Good afternoon everyone,
I would like to thank Jean-Paul Martinon and Jorella Andrews for the invitation to come and speak to you and with you today.

[x] I want to start off with an ancient image from the Catacomb of Priscilla in Rome, in which Christians were buried between the II and IV c. CE. On one of the walls there is a heavily damaged and faint image of a women nursing a child, assumed to be the Mother of God, the Virgin Mary with her infant Jesus. If this is indeed the case, this is the oldest known image created of Mary, depicting her in a pose that nowadays has been mostly erased from Christianity: breastfeeding Jesus.

It is thought that the image of breastfeeding Mary was adopted from the religious context in which Christianity first emerged, surrounded by popular cults such as the cult of the Egyptian goddess Isis, which had a highpoint in the first millennium BCE. A popular iconographic motif was the image of the Isis nursing the god Horus, as you see here in this statue [x], and we even have Roman coins with the same motif [x].

Isis was both Osiris's wife and sister and the goddess of death and resurrection. She had gathered up all the parts of Osiris after he had been dismembered by his brother Seth, who had stolen his throne. She resurrects him and produces a son and heir to the royal throne, Horus. Isis is therefore considered the mother of royal heir, and indirectly of the ruler of Egypt, the pharaoh [x].

One could see how this motif of the "mother of god," nursing the heir to the throne has later influenced similar iconography from Christianity, with the posture and gesture of Isis adopted by Mary mother of Jesus [x], whom, as should be noted, was resurrected as well. Although scholars are still debating to what extent the influence of the Isis cult on Christianity, and in particular the role of Mary, was direct, there appears to be a consensus that the icons of Isis and of Mary bear a significant resemblance and that at least on the level of iconography an influence must have taken place.¹

Through Byzantine art, the image of the breastfeeding Mary arrived in Western Christianity in the 12th century [x], where it became increasingly popular as an image symbolizing the Eucharist, the sharing of the blood and flesh of Jesus. According to medieval medical theory, a mother transformed her blood into milk in order to feed the child, so just like Jesus shared his flesh and blood with his disciples

during the Last Supper, a rite that is repeated each mass through the Eucharist, Mary shared her flesh and blood with him: the milk of the Virgin thus becomes the blood of the Savior.

Saint Bernard of Clairvaux, a Doctor of the Church who lived in the 12th century, greatly elaborated the doctrine of the Catholic Church, according a more prominent role of the Virgin Mary. [x] While he had lost his own mother when he was only 19, he is supposed to have been given his wisdom from the Virgin Mary herself, when he kneeled down in front of a statue of her. In his vision, the statue came to life, and the Virgin squeezed milk into his mouth, symbolizing her maternal function, and literally nourishing his intellect. Thus Mary's breast literally gave Saint Bernard the ability to think.

However, by the 18th century, the Virgin's breast, which until then had symbolized the nourishing care of God for the Christian, had stopped having any religious significance: a bared breast had either become pornography or a medical image. Its place as icon in Christianity would be overtaken by the crucifix, the milk of Mary replaced by the blood of Christ.

In her book *A Complex Delight: The Secularization of the Breast, 1350–1750*, Margaret Miles links the disappearance of the nursing Virgin Mary and the taboo on the display of breasts to the rise of the printing press and movable type and the concomitant spreading of pornography. The sexualization of the female figure thus happened at the same time as a revolution of knowledge spread throughout Europe. Meanwhile, the image of the nursing Virgin was preserved in the syncretic Christianities that resulted from the colonization, for example in South America [x].

This is just one example of the repression of the mother, and the nourishing breast in particular, in the West. But as we will see, this repression is not limited to the field of religion. [x]

* * *

Philosophy seems to also have an issue with mothers. In her monograph on Luce Irigaray, Margaret Whitford writes:

> The sophisticated theoretical constructions of philosophers, according to Irigaray, all depend on an unacknowledged foundation, the unsymbolized maternal-feminine. Since woman is not recognized by the cultural imaginary, theory, no matter how far-reaching and innovative, goes on perpetuating the founding obliteration.  

