Life in a Box: A New Take on Intercultural Communication

Stephen M. Ryan
Sanyo Gakuen University
Stephen05summer@yahoo.com

Abstract

This paper draws on recent understandings emerging from Brain Science (Clark, 2019; Feldman Barrett, 2021; Liberman, 2013) to present a new view of the human brain's interaction with its environment, its reaction to novelty, and the role of communication. The paper begins with a simple premise: "Imagine you lived in a box with just a few holes in it. How would you survive?" From there, it builds to a holistic understanding of human existence in a changing physical and social environment of which each individual can be only partially aware. The purpose of presenting these ideas is twofold: firstly, the intention is to help teachers to re-think their understanding of Intercultural Communication and some of the basic concepts of the field; secondly, it is offered as a potential framework for introducing such concepts to students. The concepts introduced are easily comprehensible and can be explained in simple language.

要旨

この論文は、脳科学から生まれた最近の理解（Clark、2019; Feldman Barrett、2021; Liberman、2013）を利用して、人間の脳とその環境との相互作用、違いに対する反応、コミュニケーションの役割についての新しい見方を示しています。 この論文は、単純な前提から始まります：「あなたがほんの数個の穴のある箱に住んでいたと想像してみてください。 どのように生き残りますか？」 そこから、各個人が部分的にしか認識できない、変化する物理的および社会的環境における人間の存在の全体的な理解に構築されます。 これらのアイデアを提示する目的：まず、教師が異文化間コミュニケーションとこの分野の基本的な概念のいくつかについての理解を再考するのを助けることを目的としています。 第二に、それはそのような概念を学生に紹介するための潜在的なフレームワークとして提供されます。紹介する概念は簡単に理解でき、簡単な言語で説明できます。

Please cite this article as follows:
Ryan, S.M. (2022). Life in a Box: A New Take on Intercultural Communication. In J. Salazar & G. Benthien (Eds.), *ICLE SIG 1st Conference Peer-Reviewed Proceedings*. Japan Association for Language Teaching (JALT). (pp. 31-40) Retrieved from: https://icle.jalt.org/mod/page/view.php?id=182

Those of us tasked with teaching about Intercultural Communication to students in Japan often face a double challenge. We need not only to inculcate an understanding of a series of novel concepts (bias, allocentricity, stereotyping, etc.), we also have to overcome what our learners think they already know about the topic ("It is about communicating with foreigners;" "We have to learn their strange customs so we can communicate with them;" "We need to study about Americans and their way of thinking;" etc.). This task is not always aided by published materials which were a) prepared with a different learning context in mind (like the field itself, many "beginner" publications are U.S.-centric), or b) written by people with only a superficial understanding of what the field consists of, often sharing many of our students' preconceptions.

In this paper, I shall lay out a new approach to Intercultural Communication concepts which seeks to overcome these difficulties by eschewing facile comparisons of the stereotypical behaviour of one group with that of another. Instead, this approach begins with an account of the limitations of human perception and the ways in which the human brain has learnt to overcome these limitations. My intention is not only to suggest a fresh approach to presenting ideas to students but also to provide a stimulus for teachers to re-think their own conception of what happens when people encounter difference

The approach draws on understandings about perception and cognitive processing emerging from brain science. It draws principally on the theory of Predictive Processing (Clark, 2019; Hohwy, 2013) as articulated by Feldman Barrett (2017a, 2021) and largely substantiated by Walsh, McGovern, Clark, and O'Connell (2020). In part, too, it draws on Lieberman's (2013) book on the social brain. In its presentation, though, (both here and to students) it is decidedly non-academic[1]. The goal is to present a model in the form of a series common-sense propositions which, when added together, add up to a sophisticated understanding of human cognition. It is hoped that when this understanding is applied to intercultural encounters, it will circumvent the tendency to see them in the terms of us/them, normal/strange, my country/their country which seem to be reflexive for many of our students.

The Box

Imagine you lived your whole life inside a box. You cannot get out of the box. All the sides of the box are opaque. Outside the box is a variety of things you will need to survive and thrive: food, drink, companionship. Unfortunately, also outside the box are a number of

[1] The original "Brain in a Box" idea was suggested by Feldman Barrett (2017b).

things that could end your very existence: fires, precipices, and people/animals with hostile intent. Clearly. You need as much information as you can get about the world outside your box.

The only way of getting this information is through a small number of little holes drilled in the sides of the box. Thanks to these holes, you can see parts of the world outside, detect vibrations, changes in temperature, and in the composition of the immediate environment, but this information is very limited indeed, because the holes are so small. This is the information you must rely on to make decisions about exploiting the resources and avoiding the dangers that lie outside the box. These decisions are what makes your continued survival possible.

