A brain-based analysis of online mediation

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Introduction

For many dispute resolution professionals, "online" is still a dirty adjective that just should not be associated with mediation. The main reason invoked by those professionals to oppose themselves to the use of online mediation is that online is not and simply can't be a "normal" or "true" social interaction and that the technology is not reliable enough for such a difficult process as conflict resolution.

For some other professionals, online mediation is a no-brainer: it's a great substitute to face-to-face mediation for parties who might never have the time and/or money to travel several thousand kilometers to meet each other in a neutral place – and yes, online mediation has some disadvantages, but they are clearly offset by its advantages. Let us submit for your consideration two case studies to help you reflect on those positions.

Case # 1: in an international commercial dispute, an Australian party who we will call John and a French party who we will call Jacques agreed to meet face to face in Singapore, since it was judged to be sort of half-way between Paris and Sydney. Being both very busy business people with a limited budget, they agreed through their counsels to limit the negotiation to two days, even though the mediator had suggested that the complexity of the case could make that period not long enough to resolve all the matters at stake. The sessions proved out to be even more difficult than what the mediator had expected. The clock ticked and ticked and after 47 hours of a lot of mediation and little sleep, the tension was at its peak and the red-eye parties and their counsels had to agree that the two days were indeed not going to be enough. None of the people in the room thought about going back home and schedule video conferencing sessions to finish the job: the mediator was totally unfamiliar of "new" technologies and the parties as well as the mediator had their cognitive resources so depleted that they probably were not thinking as rationally as what they believed they were. John's counsel's suggestion of extending the session by one day was flatly rejected by Jacques since he had purchased two non-refundable and non- changeable tickets from Paris in economy class and did not want to engage extra expenses. Jacques vehemently argued that he had already made a bigger effort than his counterpart to travel 13 hours as compared to the mere 9 hours from Sydney and added that "all of this would have been resolved if the Australian party was more cooperating". This triggered a classical exchange of very negative accusations until that Jacques slammed the door and ran to the airport to catch his non-refundable and non-changeable flight, with his seventy-year-old counsel panting a few meters behind him. The case went to arbitration and cost to Jacques the price of a space travel with Virgin Galactic.

Case # 2: in an international commercial dispute, an American party who we will call Jim and a Chinese party who we will call Chang agreed through their counsels on the fact that online mediation was a very good medium: it was not only cost-effective but was going to allow them to resolve their conflict without seeing each other, which was the last thing they wanted to do. They asked the mediator to do an online shuttle negotiation between them, using private video conferences. After several days into the process, Jim started to complain to his counsel about the fact that he could not discuss face to face with Chang: thanks to the patient questioning work of the mediator, he had realized that what he expected from the other party was a good and sincere apology above all financial considerations. He thus accepted the organization of a 3-way video conference gathering all the parties, their counsels and the mediator. Alas, after only fifteen minutes in the session, he abruptly asked to Chang why he had a "permanent sneer of contempt on his face" and why he was "refusing to look him in the eyes" while he was speaking. Maybe the sneer was in Jim's head and maybe Chang had on his face his best expression of empathy, in any case it was an expression to which Jim had never been exposed to until that moment. What was being seen as a great advantage by the parties at the beginning of the mediation – staying at 6000 kilometers of each other – turned out to be the fatal "coup de grace": without changing his facial expression, Chang ended the video conferencing session by a click of his mouse and refused to ever speak again with Jim. The case went to litigation and cost to both parties more than the budget to meet face to face anywhere on the planet (with a good intercultural training as a bonus).

We believe that those two cases illustrate how the perspectives of "opponents" and "adopters" of online mediation are neither right nor wrong but that – as usual in mediation – it **depends on the context**. So where do we go from here?

What we are about to do in the next pages is to move away from the positions of the "opponents" and "adopters", analyzing the pros and cons of online mediation using the recent findings of neuroscience. First of all, we will define what online mediation is and characterize its different variations; then we will present "brain-based" criteria we have chosen to make our analysis and then will apply those criteria to the different categories previously defined to list pros and cons of each one of them.

