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This keynote reflects part of her latest book publication: "Intercultural Communication – An Interdisciplinary Approach: When Neurons, Genes, and Evolution Joined the Discourse". The Q&A session was chaired by Dr. Livingstone Thompson (Trinity College, Dublin) with the participation of another keynote: Dr. Randall Hansen (Director of the Centre for European, Russian and Eurasian Studies, Canada).

Intercultural Communication – An Interdisciplinary Approach: When Neurons, Genes and Evolution Joined the Discourse

The field of cultural studies has been visited and shaken lately by some of the most impressive studies on culture conducted by natural scientists. It is a situation that some scholars have considered to be "a wee bit of irony", that we need colleagues from natural sciences to convince us that nothing about culture actually makes sense, unless being put under the interdisciplinary light with evolution and biology.

This keynote summarizes my leaning points, as an interculturalist, when encountering this emerging field of cultural neurosciences – a discipline that has merely put its name on the radar for less than a decade. The insight challenges our tradition of intercultural theories, inviting us to re-evaluate and refresh our understanding on many fronts, such as the purpose of culture, the binary system of values, the static paradigm, and the notion that individuals are products of culture. Intercultural communication is an interdisciplinary science. And in order to keep up with the complexity of this changing world, it should stay updated.

In this short introduction, I have chosen two learning points to share with you. We will refer back to them as useful insights later on in the discussion with Randall and Livingstone.

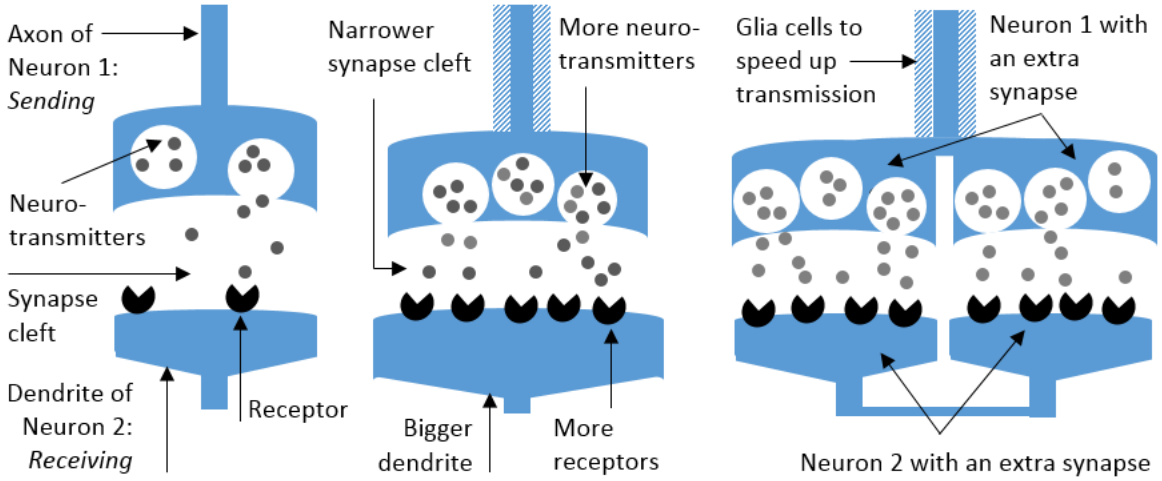
1. Values guide behaviors

I would like to start with a metaphor that we are very familiar with. It compares culture with a software of the mind. Once a software with a certain set of values is installed, it will prompt people to act in a certain way. This analogy is the epitome of the static paradigm, which is also a dominant school of thought in our field. It posits that culture is stable, values don't easily change, and each country has an index on a binary spectrum.

The result of this static paradigm is a very strong causal link between values and behavior. Because values are stable, they act as anchors, so we can predict the behaviors. If you want to communicate effectively with people from a different culture, you should learn their values. It is very reassuring because it reduces ambiguity.

I had been a follower of this logic, until cultural neuroscience forced me to question the unidirectional orientation of values leading to behaviors. That was when I learned about the brain's plasticity. In short, our brain is not fixed, but it is like a muscle. We are not talking about an analogy, but the brain is literally like a muscle, it grows, reduces, and adapts in accordance with the way we think and act.