Let me give a prominent, and foundational, example. One of the more prominent philosophical structures that have been repressed by this "founding obliteration" has been something that Jacques

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Derrida called "irreducible to the dualisms of classical ontology," something that had no place in the steady progress of reason, and which Plato describes in the *Timaeus* as follows:

> a third kind [*triton genos*] – that of Space [*khōras*] – which always is, admitting not of destruction and providing a seat for all that has birth, itself graspable by some bastard reasoning [*logismōi tini nothōi*] with the aid of the insensibility, hardly to be trusted, the very thing we look to when we dream [*oneiropolumen*] [...]. Under influence of this dreaminess [*oneirōxeōs*], we become incapable of waking up and making all these very distinctions (and other that are brother to them) – even in reference to the unsleeping [*ahupnon*] and truly [*alēthōs*] subsisting nature – and of speaking the truth [*talēthes legein*].

This *khōra*, this "Space," is one of the early philosophical concepts that didn’t survive in Western philosophy on its way to ever more sophisticated modes of reasoning. And no wonder, as a womb that is a "seat for all that has birth," and with a dream-like quality, it allows us none of the rational distinctions that wakeful individuality appears to offer us. Maternal *khōra* blurs the borders between self and other, between reality and fantasy, and can therefore have no place in philosophy.

But the mother always returns.

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Between 1936 and 1938, German philosopher Martin Heidegger writes his *Contributions to Philosophy*, which marks a major turn from his previous phenomenological work. Heidegger refused to publish the work during his lifetime, and it was only published in Germany in 1989, more than ten years after his death. The work marks a shift in Heidegger’s philosophical direction, in the literature referred to as "the Turn," "die Kehre," a turn away from the primordial philosophical question of "what is?" to the question of how what is "ises," how being unfolds. This turn happens in the framework of what Heidegger calls the *Destruktion* of Western metaphysics, his attempt to rebirth and refound philosophy itself.

In these *Contributions*, we read the following: "All necessity is rooted in distress. As the first and utmost mindfulness of the truth of be-ing and of the be-ing of truth, the necessity of philosophy lies in the first and utmost distress." One can only speculate what this "distress" refers to. Is Heidegger talking about the distress of philosophy, worn out and no longer able to think? Or is he referring to his own distress? We are here on the brink of the Second World War, only a few years after Heidegger’s failed stint as rector of the University of Freiburg under the nazi regime, after his misguided claim about the "inner truth and greatness" of the nazi movement, and in the middle of a teaching career that

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4 Derrida, “Plato’s Pharmacy,” 163.
lasts throughout a lost war, burrowing itself ever deeper into the origins of philosophy, and, increasingly, pre-philosophical "thinking."

* * *

Today I would like to address this "thinking," not only as it appears in Heidegger's work at the far edge, or perhaps the horizon of philosophy, but also as it appears on the horizon of human's sociality, how thinking is a social activity, and that perhaps one of philosophy's greatest delusions has been that thinking can or should be done alone. Because we can only think about thinking in metaphorical or analogous terms, I will take metaphors from very different fields. Philosophy is one, but I will also address thinking with the help of another field of inquiry, that of psychoanalysis, which is particularly concerned with the question of what thinking is and does, and has offered us a crucial insight: namely that the emergence of thinking in the infant cannot be separated from the figure of the mother. We will also have a brief look at some possible analogies in linguistics, and finally in the ever expanding field of machine learning, neural networks, and artificial intelligence.

I owe the beginnings of many of the ideas in this lecture to one of my own mothers, my Doktormutter Avital Ronell. She once told me that when she pointed out for the first time that there was a mother in the work of Heidegger, and that this mother appears at a crucial moment, namely when he deals with the question of "what is called thinking?," her colleagues refused to accept this as relevant and even denied her existence. This is an illustration to what extent the figure of the mother has been repressed in philosophy, as Irigaray already tells us, and gives us a hint of how the distinction between philosophy and thinking may be figured precisely by the mother.

* * *

So let us turn to the text in which Heidegger's mother makes her appearance. It is a work called What Is Called Thinking?, a lecture series given during two semesters in 1951 and 1952. These were the first lectures that Heidegger was allowed to give after the denazification to which he had been subjected, and the last before his formal retirement as university professor. As J. Glenn Gray writes in the introduction to his English translation, "What this long interruption in his teaching activity must have cost him is not difficult to guess," but we know that the result of this no doubt depressive period is a protracted effort to tease apart thinking and philosophy:

