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Where to from here? Generating the New Normal in this Extraordinary Century

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This is the first Presidential Keynote Address delivered at an AsiaCALL international conference. It will not be the last one. The Presidential Keynote Address series was initiated in order to give voice to the leader of the organisation and to the leadership team. Typically, keynote speakers and other featured speakers who address the conference in plenary session are external to the organisation and do not necessarily reflect the viewpoints of the leadership of AsiaCALL. The AsiaCALL Presidential Keynote Address will remedy this situation, and I now cordially invite you to join me for the first AsiaCALL Presidential Keynote Address.

Like other presentations in this conference, I will talk about the future and will focus on certain key issues.

Let me begin with some more or less self-evident assertions about the 21st Century.

Technology

The technological revolution has changed everything with a breathtaking array of new developments. The most Important technologies for the 21st Century – at least the near 21st century (it is quasi-impossible to predict the new technologies of the mid to late 21st centuries) - are likely to be:

Artificial Intelligence (AI) with its focus on Machine Learning, Deep Learning and Neural networks perhaps connected to renewed interest in Expert Systems where rules are no longer generated by humans but by AI itself.

Biotechnology which, if used properly, will enhance our lives in countless ways. Its contribution to language education is already making itself felt. As language educators, we are beginning to recognize that our biology appears to have a strong influence on language processing and indeed language itself, and that we can use that to our advantage. As a simple example from language processing, it is becoming clear that the way our body is constructed does not enable us to process language input sequentially. We would simply drown in information (Christiansen & Chater, 2015). Instead, our body appears to have learned to deal with this issue by bundling input in such a way as to overcome this biological limitation. Another simple (though hypothetical) example is chunk length i.e. the length of what is commonly referred to as a chunk. This normally consists of something between 5 to 9 syllables or has a length of about 1.4 seconds irrespective of language. This universality may be accounted for (hypothetically) by the length of breath an average human takes.

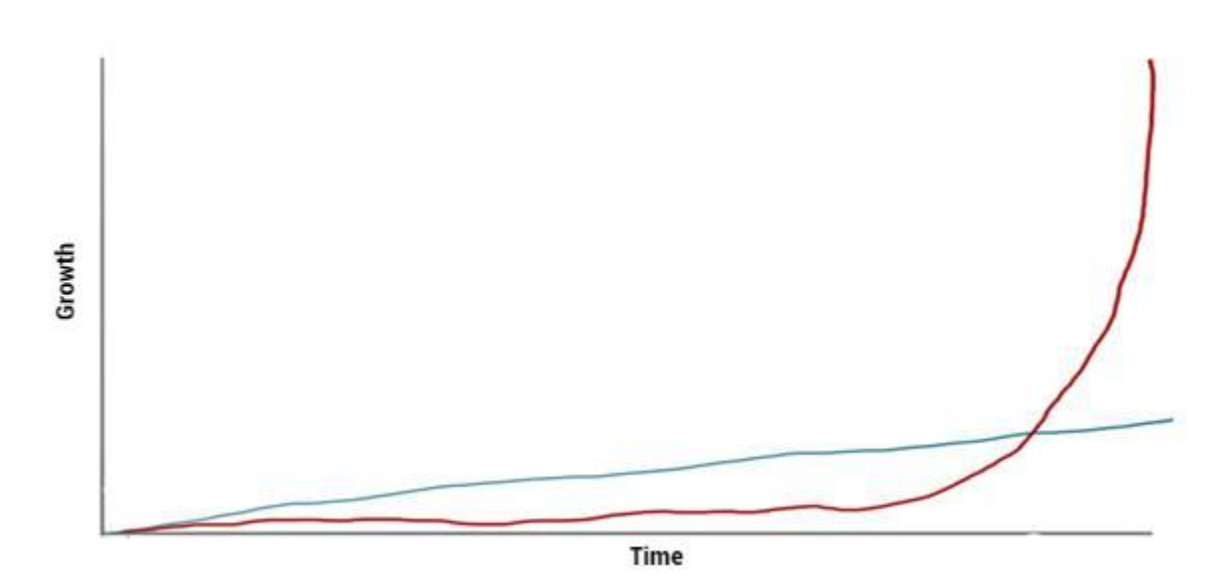
At the other end of the spectrum, biotechnology is helping us with instrumental studies designed, for instance, to enhance perception and production of language (e.g. ERP and fMRI dichotic/diotic processing comparisons (Cai et al., 2021; Lian et al., 2020)).