We have approximately 100 billion neurons in our brain. A typical neuron has an axon. The end of the axon has many branches that send electronic impulses to the dendrites of other neurons. When two neurons communicate, they do not really touch each other, but sending neurotransmitters through a small space called a *synapse*. Here is a model I created to make it easier to understand. Neuron number 2 will catch the neurotransmitters from neuron number 1 with a number of receptors. If we repeat a certain thought, an action or a ritual frequently enough, the synapse will get smaller, the dendrite will grow bigger, and as you can see, there will be more neurotransmitters and receptors. Eventually, the neuron will grow a new branch, and the sending-receiving of neurotransmitters become super quick, effortless, even subconscious.



Long-term potentiation (Nguyen-Phuong-Mai, 2017)[1]

Imagine you used to get from Dublin to Amsterdam first by swimming to the UK, then you walk through the UK and swim again across the English channel to Amsterdam. That is a bit tiring I would say. But if you keep doing it over and over again, the footpaths will widen to become highways, different waterways and flying routes will be established, and millions of people will work together to help you move even faster. At one point, you will get from Dublin to Amsterdam effortlessly, without even thinking about it.

This capacity of the brain thus makes sure that thoughts and action that occur once will be likely to occur again. I want to show you an example of how the neurons grow in human after 170 hours. It is fascinating to see how the brain physically rewires itself so we can forge new path ways, create new habits, and adapt to different cultures. This is exactly what is happening in your brain right here, right now.

In a sort of chicken and egg, so to speak, repeated thought and behaviors will create strong neural pathways, and in turn, established neural pathways will guide our behaviors.

But every interesting story has a twist. This effortless conduct can only happen if we have zero or little conflict between our thought and action. If we value one thing and have to act the opposite, we face a state called *cognitive dissonance*. This conflict will reduce productivity. I can't automatically and subconsciously go from Dublin to Amsterdam if I consciously dislike it. But if I have to go to Amsterdam anyway and still dislike it, evolutionary has a solution for me. In order to avoid this conflict, I will slowly *change my value* to make it consistent with my behavior, so that there is no conflict between the reason to do it and the action of doing it.

We see an abundance of this phenomenon in everyday life. Routines that we hated when we were young such as practicing piano or praying slowly became part of our life and value system. Many people during the Nazis did not believe in its agenda, but the frequent practice muted their conscience in order to be in sync with the behavior. It is a principle of brainwashing. Soldiers may not initially believe their enemies are evils, but frequent demonization of enemies will make them eventually believe that they are fighting evils. It is essentially a self-defense mechanism.

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The "foot-in-the-door" tactic is also another example. Once people agree to go with the first step (e.g. sign a petition), they would feel an inner need to go all the way through (e.g. give a donation), making their attitude consistent with their behavior. People fight for what they believe, but also have to believe what they are fighting for. Once given a role, we soon act that role and gradually *become* that role.

We now have the neural evidence to confirm that we not only think ourselves into action but also act ourselves into a certain way of thinking. It is actually what ancient philosophers insisted: "We are what we repeatedly do" (Aristotle). Values guide behaviors, but behaviors change values as well.

2. Values are binary

The second learning point I would like to share with you is also an important premise of the static paradigm. It posits that values are binary. A culture is individualistic, collectivistic, or somewhere in between. It is essentially "either/or" and never "both/and".

This binary thinking pattern has a lot to do with how the brain works. Any stimulus that enters our central nervous system is immediately relayed in two directions towards the *cerebral cortex* for higher thinking process, and the *amygdala* - our fear detective device. The interesting thing is that, despite being activated at the same time, the amygdala decides whether the object/or the person is safe or threatening *before* the cortex has even managed to figure out what the object/ or who the person actually is. This "quick and dirty" assessment helps humans beings survive based on snap judgement, but it also means that evolution has created a neural support for binary reaction of "good or bad".

This binary mechanism of neurology has immensely influenced how we see the world and reduce complexity. We tend to speak in "opposites," very black and white, such as day and night, male and female, sun and moon, even West and East, despite the obvious fact the earth is *round*.