> It is no evidence of any readiness to think that people show an interest in philosophy. There is, of course, serious preoccupation everywhere with philosophy and its problems. The learned world is expending commendable efforts in the investigation of the history of philosophy. There are useful and worthy tasks, and only the best talents are good enough for them, especially when they present to us models of great thinking. But even if we have devoted many years to the intensive study of the treatises and writings of the great thinkers, that fact is still no guarantee that we ourselves are thinking, or even are ready to learn thinking. On the contrary – preoccupation with philosophy

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more than anything else may give us the stubborn illusion that we are thinking just because we are incessantly "philosophizing." It is clear here that Heidegger disparages "philosophizing" – and most certainly also his own attempts to do so – and distinguishes it from "thinking" and even from learning to think. This learning, Heidegger elaborates, "means to make everything we do answer to whatever essentials address themselves to us at any given moment." And this immediate response to the stimuli of the moment is exactly not what Heidegger thinks thinking is.

"Thinking," Heidegger tells us, "is thinking when it answers to what is most thought-provoking. In our thought-provoking time, what is most thought-provoking shows itself in the fact that we are still not thinking." The German word translated by "thought-provoking" [bedenklich] is not as neutral as in English, or in German,

What we call thought-provoking in the condition of someone gravely ill, for example, is that it gives us cause for worry. We call thought-provoking what is dark, threatening, and gloomy, and generally what is adverse. When we say "thought-provoking," we usually have in mind immediately something injurious, that is, negative.

So here we are back to what Heidegger called fifteen years earlier the "distress" of philosophy. His "thought-provoking" question "What is called thinking?" operates under the sign of the negative, the injurious. It bathes in the black sun of depression. * * *

Heidegger prepares for the arrival of the mother. He writes a section on Hölderlin's poem "Mnemosyne," whom he calls "Dame Memory," the motherly "gathering and convergence of thought upon what everywhere demands to be thought about first of all." He speaks of the "womb" of philosophy. And then a few pages later he compares learning to think with learning to swim: "only the leap into the river tells us what is called swimming."

And there she appears [x]:

What is called thinking? We must guard against the blind urge to snatch at a quick answer in the form of a formula. We must stay with the question. We must pay attention to the way in which the question asks: what is called thinking, what does call for thinking?

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"You'll just wait – I'll teach you what we call obedience!" a mother might say to her boy who won't come home. Does she promise him a definition of obedience? No. Or is she going to give him a lecture? No again, if she is a proper mother. Rather, she will convey him what obedience is. Or better, the other way around: she will bring him to obey. Her success will be more lasting the less she scolds him; it will be easier, the more directly she can get him to listen – not just condescend to listen, but listen in such a way that he can no longer stop wanting to do it.\footnote{Heidegger, \textit{What Is Called Thinking?}, 48.}

What a strange passage! We begin with Heidegger's opening question, "What is called thinking?," but end with a mother calling out to her boy, her \textit{Buben}. Let's remind ourselves that a few pages earlier, Heidegger compared learning to think with learning to swim. You cannot learn it through definitions or through lectures, but only by making the leap. But in this case, the learning is even less active. The boy doesn't take a leap but "is brought to obey," brought "to listen in such a way that he can no longer stop wanting to do it." This mode of learning has nothing to do with an active, engaged effort of the learner, but seems rather to be a complete submission of the learner to the lesson, taken by the stream of thought.

Ronell remarks of this passage: "The Heideggerian circuit is loaded, for any reader of Heidegger will recognize the strangeness of this maternal eruption, the kind of invisible line to thinking that he mother wires."\footnote{Avital Ronell, \textit{The Telephone Book: Technology, Schizophrenia, Electric Speech} (Lincoln & London: University of Nebraska Press, 1989), 27.} We should indeed emphasize the "strangeness of this maternal eruption," because it is rare that a mother is so prominently featured, let alone at such a crucial moment.

This moment, however, is only brief. As Ronell puts it, "The mother will of course fade on the line, put on eternal hold, to be replaced in the same paragraph by Nietzsche."\footnote{Ronell, \textit{The Telephone Book}, 27.} So even Heidegger is not able to sustain the figure of the mother here, although he gives us a brief, fleeting insight into her most significant role. [x]

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What I would like to recall is that Heidegger turns to the question of thinking at a moment that philosophy seems to him to be lost, where in spite of 2,000 years of philosophizing we are still not thinking – and that this is what is so depressingly thought-provoking. I also recall that this question operates in a "negative key," under the sign of negation, and that an accumulation of maternal rhetorical figures – Mnemosyne, womb, swimming – erupt in the bursting forth of the mother.

