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ABSTRACT: For the last fifteen years (or so), the field of argumentation is becoming more "flexible" and open for new approaches, for approaches that are not based merely on logic (of one form or another), not even just on language. What is not quite clear about these non-verbal approaches to argumentation is how people exchange arguments, how they understand them, and above all, how they negotiate what really is/was an argument?

KEYWORDS: argument, argumentation, conscious, gustatory, intentional, neuro-cognitive, non-verbal, olfactory, visual

1. INTRODUCING NON-VERBAL

In 1997, Michael Gilbert (Coalescent Argumentation) proposed four modes of argument(ation): logical, emotional, visceral ("physical") and kisceral ("meta-physical", "intuitive"). What is not at all clear if we take Gilbert's classification seriously, is *how people exchange these non-verbal arguments, how they understand them, and above all, how they negotiate what really is an argument, or whether something really is an argument*? This problem not only remains, but is becoming more and more relevant as some argumentation theorists try to conquer gustatory, olfactory and haptic. If words can be polysemous, visuals basically and fundamentally *are* polysemous and polyphonic, i.e. (at least implicitly) referring to other (previous) situations, discourses and visuals, or quoting them. And we usually need words to actualize and "disambiguate" them.

But what if we widen the scope even more and try to include smells (olfactory), tastes (gustatory) and touches (haptic)? If words and visuals are shared by all the participants in the (argumentative) discussion, smells, tastes and touches are (shared) considerably less, or even not at all (smells and sounds could be common in a way, but not tastes and touches). We usually have to report about them verbally (somehow), which takes their distinctive features away; they become words and phrases of descriptive kind, and cease to be distinctive smells, tastes and touches, the entities we allegedly perceived, with the qualities that were supposed to persuade us (about something) as individuals. Can smells, touches and tastes (and may we should ad sounds as potential "auditory arguments" as well, sounds in their pure, basic forms, not as carriers of verbal messages) be arguments (play argumentative roles, assume argumentative functions)? How wide can the scope of what is an argument be, and what are the criteria of being an argument if we extend the scope over gustatory, olfactory, haptic and auditory as well? Should we not adapt, even (radically) change the criteria, making them much more soft and extremely flexible, even radically different? Even so different that they cannot accommodate more "traditional" arguments anymore?

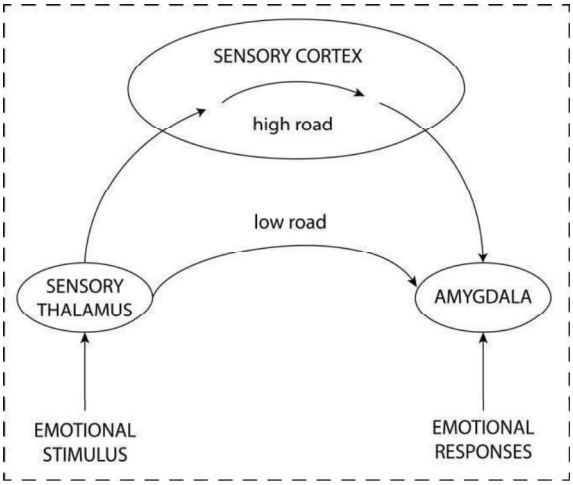
2. NEURO-COGNITIVE IN ARGUMENTATION

These are the questions I was concerned with in several of my recent papers and presentations, but in this one, I would like to take a step aside, and - challenged by the proposal of gustatory, olfactory and haptic - tentatively explore what are the neuro-cognitive bases of argumentation (reasoning and decision making), and consequently, what are the neuro-cognitive limitations of argumentation.

Namely, from a neuro-cognitive perspective, even simple verbal argumentation, the most traditional form of argumentation, does not seem so linear. As Damasio (1999), a neurologist, and Enfield (2017), an evolutionary linguist, persuasively show, human organisms' (or, if you want, human brain's) processing of the emotional aspects of a piece of communication is separate (and different) from the processing of the content of the words and sentences used in this same piece of communication. Even the simplest words, they argue, are uttered with a background emotional inflection, where inflection is understood as an instance of prosody, the musical, tonal accompaniment to the words. Verbal input (be it complex arguments or simple chitchat) is therefore processed separately, on two tracks (and that goes not only for the verbal input, but for the input from all the senses, maybe even more so): System 1 (Kahneman, 2011, Stanovich and West, 2000) - system we share with all other vertebrates - operating automatically, quickly, and without any voluntary control (conscious independently), first processes this tonal inflection, the tonal base of what is said, signaling to other relevant parts of the brain what could be expected and how to react. Only after that, with a short delay (counted in fractions of seconds), System 2 (meta-system, controller and filter of System 1) allocates attention to respective sections of the brain and mental functions that are needed to analyze, situate and interpret the content of the words carried by the tonal base.