We use the same binary reaction in theory development to simplify reality. A good example in our field is the value dimension of masculinity and femininity. This is how the definition goes, and I am pretty sure we all know about it: "A feminine culture is where both men and women are caring. A masculinity culture is where men are competitive and women are caring".

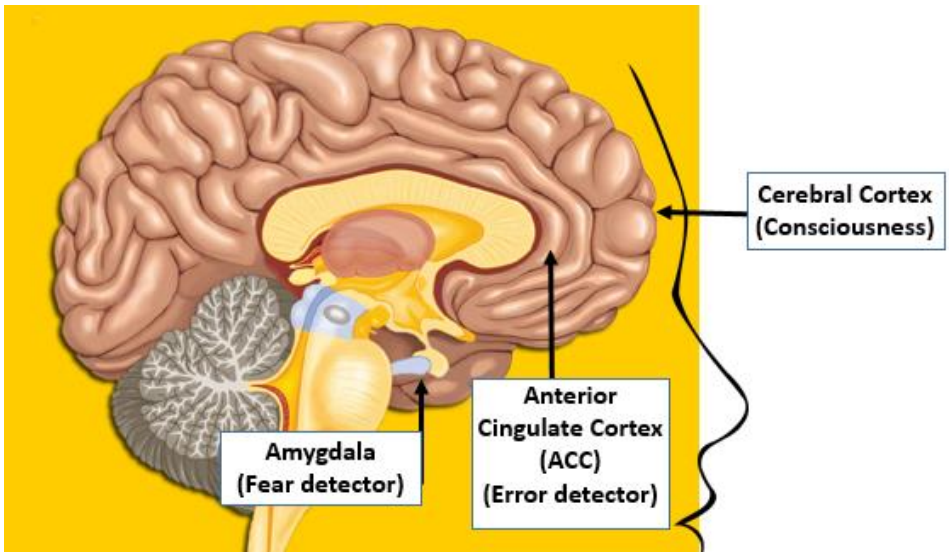
When we look at this definition from the neurology's point of view, it is not logical. A masculine society – if we follow the logic of the former – is supposed to see *both* men and women being assertive. Cultures with two contrasting values are supposed to *both* masculine and feminine. But the static paradigm, influenced by the binary reaction, struggles to deal with such a complexity of seeing two contrasting values exist at the same time (i.e. men are competitive and women are caring, or men are caring and women are competitive). In order to fit the binary spectrum, such a culture is named "masculine". If anyone accuses this definition of being sexist, I would find it hard to come up with a counter-argument.

In case you wonder about cultures where men are caring and women are competitive, or culture that do not fit the conventional stereotypes, they exist. They are the tribe Tchambuli in the classic study of Margaret Mead, the female army in Dahomey Kingdom (present day Benin), and many matriarchal societies such as the Mosuo, the Minangkabau, the Akan, he Bribri, the Garo, and the Nagovisi.

This example shows how a binary thinking can limit us in understanding the complexity of the world, especially when such a logic becomes the foundation of theory development.

At this point, some of you may wonder, are we doomed with this binary reaction, since our neural mechanism seems to support that way of categorizing? The good news is: It doesn't have to be. And it should not be. While our brain supports an instant binary reaction, it also supports rational thinking pattern. Binary thinking *begins* as a natural tendency, but plural thinking occurs if *given more time, under no threat.*

In this picture, you can see the Anterior Cingulate Cortex (ACC). It helps us to detect errors, identify biases and support rational thinking. Given more time, when the amygdala is not alarmed, the ACC can support very complex and dynamic thinking. But how complex and how dynamic?



Neuroscience suggests that the brain is capable of supporting an incredible level of flexibility and adaptation. We tend to think that a person has a fixed set of values, and that set of values dictates her/his behaviors. In fact, research has indicated that a person can accommodate "opposing" sets of values, and depending on the given context, this person will activate a matching mindset, and conduct a matching behavior.