For years, Heidegger's text and Ronell's lectures on it stayed with me, lingering, but with an ever-growing question mark. Thus imagine my great delight, and subsequent fascination, when I stumbled
upon the brief text by British psychoanalyst Wilfred Bion, "A Theory of Thinking," first published in 1962.

Bion's theory of thinking is itself an elaboration of the psychoanalytic work of Melanie Klein, who rejected the repression of the mother figure in classical Freudian psychoanalysis in favor of the Oedipus complex and reintroduced her as an important figure in the earliest, pre-Oedipal stages of infancy. In this sense, the origins of both philosophy and psychoanalysis share the erasure or repression of the mother, while in both, as we have seen and will see, the mother emerges at the moment the question of thinking is addressed.

At first sight, Bion's text appears to do the opposite from what Heidegger has counseled us to do: it formulates a direct answer to the question "What is called thinking?". But Bion expressly distinguishes his discussion of thinking from philosophy: The paper's "resemblance to a philosophical theory depends on the fact that philosophers have concerned themselves with the same subject matter; it differs from philosophical theory in that it is intended, like all psychoanalytic theories, for use."\(^{18}\) And with this distinction, surprisingly, he actually approaches Heidegger, who likened learning to think with learning to swim – as something that can be only learned through practice, or even, following the teachings of his mother, through a form of imposed practice, "in such a way that he can no longer stop wanting to do it."

Bion's theory of thinking starts from presupposition that the development of thinking as a mental process is the result of the necessity of the infant to deal with thoughts. This goes contrary to perhaps a common intuition, for Bion thoughts precede thinking: "thinking has to be called into existence to cope with thoughts."\(^{19}\)

This "apparatus" of thinking that copes with thoughts contains several component parts and processes, all of which, of course, may fail or be incorrectly calibrated in the infant, leading to a variety of psychopathologies that can be traced back to the malfunctioning of the infant's thinking apparatus.

Bion classifies the general category of thoughts in several subcategories: pre-conceptions, conceptions, thoughts, and concepts \([x]\). Concepts are fully articulated and named thoughts and conceptions, and the final output, if you will, of the thinking apparatus \([x]\). Pre-conceptions are analogous to what Kant calls "empty thoughts" in the *Critique of Pure Reason*; they need to be filled with intuitions and sense experience.

Conceptions are the result of a pre-conception brought in contact with a realization, whereas thought are the result of a pre-conception in conjunction with a frustration, an absence \([x]\). This may all sound very abstract, but Bion gives us an example: the formation of the infant's first thoughts. This is where the mother returns.

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\(^{19}\) Bion, "A Theory of Thinking," 111.
According to psycho-analytic theory, the infant has an "inborn disposition," a pre-conception that corresponds to the mother's breast. When this pre-conception of the breast is brought in contact with the realization of a breast, the pre-conception is filled up and a conception of the breast developed.

A thought, contrarily, is the result of the conjunction of a pre-conception with a frustration. It is the absence of the maternal breast coupled with the infant's expectation of it that creates the thought of the breast. Successfully formed thoughts, and therefore thinking, are in Bion's theory founded on the infant's capacity to deal with absence, negation, and frustration. To return to Heidegger's vocabulary, thinking arises from distress, from an adverse, "thought-provoking" situation: the absence of the nourishing breast, the "no-breast."\(^2\) The parallel with Heidegger here is remarkable, as he states: "What must be thought about, turns away from man. It withdraws from him."\(^3\)

These two processes of dealing with realization and frustration are of course not always successful. By being able to tolerate frustration sufficiently the infant allows for the creation of thought, which in turn makes frustration more tolerable. Thoughts are the result of tolerating frustration and at the same time improve our tolerance, because they shape and form the thing whose absence is felt. This then becomes the process of thinking \([x]\). If the infant is unable to tolerate the frustration and modify it by creating thoughts, it will create strategies to evade the frustration. As Bion puts it:

Inability to tolerate frustration can obstruct the development of thoughts and a capacity to think, though a capacity to think would diminish the sense of frustration intrinsic to appreciation of the gap between wish and its fulfillment.\(^2\)

In psychoanalytic terms, this means the creation of a "bad object," which Bion again relates to a Kantian concept, the unknowable "thing-in-itself," which is "fit only for evacuation" \([x]\). Rather than thinking, the infant displays the "hypertrophic" development of an apparatus for "projective identification."\(^3\) According to Melanie Klein, who first formulated the concept, "identification by projection implies a combination of splitting off parts of the self and projecting them on to (or rather into) another person."\(^4\)