However, biotechnology has another aspect that is less positive. It can be used not only to improve life (e.g., health-related systems) but also to exploit people. For instance, it can lead to "people hacking" (Yuval Harari speaking on *Sixty Minutes,* 2021) where computer systems will be able to manipulate the minds of humans to the benefit of commercial and other organizations.

The relationship between people and technology also has another very serious dimension. The developments of artificial intelligence will bring about massive changes in the ways in which we lead our lives. As a simple example the driverless car or truck will almost certainly be here in the mid-2030s. This means that over time there is a serious risk that the driving professions will be deeply affected, and millions of people will find themselves out of work. This is not the first time that this kind of phenomenon has occurred, but it is almost certain that nothing on this scale has been witnessed before. Multiply the driving phenomenon with other professions and we have a job crisis of monumental proportions. This will create serious social disruption and will require a fundamental reorganisation of all aspects of society.

Technology also raises another issue:

Moore's Law and Human Intellect. The diagram below represents intellectual growth of humans as plotted against technological growth.



The blue curve represents intellectual growth while the red curve represents technological growth. Clearly the curves are very different from each other, with technological growth responding to Moore's law which states that technological power doubles approximately every two years. While we are dealing with very different notions of power/growth there is a risk that the growth in technological power may push us in directions that are not necessarily beneficial to humanity unless intellectual growth expands simultaneously. While according to the above diagram intellectual growth is in fact occurring, we are clearly not doing as well as technological growth and it would be of clear benefit if the rate of growth could be increased somewhat. Of course, this growth will never be exponential.

So, let me make two points.

The first is that higher education has a critically important role to play. Higher education is important, not because it trains us for specific jobs or careers (maybe that is not the role of higher education anyway) but because it (should) equips(s) us to deal with the unimagined and, ideally, perhaps even the unimaginable.

My second point is that modern technology has an equally important role to play in our intellectual development. In addition to the multitude of ways in which it can facilitate or support learning, technology presents us with countless ways of spurring the imagination to investigate ways of thinking that were previously unimaginable before the advent of that technology. For instance, technology has now made available the possibility of student-generated learning materials based on students' actual needs as determined by the students themselves at the time of the need (Lian, 2014). This is something that was impossible to envisage as little as fifty years ago.

Yet technology can also limit us. This is because, like all other intellectually based systems, it organises the world for us to some extent and therefore limits the ways in which we think. Use of technology must therefore always be carefully assessed in its context of usage so as to maximise its value.

I would now like to move on to my second key point about current life: the Post-Covid Condition (with apologies to Jean-François Lyotard).

The post-covid condition

Right now, we are all in the clutches of an all-invasive world-wide pandemic called Covid-19. This happened with little warning, and the world had to react quickly and with no preparation to avoid a human and economic tragedy of unequalled proportions.

Everyone is now waiting for a vaccine so that we can enter the post-Covid world, a world free from the disease, and get back to our normal lives.

That would be great, but I feel that this is unlikely to happen. Beating this pandemic will not be enough as a new one (or a new variety) will probably come along for several reasons, as we have already seen. On top of that, we already have a history of disease spreading around the world, starting with something as common as "the flu", the bird flu, even Ebola and so on. Ideally, we would have to defeat new pandemics before they start – and that is a huge if not impossible challenge.

Perhaps more importantly, in addition to the health issues, this pandemic has triggered new understandings about how we can lead all aspects of our lives. We have already re-thought new ways of living our lives such as travel, group meetings, workplace location and activities, entertainment, education and many other things.

In learning to do things differently and meeting new challenges, we may also have learned to do them better or even to develop entirely new ways of dealing with certain issues, e.g., online learning. In a sense, Covid-19 has been something of an opportunity.

So, in a way, we may never get back to the old normal in every aspect of our lives, at least in the foreseeable future. Covid-19 has taught us to be vigilant ALL of the time about it and similar diseases, and to protect ourselves against the possibility of infection even if the danger has gone.

Consequences of Covid-19 include, for example, the fact that people can work successfully from home (both employers and employees), that at least adult students can successfully study from home and that it is often possible to replace travel with online meetings.

These NEW understandings are unlikely to change and will stay with us for ever. This is what people have also called the Great Reset – we must reset the world in order to survive. Let me quote from something I wrote recently in a non-academic context: "As the world resets itself and, together, we co-construct the new normal for a life that will never be the same again, we will need, more than ever before, to rely on the fundamental human qualities of ingenuity, imagination, adaptability and resilience in order to lead safe, productive, sustainable, comfortable and satisfying lives". Our lives should be safe (or secure), satisfying and serene.