This shifting of values has been observed in both behavioral and neural studies with priming techniques and fMRI. The plasticity of our brain enables simple cues such as looking briefly at "I" and "we" to trigger us to think in a self-oriented or group-oriented way. For example, people primed with individualistic values showed enhanced evaluation of *general* self (e.g. I'm honest), whereas people primed with collectivistic values showed enhanced processing of *contextual* self (e.g. *When talking to my mother*, I am honest). Contexts dynamically shape neurobiological mechanisms of the self because the malleable brain allows us acculturate to new cultural environments. Our brain can be so plastic that we can represent *multiple cultures* in our mind, switching between values simultaneously, communicating very complex information, to the point that we can be both collectivistic and individualistic, as long as a specific context activates that element in us.

With the brain's plasticity, we can construct a multicultural mind. It is a very promising notion since it means we are not destined to be the consequences of a certain set of values. We are not only the product but also producer of our own culture. That gives us back the authorship as active agents rather than a cultural dope.

Q: We've seen in the last 5-10 year waves of migration into Europe. This significant movement of people has even led some European countries construct borders, ostensibly to keep people out. What do you make of this development, from the cultural neuroscience's point of view?

I would like to refer back to a learning point we shared earlier on the binary mechanism of our brain. Any information that we encounter will be relayed immediately into a binary polar of safe or danger. When I see a person, all information associated with this person from the skin color, the language, the hairstyle…etc. will combine and trigger the binary evaluation of ingroup or outgroup, friends or foes. Our ancestors spent thousands of years in close-knit communities where their own ingroup was the main source of survival and support. By contrast, outgroup members mean threat. The ability to figure out if a person is an ingroup or an outgroup can mean life or death. That is why we can distinguish someone as an outsider or insider within 170 thousandths of a second from the moment we see them.

In light of neuroscience, waves of immigration thus will always cause resentment and hostility if this is perceived a *threat* to those who arrived earlier. First and foremost, we should acknowledge the neural preconditioning of this tendency before pointing any fingers and let any blame game start. Randall has mentioned that it is not a matter of number, 50, 500 or 5000 immigrants. As long as people think that the government can't control the process, they will be angry. In most cases, this anger is directed at the immigrants and refugees.

That means we should make it clear that this is the failure of the policies and system. There is a fundamental difference between "Are immigrants a threat?" and "*Why* are they perceived as a threat?". Focusing on the first question is not useful because it is scape-goating, attributing the failure of the government to a particular group. But that is what happens in the media. Focusing on the second question, (i.e. *why* they are perceived as a threat), means uncomfortably admitting that the policies are not effective, that the authorities are not doing what they are supposed to do, and that an effective social structure is not in place. Admitting that failure takes a lot of courage. And that is why many politicians tend to turn a blind eye to the backlash of public opinion against immigrants.

Q: Let's talk little about integration and integration policy: from the points of view of cultural neuroscience, what in your view accounts for the ways Europeans countries have managed integration?

We tend to focus on trying to change people's opinion, by debating, by discussion. Interestingly, this is not always working. In a hostile environment, when a person's values are threatened, it is easy to have confirmation bias. This means facts and logics can't change the opinion, but strengthen the false belief instead. It is also called the backfire effect. A neural study shows that the part of the brain that involves in processing information were more active when people listened to positive messages from in-group leaders, and negative messages from out-group leaders.[2] This means the brains of the followers tune in with what they believe. They only hear what they want to hear, the good stuff from their leader and the bad stuff from the opposition. That is why Donald Trump said that he could shoot someone on the Fifth Avenue and still would not lose supporters.

The indication is that, we need first to eliminate the hostile environment of this amygdala-charged atmosphere. Fearful and threatened people will *not* change their mind with reasons and logics. Instead of attacking Trump or Le Pen, we need to address the root of the fear and show sympathy with those who face the fear. In a

hostile and fearful environment, attacking populist leaders will not change their followers' mind, and showing that the leaders are wrong will more likely to strengthen the belief that they are right.

Next, I would like to refer back to the indication that repeated behavior can slowly change even deep-seated values, thanks to the plasticity of the brain. By forging a new neural pathway, new attitude will be formed. Behavior that has been conducted once will be more likely to be conducted again. From neuroscience point of view, an effective solution is to get people involve in actions. Even a symbolic act can be powerful in creating a condition for the mind to follow. Human beings do not want cognitive dissonance, or a conflict between the thought and the action, and we will change our mind to be aligned with our behaviour.