In this primitive defense mechanism, the bad, un-nourishing breast, the no-breast, is projected on the mother, and only if the mother is able to deal with the infant's projections, she may hope to instill into the infant the comfort to deal with frustration appropriately. As Bion explains:

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20 Bion, "A Theory of Thinking," 111.
23 Bion, "A Theory of Thinking," 112.
If the infant feels it is dying it can arouse fears that it is dying in the mother [this is projective identification]. A well-balanced mother can accept these and respond therapeutically: that is to say in a manner that makes the infant feel it is receiving its frightened personality back again but in a form that it can tolerate – the fears are manageable by the infant.\textsuperscript{25}

This capacity "to respond therapeutically" is what Bion elsewhere calls the "reverie" of the mother: "reverie is that state of mind which is open to the reception of any 'objects' from the loved object and is therefore capable of reception of the infant's projective identifications whether they are felt by the infant to be good or bad."\textsuperscript{26} The reverie of the mother, which contains the infant and its budding and incomprehensible feelings, here bears fascinating overtones of the "dreaminess" of the "womb of all things," Plato's \textit{khōra}.

But to continue, at the same time, the realization of the breast may not be a fully satisfying experience to the infant. So also here we have the possibility of frustration and the necessity for the infant to be able to tolerate it in order to arrive at a conception of the breast. Together with the already formed thoughts in the infant's mind, this is what Bion calls "learning by experience" [x].

However, should the infant lack the ability to deal with frustration, again the extreme evasion mechanism is put at work, leading to the evacuation of the no-breast as we discussed earlier [x]. An intermediate option would be not to radically equate the realized but unsatisfying breast with the no-breast, but to reject the coupling of a negative or unsatisfying realization with the pre-conception, and thus to reject learning from the experience. Instead of the formation of conceptions that are grounded in experienced reality, we find the development of "omniscience," in which there is "no psychic activity to discriminate between true and false."\textsuperscript{27}

Omniscience substitutes for the discrimination between true and false a dictatorial affirmation that one thing is morally right and the other wrong.\textsuperscript{28}

I think that in these brief observations lies an incredible insight into how it is possible in our current world that seemingly well-educated and intelligent men and women often appear completely unable to think or take account of reality, and at the same are fully convinced of their own right. This line of thinking would lead to a possible analysis of climate change is the largest unconscious psychological factor in the political rise of the alt-right. [x]

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\textsuperscript{25} Bion, "A Theory of Thinking," 115.
\textsuperscript{26} Wilfred Bion, \textit{Learning from Experience} (London: Karnac, 1962), 36
\textsuperscript{27} Bion, "A Theory of Thinking," 114.
\textsuperscript{28} Bion, "A Theory of Thinking," 114.
There are two ideas I want to take away from this very brief exposition of Bion's theory of thinking, which resonates with many of the preoccupations of Heidegger's "post-turn" ruminations on philosophy and thinking.

The first one is that thinking is the result of a confrontation with an absence, or, in Heideggerian terms, a withdrawal. It is the result of being able to deal with a no-thing. Thoughts are produced under the sign of negation.

The second is that thinking is not the result of a single person, but the result of at least a couple – mother and infant. As Noreen Giffney puts it, "thinking comes into being in relationship with another, the mother." This means that thinking is in essence a social activity.

It is these two ideas that I would like to explore in the remainder of this lecture.

* * *

Thoughts appear under the sign of negation, they are the result of an absence rather than a presence, a frustration rather than a realization. We find analogous objects in semantic theory, are called "negative polarity items." Negative polarity items are specific words or groups of words that can only grammatically appear in the context of a negation. They are a subset of our vocabulary that can only reside in the negative.

A common example of a negative polarity item is the French word *pas* in the sentence *Ceci n'est pas un pipe* "This is not a pipe" [x]. On its own in an ordinary declarative sentence, this word *pas* [x] has no well-determined meaning; only together with the negation *ne* [x], it means not.

It is curious to note that several twentieth-century French authors already picked up on this word *pas*, which is not only a negative polarity item, but also means "step." An example is here Maurice Blanchot's book *Le pas au-delà*, translated in English as *The Step Not Beyond* [x]. In the English translation, *pas* is translated both as *not* and as *step*, because the negative polarity item *pas* and the noun meaning "step" are homophonous in French.