As both Kahneman (2011) and LeDoux (1998), another neurologist, show, and Enfield (2017) confirms, a *human organism thus adopts an attitude towards what was heard (tasted, smelled, felt), even before the content of words (their meaning) was processed*, understood and brought to the conscious level (System 1 prevails over System 2).

Here is one of the explanations (there are different versions, but the bottom line is the same) why and how that happens (see the diagram below):



The thalamus is sending theinformation about the external stimuli via two routes: 1. via short route (low road), directly to the amygdala, which is responsible for our emotions and decision making; 2. via long route (high road), through the sensory cortex, which is resposable for making sense of things (i. e. stimuli), and than further to amygdala to potentially correct or balance the information sent via the short route. Because the high road takes more time then the low road (we ar talking milliseconds here), we know before we know that we know, or more precisely, our organism knows (and acts accordingly) before we know that it knows.

But you may object, how do these (psychological and neuro-cognitive) findings concern, inform or even affect argumentation? Well, if wondering (thaumadzein) is really the origin and the basis of philosophical thinking, as Plato already postulated, and methodical doubt or methodical skepticism is the leading principle of any philosophical and scientific research as postulated by Descartes these findings should sow at least some seeds of rational and reasonable doubt: is argumentation really an independent, autonomous, conscious, intentional and free will activity, based on (more or less) rational reasoning (in mostly verbal form)? Does "intentional" really imply independent and autonomous? Independent and autonomous from what? From neuro- cognitive and physiological bases of how human organism function? And, is intentionality not supposed to be based on something we call free will, both being strictly conscious phenomena?

Arguing from a neuro-cognitive point of view, “visual arguments” demonstrate another, rather interesting problem. As Damasio (1999, p. 185) shows, “second-order nonverbal narrative of consciousness can be converted into language immediately”. What does this mean? It means that human brain generates an automatic verbal version of the “story” it is occupied with at a certain moment (for example an alleged "visual argument", but it could be any non-verbal "argument"), and we have no way of stopping that verbal translation. “Whatever plays in the nonverbal tracks of our mind is rapidly translated in words and sentences. That is in the nature of the human, language creature.” (ibid). This fascinating neuro-cognitive finding was in a way already anticipated by the “phonological loop”, a concept proposed by psychologists Alan Baddeley and Graham Hitch in their 1974 model of working memory. Applied to argumentation, *these neuro-cognitive findings show that there really is no and cannot be no visual argumentation proper*.

3. OTHER MINDS, AUTOBIOGRAPHICAL SELF AND EXTENDED CONSCIOUSNESS

If we now turn to potential gustatory, olfactory and haptic extensions of argumentation, we have to take into consideration that we are really addressing the eminent problem of other minds (Austin, Putnam, Chalmers, …) or in a bit simplified manner: *how can I know what you know, how can I (know that I) feel what you feel, or in the context of our imminent discussion about tastes and wine tasting: how can my feelings/experience of things (tastes, smells, touches ...) be an argument for what you (may) feel/experience* (see Groarke, 2015)?

Neuro-cognitive science is very clear about this: “Consciousness is an entirely private, first-person phenomena, which occurs as part of the private, first person process we call mind” (Damasio, 1999, p. 12). In other words, you and I can have the experience of the same wine (Groarke, 2015), but each of us will generate this experience according to our own individual perspective, our own “autobiographical self” that is

being constantly constructed and reconstructed (mostly in the hippocampus area of the brain). You, tasting the same wine (or something else) do have an experience of something that may be highly correlated with my experience, but as an (tasting, gustatory) experience it is something completely different, and it simply, ontologically, cannot be otherwise.

Neuro-cognitive sciences are basing these claims on two concepts: extended consciousness and autobiographical self (that we have already mentioned).