In my class, it is quite often to see some students who are subtly or explicitly anti-Muslim. What I do is to bring the whole class to mosque, let them walk around, talking to mosque-goers. Most of the time, I saw a change in their attitudes, evidenced by their reflection essays. Behavioral change can start with a change in the mind, but it is not a unidirectional process. Thought can be the child of action. And thus, an action can be a trigger to lead the mind as well.

Q: Political populism, which in part expresses itself in negative perception of immigrants, can be seen today it on both side of the Atlantic. How do we account for it? It is justified and should it be combatted?

Populism is a classic political trick of attracting followers by dividing the world into "us" and "them", and it has a neural basis for it. When fear is the condition, the amygdala sorts out information in a very black and white way: ingroup or outgroup. The cortex has next to no chance for in-depth and rational thinking, for going pass the binary logic of the amygdala. Politicians capitalizes on this neural machinery by provoking the amygdala, describing the immigrants as an "out-group" and their followers as the "in-group" in a vicious battle between the "good" and the "bad".

Historically, liberals tend to lean more towards rational thinking and they typically have more gray matter volume in the ACC, while conservatives tend to have bigger amygdala.[3]

However, the hostile political environment we are witnessing these days shows that things go other way around as well. The liberal and leftists have become fearful for their values, and we have seen many attacks from them with the defensive attitude triggered by the amygdala rather than the cerebral cortex. No matter what Trumps says or does, it is wrong. It is so biased that I wonder if their ACC has become smaller as a result. I would say the current political atmosphere is a show of angry amygdalae shouting at each other from both sides, so to speak. If this binary battle does not subside soon, we should be concerned that the neurology of those involved have little chance to engage in the advanced stage of fine, rich, in-depth, complex, multipolar and plural reasoning, when the cortex and the amygdala can enrich each other.

Q: Finally, theories of culture and cultural paradigms: what do you make of the frameworks (Hofstede, Trompenaar, Hall) often referenced in organisations like SIETAR? How useful are they really?

The dominant theories in our fields belong to the static cultural paradigm. They are very useful and have served as some great theoretical foundation. However, in the light of neuroscience and many other disciplines, we should take one step further. In many cases, these frameworks should be seen as the first best guess. Boxing a

culture into a set of values, or reducing a culture to a static index risks fatalism because it can indirectly promote assumption, prompting us to look for and see only cases and examples that fit.

Please remember the connection between behaviour and belief. Many of us here are protagonists, in the role of teachers and trainers. Once we have spoken out, expressing our support of a theory, we form a neural pathway that will prompt us to act accordingly because we don't want a cognitive dissonance. And by choosing to see what fits the static description of a culture, we tend to disregard paradoxes and contrasting phenomenon as atypical and error of the system. My opinion is, we should see these frameworks as Osland and Bird[4] have named them: *sophisticated stereotypes.*

With the evidence of brain plasticity we know that humans can cultivate a multicultural mind, repeated behaviors can change the values, and context (not static values) is the indicator of the consequential behaviour. If we want to predict the behaviour of a person, a community, or a society, index and the pre-fixed values can act as indications, but it is also critical to analyze the *particular context*. That is why Osland and Bird suggested we should "index the context" instead of indexing the countries.

The insight from cultural neuroscience thus tells us that humans are not only the products of culture but also the author of our own culture. That is more promising and hopeful than the notion that humans are the result of a cultural software. It means we may want to consider shifting towards a *dynamic paradigm* of culture, one that resonates more with the increasing evidence from other disciplines.

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[1] Mai Nguyen-Phuong-Mai, *Intercultural Communication – An Interdisciplinary Approach: When Neurons, Genes and Evolution Joined the Discourse* (Amsterdam: Amsterdam University Press, 2017), 31.

[2] Pascal Molenberghs et al., "The Neurosceince of Inspirational Leadership: The Importance of Colelctive-Oriented Language and Shared Group Mebership," *Journal of Management* 20, no.10 (2015):1-27, doi: 10.1177/0149206314565242

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