1   Online mediation: definition and implications

The field of "online dispute resolution" includes many types of online processes. We will not study in this chapter automated negotiation systems or simple case appraisal systems and will focus only on the **online mediation** category, which we will define as "*an interest-based negotiation process between two or more parties, facilitated by a neutral third party, which leverages one or several of the following technologies: email messaging, instant messaging, online document sharing, audio*

conferencing and videoconferencing"[2]. By contrast, we will name "**offline mediation**" any mediation process which does not use *any* of the technologies listed above.

Let us make some of the implicit notions linked to our definition a little bit more explicit:

1. Online mediation can use one, two or several of the technologies listed above in any specific order;
2. Online mediation can use one, two or several of those technologies for one part of the process only (e.g. preparation) or during all the process;
3. Online mediation can be a synchronous and/or an asynchronous negotiation process, taking into account that most of the technologies listed above can function in both forms;
4. Online technologies offer exclusive features as compared to the offline world and thus can bring new benefits to mediation as compared to offline mediation.

Based on those notions, it can be argued that the nature of the experience of the parties (including the neutral) during an online mediation does not depend as usually believed on the sole capacity of the online technologies to emulate as well as possible a live interaction, but on:

1. The exact mix of the online technologies used *for each phase* of the mediation process: preparation, opening, option generation, closing[3];
2. The "*timing nature*" of each technology: synchronous vs. asynchronous;
3. The impacts (positive or negative, strong or weak, etc.) of those technologies on the emotional, social or cognitive experience of the parties;
4. Last but not least, the structure of the *online mediation process itself*: if for instance a mediation process is especially "socially deficient" in the real world, there is a high chance that its translation to the online space will be even worse. Comparing such a "socially deficient" *online* mediation process to other types of *offline* processes that are better from a social standpoint would be unfair to the providers of online technologies and arguably to the practice of mediation itself.

2   A few words about "effective" communication

Effective communication may be defined using 4 principles:

- A clear contact between sender and receiver must be done;
- Sender and receiver should easily allocate turns at talk;
- Every party should be able to easily monitor the understanding and attention of the other parties;

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[2] To have an overview of those technologies, please refer to chapter XX.
[3] This is a simple model that we will refer to in the rest of this chapter.

- "Deixis" – the possibility to see and use the artifacts used during the meeting such as the document the discussing party is speaking about, a paper used to draw diagrams on, etc. – should be supported.

At first glance, even the most complete form of online mediation (video conferencing) is quite inefficient since it passes a smaller number of observable details compared to face to face sessions, such as voice modulation and its impact on word meaning, non-verbal signals from hidden gestures and body position. As "social animals", we are used to process a communication act in its entirety and not to have only the face or the superior part of the body to understand what message the "other" is trying to convey. Some senders may also have to slow down their natural speed of speech due to a low-quality connection and in the worst situations the lack of synchronization of sound and video channels may result in a very significant impairment of the communication. Still, the case studies above as well as the implications of our definition of online mediation all suggest that "effectiveness" is a very **contextual and dynamic** notion: what is effective in one context might turn out to be ineffective in the same context later or sooner in time and vice versa. For this reason, we believe that effectiveness should not be the single criterion to decide which form of online mediation to use and when. It is the tree that hides the forest. We propose to evaluate the relevance of online mediation by analyzing the potential impact of the use of online technologies on the functioning of the brain of the parties and – as a consequence – on their behavior. We want to see if this impact is positive or negative, when and why and, when this is possible, we will compare it to offline mediation.

3   10 key "neuro-principles" governing the human brain

Like it or not, our emotional, social and cognitive brains are "wired" to make us react and behave in some predetermined ways, generally as an heritage of ancient times when our survival was a at stake in many moments of our life. The "brain-based" principles governing our behavior are the following ones:

1. **"Thou shalt consume thy brain's resources efficiently, and create patterns"**: The human brain is just 2% of the average person's body weight it yet demands 20% of the body's blood flow and 20% of its oxygen.[4] The human prefrontal cortex, where we manage our high-level thinking, is also unusually large, accounting for approximately 1/3 of total brain size (which is what makes the human brain unique) and needs lots of glucose and oxygen to function properly. Conscious cognitive capabilities are severely depleted when the brain is low on glucose or oxygen, or has had sub-optimal time to rest (including sleep). The can lead to decision fatigue or ego depletion.[5] In order to