> "If core consciousness allows you to know for a transient moment that it is you seeing a bird in flight or that it is you having a sensation of pain (or sensation of a pleasant taste of some liquid on your tongue - IŽŽ), extended consciousness places these same experiences in a broader canvas and over a longer period of time." (Damasio, 1999, p. 196).

Extended consciousness therefore means that "you" are now connected to your lived past and anticipated future:

> Extended consciousness occurs when working memory holds in place, simultaneously, both a particular object and the autobiographical self, in other words, when both a particular object and the object in one's autobiography simultaneously generate core consciousness." (Damasio, 1999, 222).

Or put a bit differently:

> The secret of extended consciousness is revealed in this arrangement: autobiographical memories are objects, and the brain treats them as such (as it does treat particular objects affecting our senses - IŽŽ), allowing each of them to relate to the organism in the manner described for core consciousness, and thus allows each of them to generate a pulse of core consciousness, a sense of self knowing (ibid. pp. 196 - 197).

Anticipating the wine example again, the tasting of wine does not just trigger the stimuli, correlated to the liquid in your mouth, but lets you survey (quite automatically and unconsciously, it is the System 1 that is in charge here) the facts about possible previous wine tastings, persons, events and feelings associated with it, when was it (why and with whom), where (was the place pleasant and who else was there), with whom (and what are your emotions about that person or those persons), does this wine tastes like any other wines I have tasted, did I like these other wines, what do these wine notes remind me of, what and who do they remind me of, who else likes such wines, when do I usually drink wine, how and with whom …The wine tasting would therefore act as a "ripple" (a metaphor very popular in cognitive sciences) that activates different associative chains, and the range of this dormant, implicit knowledge that Damasio calls "dispositions", awoken by particular ripples (the particular taste of particular wine in a particular moment) is called an autobiographical self (or more precisely, is part of the autobiographical self or situated in the autobiographical self). Or in Damasio's words:

> Once our autobiographical memories are formed, they can be called up whenever any object is being processed. Each of those autobiographical memories is then treated by the brain as an object, each becoming an inducer of core consciousness, along with the particular non-self object that is being processed. (Damasio, 1999, p. 197).

In other words: my autobiographical memories connected to possible previous wine tastings and tastes of wine are being processed by the brain simultaneously with the actual wine tasting, and precisely because of this actual wine tasting. And the actual taste of wine together with emotions remembered and triggered with this actual wine

tasting thus modify my autobiographical memory by this actual tasting as well as influence the actual tasting and (the experience of) the actual taste by my autobiographical memory (i.e. dispositions of the previous tastings of wine or other tastes and tastings).

4. TASTES AS ARGUMENTS?

Let us finally have a look at this wine tasting example. But, mind you, this is not just an example among many provided, this is the example, the only example, and also a completely fictitious and made-up example on which the author builds the possibility of tastes as arguments (Groarke, 2015, p. 137):

Imagine that we are at a wine tasting for California wine. Someone tells you that Frog's Leap PS 2013 is magnificent. When you respond with a doubtful look, she tells you that the magazine Food & Wine ranked it the best Petite Syrah of the year, then pours a glass and says 'here's the proof.' This is a case in which our host is forwarding an argument, offering you reasons why you should accept her point of view. One of the reasons – perhaps the deciding one – is the tasting of the wine in question, which is supposed to provide evidence for her standpoint.

So, "one of the reasons – perhaps the deciding one – is the tasting of the wine in question, which is supposed to provide evidence for her standpoint".

But, can *my evaluation* of a certain wine (or any other drink or food for that matter), after tasting it, serve as an argument in support of *your evaluation* of the same wine? Tasting is a uniquely personal and subjective experience, probably the most unique and individual(ized) as far as human senses are concerned, its effects and results as well as feelings and emotions derived from them depending exclusively on the extended reality connecting the liquid in my mouth and my personal history of tastings and tastes in particular circumstances as recorded, elaborated and reconstructed in my autobiographical self.

Therefore, if your verbal evaluation of the wine X is "magnificent", and my verbal evaluation of the same wine X sounds, quite by accident, "magnificent" as well, can my evaluation serve as an argument in support for your claim? No, absolutely not! Or, let us consider a weaker version of this claim: if I think the wine is "magnificent" and you think it is "magnificent", does that not mean – at least – that it is (really) magnificent? No, not even that!