Unpacking the Box

The box is, of course, your skull. The "you" in the text above is your brain, stuck inside your skull with only very limited information available, yet with the existence of the whole organism depending on how it chooses to interact with the environment outside the skull. The holes in the box are your senses (sight, hearing, taste, smell, touch), your only source of information about the outside world.

Why are the holes so small / the sensory data so limited? There are two reasons for this: the range and perspective of your senses are limited—you cannot smell, taste, or hear things that are too far away, and your eyes, for example, can only look forward; they are not much use if you want to know what is outside your field of vision. The second reason is that your brain's bandwidth for receiving and processing sensory data is tiny compared with the vast amount of such data that is available. Zimmerman (1986) has estimated that of the 11 million bits of information available at any given moment from our environment, the brain is capable of consciously processing only 40 bits, or 0.00036%.

Yet, the brain badly needs to understand as much as possible about the environment in order to make good decisions about using bodily resources (oxygen, glucose, neurotransmitters, etc.) to conduct the best strategy for using external resources in order to survive.

How, under these circumstances, have we evolved to overcome the dearth of information and interact successfully with our environment?

The Survival Mechanisms

Let us continue the thought experiment. Logically, what mechanisms would an organism need to develop in order to survive with such little information?

Attention to Difference

Clearly, we must pay attention to difference. There is little point in using our limited sensory resources to pay attention to elements of the environment that are the same from moment to moment. Change is where the opportunities and the dangers are, whether they are predators of potential sources of nutrition.

It is a small wonder then that we are predisposed to notice and pay attention to novel aspects of our environment. A release of the "feel-good" neurotransmitter dopamine rewards attention to novelty, in what is known as the "novelty bonus" reaction (Kakade & Dayan, 2002), thus stimulating alertness to future possibilities of novel sensory stimulation.

Pattern Detection

Once we notice something new and different, the next step is to recognize patterns in the sensory stimulation it causes. There is an element of chicken-and-egg causality here involving this step—pattern detection—and the previous one—attention to difference—since it is only by contrast with an established pattern that novelty becomes salient. Suffice it to say that both of these interdependent mechanisms are necessary.

Our only guide to what is happening around is the impression it makes on our senses. If we considered each stimulus to be a one-off event, we would be constantly reacting to everyday events as though they were happening for the first time (like the proverbial short-attention-span goldfish). It is only by recognizing pattens in the stimulation of our senses that we can begin to make sense of our environment.

Konovalov and Krajbich (2018) report the involvement of the ventromedial prefrontal cortex, a brain area known to be associated with reward, was activated when test subjects succeeded in detecting patterns in scrambled photos shown to them. Again, we see that a reward is triggered by just the kind of behaviour we need to make sense of the world. This accounts for the feeling of satisfaction occasioned by solving any kind of puzzle.

Interestingly, in Konovalov and Krajbich's study, the rewards were triggered whether or not the participants were able to detect patterns. What was being rewarded was the *attempt*

to find patterns. Pattern detection is so important that there is a reward just for trying to do it. As we often tell our students: if you don't try, you will never succeed.

Prediction

The importance of patterns is not what they tell us about the current situation but what they tell us about possible futures. Nobody knows what the future will bring, but recognising and understanding patterns allows us to make predictions about it. The more experience we have of a particular kind of sensory input, the more accurate our predictions are likely to be.

Predictions are important because they help us to prepare ourselves to get the best from future eventualities. The balance of chemicals in our body can be altered, muscles can be prepared to fire, gastric juices can start to flow. Without this kind of preparation, we would not be in a position to exploit opportunities or to avoid dangers.

Clark (2013) has called the brain as a whole a "prediction machine," concluding that its whole purpose is to make predictions about the future. This assertion is now generally accepted by neuroscientists and the discussion has now moved on to investigate exactly how the prediction mechanism works (Hohwy, 2013).

Feldman Barrett (2017b) illustrates the importance of prediction with an example from the eye-brain connection. We tend to assume that visual input through the eye is communicated to the brain through the optic nerve, and that the visual areas of the brain make sense of the nerve signal with reference to previous signals. In fact, she shows, what happens is quite the reverse: predictions from the brain are first sent to the eye; they are compared with actual visual signals; and only if the sensory data differ from those predicted is a signal (a "prediction error" sent from the eye to the visual areas of the brains. As evidence, she demonstrates that there are ten times as many nerve connections from the visual cortex to the eye (carrying predictions) as there are in the opposite direction (reporting prediction errors).