And it is becoming clear that some patterns from the past will most likely be abandoned. Many of us will work from home or in small-scale, dynamically reconfigurable, shared or co-working spaces not large, centralized buildings.

Working from home, while seemingly attractive, creates new problems. For instance, we will need to redefine "home". At home, we will have to manage work, family children, pets etc. and this may lead to difficulties in the balance between personal and work commitments. Home will no longer be primarily the place where we recover, relax and sleep in order to go back to work the next day. EVERYTHING will happen at home. Meetings will tend to be held online (from home) and the few important ones that require personal contact will often be conducted in shared spaces rather than large corporate buildings.

And, because of the growth of telecommuting (working from home), local communities will grow in importance as we learn to inhabit virtual as well as physical spaces. In some sense, we may revert to something more like the village life of the past while still remaining involved in global activities. Technology will enable all of this to happen, and the decentralization implies will affect everything.

In particular, schools and universities may be less peopled and new community-based models of education may emerge. One of the possible implications of this is that the notion of the traditional classroom may be under threat and may need to be re-conceptualized. The classroom may no longer be so important as we almost certainly move toward personalized, blended, online and self-managed learning.

Actually, it is not all bad at least for education. Although this virus is horrible, it has forced us to rely on technology to do things. In the world of education, no one has been exempted from this and people with no experience or desire to teach with technology have been plunged into the challenge of using it ~~to teach~~. In the field of language teaching, specifically, people with no experience have suddenly been told to design TELL (Technology-Enhanced Language-Learning) systems from scratch and in a very short time (e.g., "let's do it in 2 weeks").

Surprisingly, in many instances around the world, instead of looking for expert help or turning to new teaching and learning approaches, many organizations decided to use a Do-It-Yourself approach and to improvise as best they could with their old approaches. Sometimes this way of doing things worked and people felt good and sometimes it did not work and people felt bad – this had an impact on attitudes toward technology post-Covid-19. The problem with this improvised approach is that the human, time and financial investments that went into these unprepared initiatives were huge. Because of the size of the personal and financial investment that went into their preparation, it is difficult to throw away so much work and start again even though it may have been unplanned.

Now… we need a plan to move forward and deal with the hurried but valuable work that we did and either replace it with something better or keep the parts that worked. It is not enough to do nothing. One of the critically important features of using technology to teach is that it requires a clearly articulated learning and teaching theory. We cannot improvise as much as we

do in a traditional classroom. The level of planning needs to be much higher. Simply computerizing what we do in a traditional classroom will not be enough. Real TELL development is the antithesis of what happened when Covid-19 hit.

Once we start to engage with it in a sensible manner, technology will reveal flaws and problems that we were unaware of and, ideally, requires us to rethink our theoretical understandings as well as our practices. This offers us a great opportunity to rethink and improve. But rethinking and improving is not just a matter of opinion – it is a matter of research.

When Covid-19 hit, people were often asked to brainstorm solutions. Brainstorming is good but never enough. It needs to be informed. The best source of information is research but not research that simply repeats the past and that we know has failed in the past. We know it has failed because the field is fairly stagnant – we are not doing great right now. We need to seriously consider outliers: researchers are not in the mainstream of the field. Why? Because they can see things that the mainstream cannot see. They will help us to think laterally and innovatively, especially as we are now in a mass market for language education, especially English, where millions of students (both in class and out of class) need to be catered for.

Let me give you some examples from the research that my students and I have been doing at SUT and elsewhere.

This research has been ongoing since about 2014 and has resulted in the creation of what we have called the ALERT research group. It all began with Professor Dr. He Bi (XinYi Normal University for Nationalities), one of my doctoral students who initiated an interesting and original, outlying, research stream that forms the initial driver of ALERT's activities.

The name ALERT stands for Advanced Language Education Research Team. ALERT has a common, intertwined, theoretical framework and its research projects are generally circumscribed by the following theories:

- Verbotonalism (Asp & Guberina, 1981; Guberina, 1956) – perception/production.
- Rhizomatic/autonomous Language Learning (Lian, 2004, 2011) – self-managed autonomous learning
- Self-Organizing Learning Environments (Mitra & Dangwal, 2010) – teacherless project-based learning within a project-based framework.
- Precision Language Education (Lian & Sangarun, 2017) identifying learning problems for each student – a form of research-based personalization and
- a Critical Epistemological Framework for the construction of knowledge and Learning (Lian & Sussex, 2018) – how do we know something? How do we learn?