Yes, we are tasting the (same) liquid from the same bottle, but this does not mean that the experience of tastes developing in my mouth is the same as the experience in your mouth. Offering a glass of wine (or anything else) accompanied with a qualifier "It is magnificent" and "It was ranked by X as the best wine in category Y" can only qualify as an argument in support of my decision to proceed with tasting this allegedly fine wine, but it cannot in any case serve as an argument in support of the very quality of the wine as tasted by you (or somebody else). And now we will take a look why.

5. CONSCIOUSNESS, AN ENTIRELY PRIVATE PHENOMENON

To be able to do that, we will have to dive into some neuro-cognitive research over the last two decades, and for a start have a look at what consciousness may be and how it functions.

And we will start with the very same quote from Damasio, we used in the beginning of the paper (Damasio, 1999, pp. 12 - 13): "Consciousness is an entirely private, first-person phenomenon which occurs as part of the private, first-person process we call mind."

And mind, for Damasio (ibid.),

> encompasses both conscious and non-conscious operations. It refers to a process, not a thing. What we know of as minds, with the help of consciousness, is a continuous flow of mental patterns, many of which turn out to be logically interrelated.

When he says logically, Damasio does not mean or refer to philosophical, formal or symbolic logic, but more to the principles that cause and connect mental events as postulated by David Hume in his Enquiry Concerning Human Understanding (1748), namely: resemblance, contiguity (in time and place) and causality (which is, as we will see later, often projected into things and processes by System 1, the auto-pilot self (Kahneman), or the core self (Damasio) or the first intuitions (Mercier and Sperber, 2018). Namely, Damasio explains that this continuous flow of mental patterns "moves forward in time, speedily or slowly, orderly or jumpily, and on occasion it moves along not just one sequence but several." (ibid., p. 176) And sometimes these sequences are concurrent, sometimes convergent and divergent, sometimes superposed, because they are not prompted by logic but primed (triggered) and evoked by a process called associative activation. And how does this associative activation work. Here is an explanation of another well know cognitive psychologist (Kahneman, 2011, p. 51):

> Ideas that have been evoked trigger many other ideas, in a spreading cascade of activity in your brain. The essential feature of this complex set of mental events is coherence, each element is connected, and each supports and strengthens the others. The word evokes memories, which evoke emotions, which in turn evoke facial expressions and other reactions, such as a general tensing up and an avoidance tendency. The facial expressions and the avoidance motion intensify the feelings to which they are linked, and the feelings in turn reinforce compatible ideas. All this happens quickly and all at once, yielding a self-reinforcing pattern of cognitive, emotional, and physical responses that is both diverse and integrated – it has been called associatively coherent.

I should continue with explaining the concept of priming, and what the concept of ripples has to do with it, how the two of them are connected and how they affect associative coherence and associative chains, but allow me a short digression about "tensing up and an avoidance tendency" mentioned briefly in the quoted passage, but not really explained, that will eventually lead us to priming and ripples.

Tensing up and avoidance tendency in the quoted passage are nicely illustrated by a simple example, based on previous experiments, Kahneman used to explain some of the characteristics of the System 1 mentioned in the beginning of the paper. Here is a quick summary (ibid, p. 50):

> Look at the following words:
>
> Bananas Vomit

A lot happened to you during the last second or two. You experienced some unpleasant images and memories. Your face twisted slightly in an expression of disgust, and you may have pushed this book imperceptibly farther away. Your heart rate increased, the hair on your arms rose a little, and your sweat glands were activated. In short, you responded to the disgusting word with an attenuated version of how you

would react to the actual event. All of this was completely automatic, beyond your control.

We'll come back to this in a moment, for now, please, keep in mind the last part of the quote: all of this was completely automatic, beyond your control. How does he explain this phenomenon?

6. ASSOCIATIVE COHERENCE, CAUSALITY AND INTENTION

Your mind automatically assumed a temporal sequence and a causal connection between the words bananas and vomiting, forming a sketchy scenario in which bananas caused the sickness (ibid., p. 51)

This is a case of associative (memory) coherence at work, exhibiting one of its (and System 1's) basic characteristics: projecting causality and intention into perceived phenomena where there are none. And he continues (ibid., p 52):

> The state of your mind has changed in other ways: you are now unusually ready to recognize and respond to objects and concepts associated with "vomit", such as sick, stink, or nausea, and words associated with "bananas", such as yellow and fruit, and perhaps apple and berries.