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[4] Brain Bulletin #54 - *6 Things You Didn't Know About Your Brain*, Terry Small (www.terrysmall.com/bb_54.asp)

[5] For an excellent review of these phenomena, which go beyond the scope of this chapter, see J. Tierney "*Do You Suffer from Decision Fatigue?",* The New York Times (August 17, 2011), available online at

conserve on energy, the human brain constantly and instinctively indulges in "pattern recognition", comparing the data it receives from the external world to memories and scripts rather than really analyzing them (see also commandment # 10 below). This processing mode is extremely efficient but can lead to rely on non-relevant heuristics and stereotyping;

2. **"Thou shalt predict according to thy patterns":** our usage of patterns is also critical from a survival standpoint since it allows an efficient anticipation of potentially harmful events and the implementation of the most relevant action (see also commandment #3 below)[6]. Our brain will also tend to rationalize decisions once they have been taken, to fit them into a consistent pre-existing pattern of behavior, especially after having made difficult choices or having experienced a cognitive dissonance, where two contradictory choices of behavior seem to be possible. Post-choice rationalization occurs in these cases, when one's choices (usually one's actions) conflict with one's prior attitudes about choice options, and do not comply with cogent predictable behavior. This dissonant state is unpleasant and can motivate a change in attitudes about what was chosen and/or not chosen (or done or not done), which serves to both justify the choice *ex post facto* and reduce further future dissonances from occurring, possibly affecting memory in the process.[7]

3. **"Thou shalt avoid and be far more sensitive to danger/fear than to reward/pleasure, which thou shalt seek ("away" v. "towards" reflexes)":** The human brain is wired to respond positively to senses of reward (e.g. sexual pleasure, pleasant smells) and to avoid painful stimuli (e.g., fire, smoke). These instincts are apparent even in commercial disputes, where money may be perceived as a secondary reward that is instinctively associated with feelings of pleasure or safety, or where having to pay damages can trigger feelings of pain. These can be summarized as the "away reflex" and the "towards reflex". The first one appears to be far stronger and longer lasting than the second one.[8] Stimuli of pain or a threat are typically much faster acting and are likely to increase adversarial behavior and slow down cognitive capacity. Stimuli of pleasure or reward, however, tend to be slower acting, milder, shorter in duration and likely to stimulate cognitive capacities. A single negative stimulus, however, may outweigh many positive stimuli and affect human behavior for far longer.

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http://www.nytimes.com/2011/08/21/magazine/do-you-suffer-from-decision-fatigue.html?_r=1&pagewanted=all

[6] For an interesting read on this theory, and how it is being applied to try and create machines with artificial intelligence, see: J. Hawkins & S. Blakeslee, On Intelligence: How a new understanding of the brain will lead to the creation of truly intelligent machines", St. Martin's Griffin; First Edition edition (July 14, 2005).

[7] L. Festinger, A Theory of Cognitive Dissonance, Row, Peterson. (1957). A typical example of giving is smoking, where people accept that smoking can be lethal, but will rationalize to themselves their decision to continue smoking.

[8] See S. Leknes S &I. Tracey, "*A common neurobiology for pain and pleasure*", Nature Review Neuroscience, 9, pp. 314-320 (2008); and M. Kringelbach & K. Berridge, "*The Neuroscience of Happiness and Pleasure*", Social Research Vol 77 : No 2, pp. 659-78 (Summer 2010).