So let us take a closer look at these negative polarity items. In a standard work on the topic, Ton van der Wouden gives an extensive overview of the different types of negative polarity items, which can be single words, word combinations, or even idiomatic expressions [x].

Any

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Lift a finger
The fuck

For example, look at the following pairs:

[x]
a. John doesn't give me any money.
b. *John gives me any money.

Sentence a contains the negative polarity item "any," which can only be used in the scope of a negation. In b we have removed the negation, and the sentence becomes ungrammatical. In order to resolve this, we need to use another word instead of "any":

[x]
c. John gives me some money.

As I said before, negative polarity items don't need to be just words, they can be entire expressions.

[x]
a. Mary never lifts a finger.
b. *Mary always lifts a finger.
[x]
c. Mary always lends a hand.

And a final example:

[x]
a. Steve doesn't know where the fuck his keys are.
b. *Steve knows where the fuck his keys are.
c. Steve knows for sure where his keys are.

Negative polarity items form a fascinating part of our language, because, as Van der Wouden asserts, they show the complex interaction of syntax, semantics, and pragmatics.\textsuperscript{31} Between the way in which we structure language, give meaning to it, and use it. It cannot be reduced to a simple aspect of language but appears to be an integral aspect of language as such.

Not only negative polarity items are remarkable difficult to categorize, also negation itself can be expressed by a wide variety of grammatical categories, all of which can license negative polarity items.

Van der Wouden gives us a following list of examples:

\textsuperscript{31} Van der Wouden, \textit{Negative Contexts}, 79.
[x] We want to avoid causing any damage.
[x] There is a lack of anything resembling food.
[x] It is pointless to teach you anything.
[x] I've never seen anything like that.
[x] You can do that without any problem.
[x] This has no direct effects on anyone.
[x] Leave the lights on, lest anyone would find themselves lost.

So we see here that the forms of negation we are dealing with are not only a simple "not," but a detailed variety of expressions that all express enough of a negation for a negative polarity item to feel comfortable.

Moreover, Van der Wouden notes that negative polarity items may also be licensed by grammatical contexts which at first sight do not contain anything negative, such as questions [x] and conditionals [x]. Van der Wouden states: "These examples show that negation is everywhere in grammar."32

Negation is indeed everywhere in language, because, if we follow our reading of Bion, negation in all its forms stands at the basis of the formation of our thoughts. This also implies that negation precedes the acquisition of language, that it is in this sense beyond words, which explains to us the enormous complexity of the way in which negation manifests itself in language, as shown by Van der Wouden.

* * *

Thinking is a social activity. Thinking the result of the couple mother–child and not the result of the self-sufficient, self-centered individual. Perhaps this is what Heidegger wanted – but couldn't arrive at – that philosophy had been seriously mistaken in its belief that thinking was an activity of the individual, perhaps even the defining activity.

It was not always like this. The Platonic dialogues clearly show that the philosophy of Socrates is developed in conversation with one or more others, but as Plato's writing matures, Socrates' interlocutors are reduced to yes-men, bringing little to the conversation.

The classical philosophical site of defining thinking as an individual activity, in fact, as the self-defining individual activity is the The Discourse on Method of René Descartes in which he formulates the equation "I think therefore I am." Descartes sets himself up through a paranoiac fantasy in which everything he had hitherto accepted as true turns out to be false and his entire lived reality was nothing more than a dream.

32 Van der Wouden, Negative Contexts, 83.
think, therefore I am, was so certain and of such evidence that no ground of doubt, however extravagant, could be alleged by the sceptics capable of shaking it.

In his *Meditations*, Descartes goes even further in his fantasy, imagining "some deceiver or other, very powerful and very cunning, who ever employs his ingenuity in deceiving me." Yet in spite of that, Descartes insists that "without a doubt I exist also if he deceives me, and let him deceive me as much as he will, he can never cause me to be nothing so long as I think that I am something."

The primacy of thought and the thinking subject have since been undermined under the influence of Freud's discovery of the unconscious and the modes of deconstructive philosophy that were developed in the wake of Heidegger's work. We now know that Descartes' "cunning deceiver" may indeed deceive to such an extent that we stop thinking altogether.