Error Correction

Our predictions will not always be borne out by subsequent sensory evidence (i.e., what actually happens). In fact, when we find ourselves in a new environment, our first predictions are likely to be wildly inaccurate. Because of this, we need a mechanism that will allow us to use new sensory data to help us make better predictions in the future. This mechanism

is known as "prediction error minimisation." A "prediction error" is the difference between what we thought would happen and what actually happens. We can use this error to fine tune our understanding of the world so that future predictions take account of our new, more nuanced understanding of the patterns in our environment. This process of allowing experience to modify our understanding of the world is called learning.

Communication

One more point needs to be added to our image of the brain in a box. Although each brain is alone in its box, there are other brains in other boxes all around us. This enables a further powerful way (apart from experience) for us to learn about the environment in which we live: communicating with others. Communication allows us to learn from the experience of others, whether those others are in the next box over, on the other side of the world, or they died many years ago. The patterns that others see in their experience (and the predictions they base on them) are just as susceptible to perspective and bandwidth limitations as our own, but they do constitute new sources of data about the world which we may use to improve our predictions.

Lieberman (2013) speaks of the "social brain," by which he means a brain that learns not only from its own experience but also from that of others. He shows that social learning is both more effective and more long-lasting than the learning done by a single brain in isolation. We have evolved, he says, to learn from each other.

An Intercultural Example

At this point, a worked example might be appropriate. My purpose here is to clarify, for both teachers and students, how the precepts of human understanding outlined above can guide us when we encounter and react to novel experiences. For this, I will use an example from my own life.

I grew up in an environment where the common greeting between strangers and acquaintances was a handshake. Repeated exposure to this form of greeting from an early age helped me to recognise it as a pattern and to predict that each time I met a stranger or acquaintance, one of us would offer their hand for the other to shake. My brain based several actions on this prediction, not only the subtle changes in oxygen delivery to arm muscles which prepare the muscles to raise the hand to a position where it can shake or be shaken, but also a habit of transferring anything I was carrying to my left hand when about to meet someone, so the right hand would be free for shaking.

After several years, though, I found myself in a new environment. Many things in this environment were "novel," in the sense that they were different from what my previous experience had led me to predict. I found the constant direction and re-direction of my attention to such novelties tiring but rewarding, too. Thanks to my brain's reward system I felt excited and ready to learn more. I slept well at night, probably because my brain needed time to puzzle out (i.e., find patterns in) all these new experiences.

One of the things I noticed quite early on in this new environment was that handshakes were much less common than I had expected. Many people greeted each other (and me) by bowing. I initially experienced this novelty as an "error": I was about to reach out my hand to shake when I saw that my new acquaintance was bowing rather than reaching out her hand. I felt confused and disconcerted, but further observation led me to modify my predictions about greetings in this new environment. (In a more modern age, I could have Googled to learn from the experience of others.)

My new set of predictions were much more nuanced than my previous one (greeting = shake hands). They were situational: I had noticed that handshaking was much less common in my new environment than in the previous one, so now my predictions would vary depending on where I was. Later, I would discover cheek-kissing of acquaintances in a third environment. They were also probabilistic: not everybody in my new environment was bowing. Some were offering hands for shaking, perhaps in recognition of my original environment. As time went on, I was able to establish (largely unconsciously) probabilities for the various forms of greetings: say, a 35% chance of a handshake and a 65% chance of a bow. Each subsequent experience allowed me to fine tune those probabilities.

Building on This

The intent of the foregoing examples and explanations has been to set encounters with novelty in the context of a general theory of human perception and cognition (and action—see Clark, 2019), rather than labelling some such encounters as "cultural." If we can avoid this kind of labelling, we can perhaps overcome the predisposition to think that "cultural" novelty is somehow distinct from other kinds of novelty and merits special treatment.

Let us now see what general lessons we can draw from this approach about dealing with novelty in general, before examining lessons for those entering a novelty-rich environment.

General Lessons

Understanding is only partial and provisional: We may think we have a good understanding of our environment and how to get things done in it, but that understanding is always subject to revision. When we encounter novelty in the environment or a novel environment, a prediction error will be generated which will often result in an update to our understanding of the world.

First impressions are always very rough and very biased: Our first encounter with anything new constitutes a very small sample size (one), the merest glimpse through one of the tiny holes in our box. As such, our impression of the novel element is subject to immediate and repeated revision as we gather more data. The predictions that we base on first impressions will almost always be wrong. We need time and experience to collect enough data to generate a more nuanced understanding of the (new) world around us.

We learn through challenges to our assumptions: Every time we use new sensory data to revise our understanding of our environment, we are learning. This can, depending on the scale of revisions involved and their emotional valence (Immordino-Yang, 2015), be mildly disconcerting, uncomfortable, or even painful. However, upsetting the experience of novelty may be, it is part of the natural process of learning.