4. **"Thou shalt first perceive via emotions before being able to self-regulate (unconsciously or by habits)"**: The human brain will instinctively assess a stimulus and generate an emotion within the first few milliseconds of exposure, before the brain is able to have a cognitive appreciation of this emotion or stimulus. This is as a result of the limbic system (and the amygdala in particular) acting as a rapid relevance detector to prioritize sensory input and determine what should be given priority to[9]. It is only after a conscious awareness of the stimulus exists (after approximately half a second from exposure to the stimulus) that a person can begin to self-regulate and overcome strongly rooted emotions through habit and conscious reappraisal. This ability can be developed at any time and touches on the plasticity of the brain.[10] It appears to be strongly regulated by interconnections between the amygdala and the frontal cortex.[11]

5. **"Thy 'Social' stimuli shall be as powerful as thy 'Physical' ones":** Human beings are gregarious animals that evolved to live in small groups or cliques.   Like other mammals, there is an automatic and instinctive need to assess one's social status in a group. Negative social stimuli, such as social exclusion, grief, being treated unfairly or being negatively compared in a social context, can activate trigger feelings of pain, that activate networks similar to those that are activated in cases of actual physical pain. Likewise, positive social stimuli, such as having a good reputation, being treated fairly, cooperating, giving to charity, and even *schadenfreude[12]*, can active physical pleasure networks and stimulate cooperative behavior and reciprocity. We tend to underestimate this in adult life, but it is often a primary driver of social behavior, which can operate at an unconscious but instinctive level.[13]

6. **"Thou shalt seek safe or comfortable status positions at all times"**: This is a combination of the 5th rule above and the overwhelming reflex to avoid pain, which is a more dominant and long-lasting feeling. According to a recent study, the result is that in situations where people are positively primed socially (e.g., as "clever"), they may behave more cautiously to conserve their positive status, whereas they may act more rapidly or incautiously, where they have not been positively primed, or have been primed negatively (e.g., as "stupid").[14] It also may explain the complex and multifaceted nature of what has been termed "human-ecosystem interactions" and

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[9] See D. Sander et al *supra* at footnote 6.

[10] See M. Beauregard et al, "*Neural Correlates of Conscious Self-Regulation of Emotion*", The Journal of Neuroscience, Vol. 21 RC165, pp. 1-6 (2001); and M. Beauregard (ed.), Consciousness, Emotional Self-Regulation and the Brain (Advances in Consciousness Research), John Benjamins Pub Co (January 2004)

[11] S. Banks et al, "*Amygdala–frontal connectivity during emotion regulation*", Social Cognitive and Affective Neuroscience, 2, pp. 303–312 (2007)

[12] Defined as "pleasure derived from the misfortunes of others". See http://en.wikipedia.org/wiki/Schadenfreude.

[13] See Lieberman and Eisenberger, "*Pains and Pleasures of Social Life*", Science, 323, pp. 890-91, (Feb, 13, 2009); H. Takahashi et al. "*When Your Gain Is My Pain and Your Pain Is My Gain: Neural Correlates of Envy and Schadenfreude*", Science, 323, pp. 937-39 (Fev 2009); N. Eisenbergeret al., "*Does rejection hurt? An fMRI study of social exclusion*", Science, 302, 290-92 (2003).

[14] See S. Bengtsson et al., "*Priming for self-esteem influences the monitoring of one's own performance*", Social Cognitive and Affective Neuroscience, 6, pp. 417–25 (2011)

the acceptance of allocations of common pool resources by and within communities, and how people seek to avoid shaming or shunning within their communities.[15] A sense of status will also affect the ability to empathize with others.

7. **"Thou shalt relate to others & empathize (in-group)":** Humans have a fundamental need to trust and be able to rely on other animals within their social or family groups. This need appears to be "neuro-biologically driven" in two ways: (i) by a neuropeptide that is found in the brain called oxytocin; and (ii) by the presence of neurons in the brain, called "mirror neurons", which induce the same activation of neurons in an observer as are actually flaring in a person being observed who is doing an action (e.g., playing a sport) or expressing a facial emotion (e.g., grimacing). The neuropeptide oxytocin has been studied in detail and plays a key role in social attachment and affiliation in mammals. It increases the willingness to accept social risks in interpersonal interactions within the same social community.[16] This increase in trust due to oxytocin only appears to occur intra-group, however, and not as between groups, where others may be perceived as being different. In fact, increased oxytocin can lead to more defensive and aggressive forms behavior towards persons perceived as competing or being outside of a social group.[17] This automatic tendency to empathize and relate to other humans (at least intra-group, if not out-of-group) may also be supported by the activity of mirror neurons in the brain, that allow non-verbal communication between people and a natural sense of empathy to occur.[18] Because mirror neurons fire both when an individual performs an action and when one watches another individual perform that same action, it is believed that this "mirroring" is the neural mechanism by which the actions, intentions and emotions of other people can be automatically understood by the observer, in particular via facial expressions of emotion.[19]