At the same time, we can turn Descartes around and say that he needs to imagine a "cunning deceiver" or "sceptics" in order to cast himself as a thinking subject. He cannot conceive himself as such without *invoking* another subject. In this sense, we may very well think of the "cunning deceiver" is the mother to the infant, who appears to promise the breast but withholds it, causing frustration in the infant the rise – if properly dealt with – of thinking.

Jacques Lacan offers another interpretation, in which the "cunning deceiver" is equated with God:

> A curious scrap of *ergo*, the *ego* is bound up with this God. Descartes' approach is, singularly, one of safeguarding the *ego* from the deceitful God, and thereby safeguarding the *ego*’s partner – going so far as to endow the latter with the exorbitant privilege of guaranteeing the eternal truths only insofar as he is their creator.\footnote{Jacques Lacan, "Science and Truth," in *Écrits*, trans. Bruce Fink (New York and London: W.W. Norton, 2006), 726–45, at 735.}

So in other words, whether mother or God, Mother of God or godmother, even for Descartes, it takes at least two to think. [x]

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Even though both psychoanalysis and philosophy in the twentieth century have somewhat recuperated the figure of the mother, while, in the process, developing theories of thinking, the Descartian idea of the thinking, individual subject without social bonds has remained very attractive and current, thanks to the economical model in which it found its main expression, capitalism, and the political model that was developed in parallel, liberalism.

It should not be surprising to us that this ideological and economical model has attempted to formulate its own doctrine of thinking, which we perhaps can call a "theory of intelligence." Whereas thinking is
grounded in absence, frustration, and negation and is a first and foremost social activity, intelligence is based on affirmation and presence – presence of mind. Intelligence is a trait of the individual, not the group. [x]

Capitalism and liberalism have fostered an attitude, which in our current societies appears to value intelligence at the expense of thinking. For example, when we speak about "group thinking" we mean something negative, a slowing down of the mind and the inability "think for yourself." [x]

On the other hand, we have expanded our notion of "intelligence" to now include "social intelligence," namely the capability of individuals to understand themselves and others as part of the social context. But nevertheless, the starting point of this "social intelligence" is still the idea of the thinking individual, alone in his monad or on his mountain. "Social intelligence" is therefore an attempt to describe thinking by a detour through the artificial and untenable construct of the individual.

Perhaps the most interesting result of the "paradigm of intelligence" has been the rise of what is now called "artificial intelligence." Its horizon is "artificial general intelligence," which is supposed to perform any intellectual task that can also be performed by a human being. In other words, artificial general intelligence is supposed to capable of what we call thinking. The emergence of artificial general intelligence is what Ray Kurzweil has called "the singularity," and basically equivalent to the moment that AI will be able to construct and improve AI systems, thus causing an exponential improvement of AI, which at some point will reach AGI.

Even though general artificial intelligence itself remains beyond the horizon, the development of complex neural networks and learning algorithms have led to enormous progress in artificial intelligence and its capacity to deal with specific subsets of what until recently was reserved to human thinking.

[x] In 1997, IBM supercomputer Deep Blue beat reigning world chess champion Gary Kasparov, after previously being beaten in 1996. In terms of sophistication, Deep Blue had still little to offer. It functioned on brute computer power and was simply very fast at computing all possible outcomes of all moves.

[x] March 2016 provided another milestone for artificial intelligence, under the denominator of machine learning, when DeepMind's AlphaGo beat 9-dan go player Lee Sedol, ranked second in international titles. Go is computationally much more complex than chess, making a brute force approach unfeasible. In 1997, when Deep Blue beat Kasparov, it was thought that it would take 100 years to make a machine beat a human at go. But different from Deep Blue, AlphaGo was not based on brute computing force but on a neural network learning hundreds of professional go games.

These were the last two matches in which humans were actually relevant. AlphaGo was further developed in AlphaGo Zero, in which the neural network was no longer trained on already played
games. In a paper published on Oct. 18, 2017, the developers of AlphaGo Zero describe the program as follows:

Here, we introduce an algorithm based solely on reinforcement learning, without human data, guidance, or domain knowledge beyond game rules. AlphaGo becomes its own teacher: a neural network is trained to predict AlphaGo’s own move selections and also the winner of AlphaGo’s games. This neural network improves the strength of tree search, resulting in higher quality move selection and stronger self-play in the next iteration. Starting tabula rasa, our new program AlphaGo Zero achieved superhuman performance, winning 100-0 against the previously published, champion-defeating AlphaGo.\(^{34}\)

[x] As you can see from this graph, AlphaGo Zero beat AlphaGo, the neural network that beat Lee Sedol last year after training for only four days. And after 30 days it defeated the then best performing iteration of AlphaGo, AlphaGo Master. [x] The following images show AlphaGo acquiring standard, ”human” joseki (corner sequence) moves under a, but also non-standard, ”non-human” sequences under b, while the boards under c show the progress of AlphaGo between 0 and 72 hours of learning. In other words, AlphaGo Zero will be a better at go than any human being in the foreseeable future.