It draws on technology as needed (and it often does). Clearly, these are not mainstream theories. Here are some examples of the work done by the ALERT group.

Research began with work in pronunciation and trying to improve students' prosody, intelligibility and comprehensibility – not turning them into native speakers but making them operational and empowering them for success. There were many offshoots to this research including enhancing listening comprehension, maximizing fluency and, believe it or not, enhancing academic writing in L2 learners.

How was this achieved? In part through manipulation of the physical auditory signal that learners were exposed to. The techniques used were based on the principle that if you provide the brain with an optimized physical signal then the brain, on its own and without additional work by the student, will enhance language learning automatically. This principle is part of the verbotonal theory.

Did it work? It worked very well, and it has now been extended to some seven other projects in China, Thailand, Vietnam, Indonesia and Australia. Results are published for some, and new results are expected to be published soon.

We now need to conduct large-scale replications, but every project conducted has yielded more than the expected results (some are surprising and will need special investigation). Wherever appropriate/possible a double-blind protocol was applied.

In order to discover more about these phenomena, we are now also conducting instrumental studies scanning the electrical activity of the brain (with Event Related Potentials and blood flow studies using fMRI). These studies are being conducted in China.

The work that we have been doing has not been limited to audio manipulation but has also incorporated autonomous learning and personalization of learning while focusing on perception issues. In developing all of these systems we have discovered two things:

(a) In order to learn SOME things (not everything), students do not have to think about what they are doing or trying to learn in order to get good results. They just need to perform certain activities. Like the old slogan about the value of physical exercise, you don't have to like it, you just have to do it.

In other words, the systems are teacher-less (and therefore teacher-proof) and, essentially, automatic.

The second thing that we learned was that despite the fact that they did not have to "work" at what they were doing other than follow a routine of activities, in every case

(b) students enjoyed doing the required work
    a. became more autonomous and
    b. were motivated to continue and

    in some cases, they claimed to be less anxious and/or more confident because they felt that significant improvement in their English had occurred.

This research is leading to the development of automatic/teacherless systems for learning certain aspects of language. It began with pronunciation work (Professor Dr. He Bi, Professor Dr. Yan Yang, Dr. Wen Fengwei – all from China/Thailand) and has now extended to Listening comprehension (Dr. Luu Thi Mai Vy, Vietnam/Thailand), Fluency/accuracy studies (Mr. Zhang Shaobing, China), Academic writing (Dr. Lala Bumela Sudimantara, Indonesia/Australia); Mr. Luqman Baehaqi, Indonesia/Australia) and Mr Cai Xirui (China/Thailand).

The use of Artificial Intelligence approaches such as the development of expert systems based on neural networks and deep learning algorithms will enable the creation of fully automated systems that, within certain domains, will diagnose and monitor some of the students' individual problems (especially in areas like pronunciation and prosody). These systems will be of great value in language learning in the post-Covid period, freeing educational organizations from the obligation to provide classrooms and people who, in any case, will be less efficient than the teacher-less systems. Classrooms and people can be saved for activities that cannot be automatic (so far).

Just as important, though, these studies will give learners opportunities to learn when and where and sometimes how they like. This is a good way of increasing the amount of critical support available for language learning at minimal cost, especially in today's mass market.

So where to from here?

It is the job of the university and researchers in general, the people who attend AsiaCALL International conferences, to lead intellectually. It is our job to create progress for our profession and to avoid stagnation. We need to work together to generate intellectually valid and valuable learning systems, beginning with research and drawing on the best that each of us has to offer. And to do so humbly, with the understanding that even though we may feel certain that we know what needs to be done and how to teach, we are all open to new ideas and new evidence of what works and what does not. Maybe we should give serious consideration to formalizing our relationships with each other through the formation of one or more international centres so that we can move forward smoothly, perhaps a national or international centre for Computer-Assisted Language Learning.

In order to achieve all of this:

- We need to be smart
- We need to be forward-looking
- We need to be brave
- We need to be active
- We need to be visible
- We need to be heard
- We need to connect to each other and to decision-makers,
- We need to participate in the creation of the future and not portray ourselves as helpless victims of "the system"

In short, we need to learn to be in control of our work and of our situation and if we do that, then the NEW NORMAL is in OUR hands!

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