8. **"Thou shalt believe in fairness and react negatively to unfair behavior"**: Functional neuroimaging investigations in the fields of social neuroscience and neuro-economics indicate how decisions affecting a sense of status, social belonging, or about money may activate pain/reward reflexes, and that a part of the brain called the anterior

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[15] For a general discussion on shunning, see http://en.wikipedia.org/wiki/Shunning. These "neuro-commandments" may also be useful in interpreting the work of Elinor Ostrom (2009 Nobel Laureate in Economics) on tendencies of groups to shame, shun or refuse to do business with others, or the "tragedy of commons" and collective action problems. See http://en.wikipedia.org/wiki/Tragedy_of_the_commons and M. Olson's The Logic of Collective Action: Public Goods and the Theory of Groups, Harvard university Press (1965, rev. 1971).

[16] M. Kosfeld et al., "Oxytocin increases trust in humans", Nature, 435, pp. 673-676 (June 2005); P.J. Zak et al., "*Oxytocin Increases Generosity in Humans*", PLoS ONE, 2(11): e1128. doi:10.1371/journal.pone.0001128 (2007)

[17] C.K.W. De Dreu et al, "*The Neuropeptide Oxytocin Regulates Parochial Altruism in Intergroup Conflict Among Humans*", Science, Vol. 328, no. 5984 pp. 1408-1411 (June 2010);

[18] See an interview of M Iacoboni in "*The Mirror Neuron Revolution: Explaining What Makes Humans Social*", Scientific American, 17, pp. 17-18 (July 2008).

[19] R. Mukamel et al., "Single-Neuron Responses in Humans during Execution and Observation of Actions", Current Biology 20, pp. 750–756, (April 2010)

insular cortex (the "AI") is consistently involved in empathy, compassion, and interpersonal phenomena, such as fairness and cooperation. These findings suggest that the AI plays an important role in social emotions, defined as affective states that arise when we interact with other people and that depend on them in a social context. In certain studies (e.g., the Ultimatum game, where one player has to split money in a way that is accepted by another player in order for the money to be kept by both), a receiving party will refuse a benefit even if it is to his/her net advantage, if they feel the other person making the split is behaving unreasonably or selfishly (e.g., by proposing a 99:1% split, even though the 1% increment would still benefit the receiving party as opposed to receiving nothing). Behavioral experiments show that where proposals are deemed as being fair (a 50:50 split being perceived as most fair) they have far higher chances of being accepted, whereas unfair proposals are more likely to be rejected. When participants play such games in an fMRI scanner, a complex interaction between the AI and an area of the frontal cortex appear to be activated very rapidly, in milliseconds, preceding the time possible for a cognitive decision. In a more extreme fMRI experiment, participants observed fair or unfair players receiving painful electrical shocks. This study showed an interesting difference in behavior between men and women. Men's empathy-related neural responses were significantly reduced when they observed unfair players, which was not the case in women. While mutual cooperation usually results in feelings of trust and friendship, a lack of cooperation results in anger and indignation, and thus an acceptance or a willingness to punish (more so in men than in women). The AI seems to play a central role in social empathetic emotions ranging from pain, and pleasant emotions to fairness, admiration and compassion. The AI seems to have evolved as a primary means of generating and predicting self and other-related feelings, where a sense of unfairness is experienced as a form of pain.[20]

9. **"Thou shalt be motivated by autonomy or by feeling autonomous"**: Humans do not cope well when they believe they are forced or obliged to behave a certain way. They require the perception that they are in control of their environment and have free choice in order to feel well. This need for a perception of control is profound. It is a need that is not only psychological but profoundly biological. The body's neural systems seem to have hardwired the need for control as a biological imperative for survival, although this can be tempered in certain collectivist groups. For this reason, most humans (as is the case for the majority of mammals) will languish when deprived of autonomy.[21]