Advice to those about to Encounter Novelty

New school, new country, new living arrangement, new colleagues, new working patterns—whatever type of novelty we encounter, here are the things to keep in mind:

It is natural and normal to notice difference: As a matter of survival, your brain has evolved to notice things that are different. These are the things you can learn from. The faster you learn, the easier you will find it to adapt to and thrive in your new environment. On the other hand, being aware of your predisposition to notice novelty will allow you to consciously seek out similarities between the new environment and ones you are more used to. These will help you to build a more accurate picture of your new environment rather than simply feeling that everything is overwhelmingly different.

Look for patterns: There are patterns in people's behaviour, in the way they speak and relate to one another; patterns in the use of time and space; patterns of assumptions and expectations. These are the keys to finding your bearings in the new environment. The

patterns will allow you to make predictions about events around you, and accurate predictions are what enable you to feel comfortable in a place.

Always be open to revising your ideas: You will never reach a point where you know all you need to know about a place or event. There will always be new information, new experiences. After a while, there is a tendency to treat such experiences as "wrong" or "aberrant." You should resist this tendency. The new information is an opportunity to learn, to enhance your understanding of the place or event.

Get as much as information, from as many perspectives as you can: The view from one box will always be subtly different from the views from others. The perspectives you can get by seeking out, listening to, or reading about how other people understand the situation you are in are a great opportunity to learn. They are not "wrong" or "mistaken." They are seeing things from another point of view, one that is just as partial, provisional, and biased as yours. By accumulating a variety of points of view, you can develop a richer understanding of the situation. This, too, is learning.

In general, beware of overgeneralisation: If your understanding of the world no longer fits the sensory data you are receiving, it is time to revise your understanding. Models that generated good predictions in one context may not work as well in another context. Adapting to a new context will mean changing your ideas about how things work. You are good at this. It is how your ancestors survived and thrived in a huge variety of environments.

Conclusion

This re-conceptualisation of Intercultural Communication in the context of limitations and mechanisms of human perception has helped me to overcome some of the problems I have found in understanding and teaching about this field in the past. It does not divide people into "them" and "us." It focuses on reactions to difference rather than trying to catalogue specific differences between (stereotyped) groups. And it directs attention not to "culture" which is somehow out there, beyond everyday experience, but to processes, mechanisms, and events (experiencing novelty) that students can experience in their daily lives.

I hope these thoughts will be of use to teachers seeking to go beyond the rather limiting views of the field often encountered in textbooks and maybe trying out some of these ideas with their students.

References

Clark, A. (2013). Whatever next? Predictive brains, situated agents, and the future of cognitive science. *Behavioral and Brain Sciences, 36*(3), 181-204. doi:10.1017/S0140525X12000477

Clark, A. (2019). *Surfing uncertainty: Prediction, action, and the embodied mind.* Oxford University Press.

Feldman Barrett, L. (2017a). *How emotions are made: The secret life of the brain.* Houghton Mifflin Harcourt.

Feldman Barrett, L. (2017b). The theory of constructed emotion: An active inference account of interoception, and categorization. *Social, Cognitive, and Affective Neuroscience, 12*(1): 1-23. doi:10.1093/scan/nsw154

Feldman Barrett, L. (2021). *Seven and a half lessons about the brain.* Boston, MA: Mariner Books

Hohwy, J. (2013), *The predictive mind.* Oxford University Press.

Immordino-Yang, M. H. (2015). *Emotions, learning, and the brain: Exploring the educational implications of educational neuroscience*. W. W. Norton.

Kakade, S., & Dayan, P. (2002). Dopamine: generalization and bonuses. *Neural Networks*, *15*, 549–559. doi: 10.1016/S0893-6080(02)00048-5

Konovalov, A., & Krajbich, I. (2018). Neurocomputational dynamics of sequence learning. *Neuron*, *98*(6). doi: 10.1016/j.neuron.2018.05.013

Lieberman, M. D. (2013). *Social: Why our brains are wired to connect.* New York, NY: Crown

Walsh, K. S., McGovern, D. P., Clark, A., & O'Connell, R. G. (2020). Evaluating the neurophysiological evidence for predictive processing as a model of perception. *Annals of the New York Academy of Sciences, 1464*(1), 242-268. doi: 10.1111/nyas.14321

Zimmerman, M. (1986). Neurophysiology of sensory systems. In R. F Schmidt (Ed.), *Fundamentals of sensory systems.* Springer.

Author's Biography

Stephen M. Ryan works at Sanyo Gakuen University in Okayama, Japan. He teaches a course on how to get along with people from different backgrounds, leads groups of students in their first overseas experience, and works with outgoing Study Abroad students.