Not even two months later, the same team had generalized the AlphaGo algorithm, such that it ”can achieve, tabula rasa, superhuman performance in many challenging domains.”\(^{35}\) AlphaZero, as the named the algorithm, learned to play both chess and shogi within a matter of hours, and is now outperforming both human and the best performing software available [x].

Between Deep Blue's and AlphaGo's victories lie 10 years, between AlphaGo and AlphaGo Zero one and a half years, and between AlphaGo Zero and AlphaZero one and half months. This gives us some idea of the enormous progress that is being made in the field of artificial intelligence, or as we should perhaps call it, just intelligence. Because artificial intelligence has become \textit{par excellence} the intelligence of the individual. In the case of AlphaGo Zero and AlphaZero an individual that only plays against itself without any social or historical context, like Deep Blue and AlphaGo.

What I find fascinating is not how these neural networks acquire such deep insight into strategy games that humans have played – and they thought, perfected – over centuries if not millennia, but how humans respond to the behavior of neural networks like AlphaZero. In an interview given after the release of several games of chess played by AlphaZero against Stockfish, the currently best available chess program, grandmaster Peter Heine Nielsen, the second of grandmaster and World Champion Magnus Carlsen, said the following:


After reading the paper but especially after seeing the games I thought, well, I always wondered how it would be if a superior species landed on earth and showed us how to play chess. I feel I know now.

The idea of an "alien" intelligence can be found in many analyses on YouTube of chess and go games played by AlphaZero and seems to be a common descriptor for the playing ability displayed by the neural network.

Apart from the "alien" qualifier, artificial-intelligence generated material has made significant inroads into displaying all kinds of basic emotions, including fear, disgust, and anxiety. We seen images from DeepMind's "dreams" [x], product-generating algorithms [x], teen-girl Twitter bots [x], and YouTube cartoons generated for children [x],36 which James Bridle in a recent article describes as "familiar characters, nursery tropes, keyword salad, full automation, violence, and the very stuff of kids' worst dreams. […] Industrialised nightmare production."

If we indeed accept the contrast between thinking and intelligence that I proposed a bit earlier [x], the descriptor "alien" may not be as strange as it may sound. Artificial intelligence is not essentially different from what we call intelligence. What a neural network like AlphaZero shows is the inherent alienness of this concept derived from an economic and ideological system that prioritizes the individual over the social. What AlphaZero takes out of the equation is precisely the other, the mother. That the affects resulting from image, text, and video material generated through these intelligent algorithms play right into our most fundamental insecurities and fears should not surprise us. According to the social standards of human society, artificial intelligence is trauma, an absent mother, on full display.

This doesn't mean that we should attempt to psychoanalyze artificial intelligence or neural networks; this has rather been an attempt to find analogies and parallels, and ways in which we can talk about the enormous and overwhelming output of something that until now has been our own creation. And it is perhaps a way of heeding to Heidegger when he said, "the necessity of philosophy lies in the first and utmost distress." We need to think about what neural networks are "thinking."

In our regular, daily life, surrounded by all the popularized varieties of intelligence that are sold to us under the label "smart," we do not recognize the paradigm of intelligence as alien to us, it only becomes this way at the moment that we somehow arrive at its essence, as captured in neural networks such as AlphaZero in perhaps its most stunning manifestation, and YouTube horror as its most nonsensical.

This, in turn, puts a great question mark to the possibility of an artificial general intelligence, which, if we extrapolate our human response to AlphaZero, the most generalized AI that we currently possess, would mean that such an artificial general intelligence would be completely "alien" to us. It is even a question whether we would be able to recognize it for what it is.

And this brings us to the end, and perhaps something we can discuss together, namely whether the rise of artificial intelligence allows us to think the possibility of an artificial thinking – a thinking without the mother?