10. **"Thou shalt operate cognitively in 2 gears ('X' & 'C' modes)"**: This is a theory proposed by Matthew D. Lieberman, according to which human beings have two basic

[20] C. Lamm & T. Singer, "*The role of anterior insular cortex in social emotions*", Brain Struct Funct, 214, pp. 579–591 (2010)

[21] L. Leotti et al, "*Born to Choose: The Origins and Value of the Need for Control*", Trends in Cognitive Sciences, Vol. 14, No. 10, pp. 457-63 (October 2010).

modes of conscious functioning[22]. The first is called the "reflexive mode", which is mediated by neural assemblies in the brain (referred to as the "X-system"). This system relies primarily on our patterns to predict unconsciously and on our "cognitive reflexes". This is the state we tend to function in most of the time, and can be exaggeratedly described as a sort of "auto-pilot" state, which occurs when we are in a low state of conscious arousal. The second mode is called the "reflective mode" and is mediated by a different neural assembly system (the "C-system"). This level of cognitive behavior is seldom activated and involves high level concentration. Humans tend to cruise like a car in first gear, using their "X-system" mode, where glucose and oxygen are consumed very frugally (e.g., when a driver of a car is conscious but cannot remember much of what was consciously done, on a routine basis, during the journey). We seldom move into our second and optimal gear of cognitive thought – using our "C-system". When the "C-system" is activated, it is far more focused and demanding in terms of oxygen and glucose consumption. The brain becomes deeply absorbed in very complex activities requiring intense concentration (e.g., mathematical calculations), and cannot sustain this mode of cognitive behavior without frequent breaks and nutrition.[23] According to this theory, we tend to go about our daily affairs (and remember things) paying little attention to internally-focused processes and only have strong senses of cognition when sufficiently aroused to do so on externally-focused tasks requiring full concentration.

The principles listed above are **all** modulated by our **personality and cultures**: we might be for instance better at facing uncertainty compared to other people because of our family, professional, school education and/or our genes.

Let's now apply those principles to analyze the impact of online mediation technologies on the brain.

4 "Brain-based" analysis of online mediation technologies

4.1 Text-based technologies

NB: we include in this group email messaging, instant messaging and online document sharing.

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[22] Daniel Kahnemann (Nobel Prize in Economics in 2022) has his own name for this duality, "System 1" and "System 2"

[23] M.D. Lieberman, "*Social Cognitive Neuroscience: A Review of Core Processes*", Annual Review of Psychology, 58, pp. 259–89 (2007).

Principles	Pros	Cons
Higher sensitivity to social danger/fear than to reward/pleasure + need to relate and empathize in group	• Parties can take time to react to incoming messages and thus avoid inflicting pain through reflexive retaliation	• A delayed response may be interpreted as a threat in the absence of any contextual information • Receiver may read between the lines and imagine an hidden meaning without the ability to double-check directly with sender
	Lack of image and sound may feel as a reward to some parties and as a pain to others	
		• "Anti-social technology": no sound of voice, no eye-contact, no mirror-neuron activation, no physical touch • The text-based system is part of the process as a non-human party
Brain's resources efficiency, patterns & predictions	• When asynchronous mode is used, parties define their own speed of usage and thus are able to minimize their brain drain • Written communication is "secure" and "clear"	• Delayed response may be misinterpreted and generate uncertainty • In the void, parties may project from their patterns/internal representations to predict
Thou shalt first perceive via emotions before being able to self-regulate	• Ideal for "low-context" or "machine-to-machine" personalities who are eager and able to "stick to the facts" • Less emotional inhibition because of no immediate visual/verbal feedback from the other party	• No "on the spot" reformulation or reappraisal from mediator is possible • Delayed answers may trigger emotional rumination • Less emotional inhibition because of no immediate visual/verbal feedback from the other party
	Less emotional inhibition from sender because no immediate audio or visual feedback from receiver	
	This could help some shy parties to express themselves more	This could unleash negative emotions