This is a case of associative network, primed (triggered) by the ripple, caused by the juxtaposed words "banana" and "vomit". David Hume, mentioned earlier on, was persuaded that human mind goes through a sequence of conscious ideas, one at a time. Current neuro-cognitive research shows that associative memory works quite differently (ibid.):

> *An idea that has been activated (primed) does not merely evoke one other idea. It activates many ideas, which in turn activate others (ripples). Furthermore, only a few of the activated ideas will register in consciousness*; most of the work of associative thinking is silent, hidden from our conscious selves.".

But the fact that most of the work of associative thinking is silent does not mean that these ideas that did not manage to surface to the conscious level do not affect us, do not have any influence on our organism. They do, they are duly registered on the pre-conscious, sub-conscious, proto-self level by the System 1, transmitted to relevant respective parts of the organism that then act (out) accordingly. Completely automatic, beyond our conscious control.

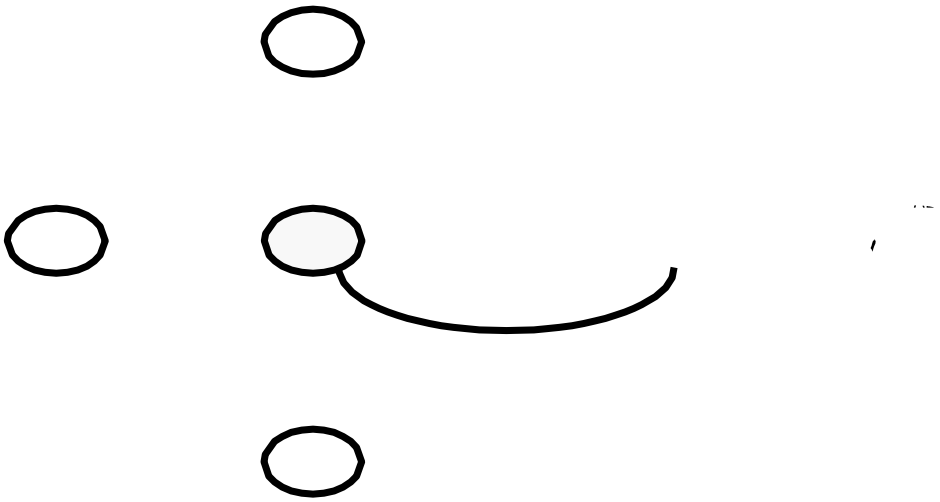
How is that and why is that?

7. TRIGGERING, PRIMING AND RIPPLES

Already in the 1980s psychologists discovered that exposure to a (single) word (priming) causes immediate and measurable change (an important detail, because this research is often frowned upon as irrelevant) in the ease with which many related words – related across different paradigms, different contexts and in different way, by different common denominators – can be evoked (ripples) from my autobiographical self. Here is a short summary of those experiments (ibid., p. 52): if you have recently seen or heard the word EAT, you are more likely to complete the word fragment SO_P as SOUP than as SOAP. And the opposite would happen if you had just seen (or experienced) WASH. This phenomenon came to be called a priming effect, a concept

of paramount importance in neuro-cognitive research, with (potentially) significant effects on human argumentation as well as on argumentation studies. The primed ideas have the ability to prime other ideas, and like ripples on a water spread through a (small) part of the vast network of associated ideas. The mechanism of priming is also behind the semantic frames, postulated in the 1970 by Charles Filmore, elaborated by Richard Langacker and "popularized" by George Lakoff (Philosophy in the Flesh (Lakoff & Johnson,1999)) summarizes well the workings and effects of priming: most of the evoked ideas may not make it to the conscious level, but they will affect the working of the body; and this is where the notion of "embodied cognition" comes from).

Here is an illustration of an associative memory network for "Fear (of snakes)" (LeDoux, 1998, p. 213):



But, more importantly, psychological and neuro-cognitive research shows that *priming is not restricted only to concepts and words, but that it extends to actions and emotions as well*. And actions and emotions can be primed by events of which – once again – we are not aware. There is a famous experiment called the "Florida effect" that demonstrates this fact as having really dramatic and worrisome consequences as far as human free will and conscious agency is concerned (Kahneman, 2011, p. 53).