Principles	Pros	Cons
Thou shalt be motivated by autonomy or by feeling autonomous	• Parties can use the system when they want, taking their time to answer	• Parties may feel harassed by the constant reminders • Parties and mediator have to be computer-savvy to use the software
	The strongly structured aspect of text-based systems can be interpreted as a threat to our autonomy (too little flexibility) or as a reward (certainty)	

4.2 Audio-based technologies

Principles	Pros	Cons
Higher sensitivity to social danger/fear than to reward/pleasure + need to relate and empathize in group	The absence of image may be felt as a reward for some parties (e.g. less intimidating and constraining) and be felt as a pain by others (e.g. less "human")[24]	
		"Low-context" technology: no eye-contact, no mirror-neuron activation, no physical touch, only the voice
Brain's resources efficiency, patterns & predictions	• Parties may focus exclusively on the contents rather than spending their cognitive resources at trying to decipher non-verbal communication	• In the visual void, parties may use their patterns/internal representations to predict and may attribute false meaning to spoken words • Poor technical quality may create uncertainty and be exhausting • Parties' brain may be too busy with complementing the audio with imagined visuals and exhaust their resources more quickly

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[24] As Ambrose Pierce said: "*Telephone, n. An invention of the devil which abrogates some of the advantages of making a disagreeable person keep his distance.*"

Principles	Pros	Cons
Thou shalt first perceive via emotions before being able to self-regulate	Less emotional inhibition of sender because no visual contact with receiver is possible:	
	This could help some shy parties to express themselves more	This could unleash a flow of negative emotions
Thou shalt be motivated by autonomy or by feeling autonomous	• Parties are free to be multi-tasking while they participate (for good or for bad) • Parties can "squeeze" easily a phone session in their agenda • Parties might feel more free to leave the session if they want • It's easier technically speaking to schedule an audio-based mediation than a video-based or offline one	• Multi-tasking generally means reduced attention and without visual feedback the mediator might have a hard time checking the situation

4.3 Video-based technologies

Principles	Pros	Cons
Higher sensitivity to social danger/fear than to reward/pleasure + need to relate and empathize in group	• Lack of physical presence may be a reward for some parties and be felt as a pain by others • No true eye-contact since you rarely look at the eyes of the other but rather at your screen during an online conference, which is good in some cultures and bad in others	
		• Empathy may be more difficult to trigger if technical quality is not good enough
Brain's resources efficiency, patterns & predictions		• Poor technical quality may create uncertainty and be exhausting
Thou shalt first perceive via emotions before	Less emotional inhibition of sender because there is a physical distance with the receiver:	

Principles	Pros	Cons
being able to self-regulate	This could help some shy parties to express themselves more	This could unleash negative emotions
Thou shalt be motivated by autonomy or by feeling autonomous	• It's generally easier technically speaking to organize a video-based mediation than an offline one	
	It's easier to quit a video conferencing room than an offline mediation session because of the physical distance: it gives more autonomy to the parties but it can be disruptive	

As we can see, each type of technology has its pros and cons and this explains why the "efficiency" of online mediation depends so much on the context.

4.4   The specific skills of an "online mediator"

Taking into account the analysis above, we believe that the "online mediator" would do well in adapting its skills to the different online contexts as follows:

- **Be aware** of the potential impacts of the technology or technologies on the parties' brain and his/her own brain by internalizing the principles and the analysis above;
- **Prepare the parties** about those impacts in a positive way and constantly check regularly the situation instead of waiting until fear or uncertainty is too high (e.g. check if the parties are satisfied with the quality of the communication during a phone of video session);
- **Leverage the "Pros" and compensate the "Cons"** listed above whenever possible and do not hesitate to make a pause during the mediation process if any major issue arises, especially a technical one;
- **Adapt checks and reformulation techniques** to the technology (e.g. facilitating a phone conversation needs specific acknowledgments of understanding of both parties).

5   Conclusion

We hope that the quick analysis that we have done above will help "opponents" and "adopters" of online mediation to create a common ground about the potential and limits of the online technologies – and to seize the occasion to understand a little bit better the potential and limits of the human brain.