In 1996, the psychologist John Bargh asked students at the New York University, aged between 18 and 21, to assemble four-word sentences from a set of five words. For one group of students, the sets contained words associated with the elderly, like Florida, forgetful, bald, gray or wrinkle. When they had completed the task, the students were sent to do another experiment down the hall. And this short walk was actually what the experiment was really about. Namely, the researchers measured the time it took people to get from one end of the corridor to the other. As Bargh had predicted, the young people who had constructed a sentence from words with an elderly theme walked down the hallway significantly more slowly than the others.

This ideomotor effect as this priming phenomenon became known involves two stages of priming. First, the set of words primes thoughts of old age, though the word old is never mentioned. Second, these thoughts prime a behavior, i.e., walking slowly, which is associated with old age. And what seems to be the most important for our context (non-verbal arguments): all this happens without any awareness of the experimental subjects. When they were asked afterwards, as the design of such experiments require, none of the students reported noticing that the words had a common theme, and they all insisted that nothing they did after the first experiment

could have been influenced by the words they had encountered. In other words, the idea of old age had not come to their conscious awareness, but their actions changed, nevertheless. These were examples of unconscious thoughts affecting behavior and (body) (re)actions. But even common gestures can unconsciously influence our thoughts and emotions.

In a 1988 experiment (ibid., p. 54), college students were asked to rate the humor of cartoons from Gary Larson's The Far Side while holding a pencil in their mouth. Now, you can hold a pencil in your mouth in two ways: 1) you can hold the pencil between your teeth so that one of its ends is pointing to the left and the other to the right, or 2) you can hold the pencil so the point is aimed straight in front of you, by pursing your lips around one of its ends. Most of people are probably unaware that the first action forces your face into a smile, and the other one into a frown. Those students that were "smiling" (without being aware of it) found the cartoons funnier that those who were "frowning".

8. OMNIPRESENCE AND INEVITABILITY OF THE UNCONSCIOUS

Here is the obvious conclusion from all these experiments (and there are many more like these): not only can our unconscious thoughts prime our actions and behavior, even common gestures can unconsciously influence our thoughts and feelings. In other words: our actions and behavior, thoughts and feelings are the result of causes that are unconscious and therefore not known to us. Not all, of course, but nevertheless many, most of them.

All these scientific findings have serious impact on rhetoric and argumentation, especially if we want to extend the field to gustatory, olfactory, haptic and auditory. Consider a research by Goris and Hutter (2011), which reveals that:

- some companies are using air-conditioning systems to release certain scents/fragrances into working halls in order to boost productivity (obviously with success);
- casinos in USA are using certain kinds of fragrances in order to encourage more risk in gambling (obviously with success);
- Sheraton hotels are said to deodorize their premises with the scent of apple pies, vanilla, and cinnamon in order to make the atmosphere more homely (so that the guests would stay longer).

Another interesting scientific research (Holland et al., 2005, pp. 689 - 693), which concerns the possibility of arguments as sensorial input/physical stimuli) has found that the hint of aroma coming out of a hidden bucket of citrus-scented cleaner was enough to persuade (that is the expression the author is using) students to clean up after themselves – even though the majority of them had not actually registered the smell.

And finally, Overman et al. (2011, 64 - 72) discovered that when men were subjected to a novel smell – either good or bad – during a gambling task used to test decision making skills, they performed significantly worse than normal. Authors conclude that not only the scent stimulated the brain areas connected with emotion, making their decisions emotional rather rational, smells also seem to direct our visual attention and may play a key role in consolidating memories too!

9. DISCUSSION AND CONCLUSION

All that brings us back to the example of wine tasting, expanding the framework. Could we really say that these respective smells (or the dimensions of taste in wine tasting, more precisely, the automatic processing of these smell dimensions by the brain), smells that were inhaled automatically, unconsciously and without any intention, are arguments in favour of (boosting) productivity, taking more risk (in gambling) and staying longer (in Sheraton hotels)? I have serious doubts about that, unless we want to call physical, sensory stimuli arguments. But if we do, and we take automatic, non- controlled, non- intentional and non-conscious signals, pulses generated by tastes, smells touches and sounds as arguments, then already each human body in itself (let alone the contexts created by inevitable intersubjective relations) is a large, complicated network of interconnected arguments and a vast, detailed map of argumentation that is constantly changing and evolving.

Which takes us far far away from what we traditionally call argumentation. Is that the future of argumentation?

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