Chapter 6:
How do we relate?

COMMUNICATE & APPLY

Chapter 6
How Do We Relate?

This chapter shows that what is needed in formal and informal education is not only the connections between theories and practice that have been called for so far in the book but also something that enables people to genuinely relate to each other and disparate ideas. This chapter asks, 'How do we relate?' Like other MELT questions, we can ask this question in relation to the small scale: within a class, or a small group investigation before lunch. Or we can ask it in relation to a larger scale: how do we relate learning from one lesson to the next, from one subject, one term, one year, one stage of education to the next? Ultimately, the question becomes 'how do we relate our thinking about teaching and learning to that of other educators?' The MELT provide a conceptualisation that represents these different progressions, people and perspectives, and that facilitates connected relationships.

This chapter focuses on the problems associated with the relationships between humans, as well as relationships between humans and the planet. It looks at why things have proceeded in a direction that was, to a large extent, inevitable in terms of how human solutions to problems, including technology, caused problems that were sometimes larger than the ones originally solved. However, now that we have a more comprehensive view of the planet than ever before, the chapter moves on to consider whether our future is, or may become, a little less inevitable. As noted in Chap. 5, part of the solution to entrenched or emerging problems is rethinking what theory does for education, and taking a complementary rather than a competing perspective of theory. This will enable more unified efforts towards providing learning environments that develop thinkers who can solve humanity's and Earth's problems.

First in this chapter is a story about cosmonauts and astronauts uniting in space during the middle of the Cold War. This story is a reminder that connections between clashing perspectives can be worthwhile and powerful, and that such connections can be made against all odds. The story provides context for how we might relate to

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those with perspectives on important aspects of life (including education) which are the polar opposite of our own.

Energies of teachers and researchers need to unite around shared, adaptable and culturally sensitive models for education that graduate students who have the research mindedness to solve the many entrenched problems, and new problems that will plague us from 2040, in a way that does not create additional problems. How do we enable the next billion brains born to become primarily constructive people who desire to build up society, the environment and each other? Student sophisticated thinking requires faciliation by professional teachers who are not forced into 'best practice' by others, but have the discernment to be constructive. For students and teachers alike, to be constructive is not to be persuasive or building-oriented, but nurturing and full of care.

6.1 Soyuz and Apollo: A Story About a Cold War Meeting in Orbit

The communist USSR and the capitalist USA arguably represented the twentieth century's most polarised, long-term adversarial positions. But in the Smithsonian Air and Space Museum in Washington DC, there is an amazing configuration: a re-enactment of a moment from 1975, when, in the middle of the Cold War, the USSR and USA cooperated at the highest, most sensitive and most complex levels (Fig. 6.1).

In the museum is a thirty metre contraption comprising a USSR-era Soyuz craft docked with a US Apollo module. Despite the two nations' adversarial politics and their appearance of extreme competition, especially in space, both realised that the competition would kill them. To begin to unite on earth, they chose a symbolic act of

Fig. 6.1 Apollo and Soyuz coupled in the air and space Museum, Washington, D.C.

uniting in space. This act is not famous, but the docking of the craft may have been the beginning of the end of the Cold War.

The Apollo–Soyuz Test Project required both groups, years in advance of 1975, to share top-secret information on guidance systems, space hardware and software [2]. The two ships were very different. For example, their entry hatch sizes were incompatible, so a three-metre 'docking unit' needed to be engineered for the event. The Soyuz normally operated on pure oxygen at 1/3 atmosphere, whereas the US craft used air at 1 atmosphere [2]; the Americans would have blown up the Russians had they docked and connected their triple-pressure atmosphere. The two teams had to share trajectories, launch times, positional information and operational information. Then the astronauts needed to engage with the cosmonauts socially—they couldn't dock and sit in separate capsules! They had to be willing to communicate with those who had not only a different mother tongue, but a very different ideology. The language barrier was perceived to be one of the biggest obstacles, and so the Americans learned Russian before launch and spoke it in when docked, while the Russians learned and spoke English [2]. The crews ate a meal together, shared memorabilia, signed international certificates and hoped, as their respective presidents watched via a live telecast (alongside millions of their citizens), that 'our joint work in space serves for the benefit of all countries and peoples on the earth' [2].

I am writing this on the eve of the fiftieth anniversary of the first moonwalk, but that event further escalated the Cold War, whereas the Soyuz–Apollo Project helped to defrost it. The threat of mutual annihilation provoked by the nuclear and space race was a sufficient stimulus to prompt changes in the way that the USSR and the USA related to each other. However, to actually change political and public sentiment is a highly charged affair, and the Soyuz–Apollo docking was a kind of circuit breaker that allowed high-voltage differences to leak out over time. It is salient that the event which generated more tension (the moon-landing) is famous, while the one that began a genuine connection between warring parties (the Apollo–Soyuz docking) is almost forgotten. As a species, we tend to prefer winning over cooperating, and this is food-for-thought for anyone involved in educational disconnections.

Current global deterioration, one would think, should be enough to prompt a similar response. However, we no longer feel the sense of urgency that came with the possibility that one button-push could launch the world into a nuclear winter. Our concerns about nuclear annihilation come and go with the news headlines. Our biggest current earth-wide issues, however, arguably involve a slow decline of the planet's ecosystem, causing habitat destruction that is induced especially by overpopulation pressures and the increasing prosperity sought by billions. This slower-speed issue is hard to resolve without concerted, unified and sustained agreement by many governments. While the overarching problem of the Cold War was evident, it is difficult to even identify the problems facing Earth in 2020, and there are now many more parties involved than the two main governments of the Cold War. Maybe a big

circuit breaker equivalent to the Soyuz–Apollo is needed, or maybe a very different kind of solution. We do know that we need a billion problem solvers whose solutions anticipate and avoid subsequent problems.

6.2 Inevitable Earth

Humans for 100,000 years have been outstanding problem solvers. However, as noted in Chap. 1, many of the solutions we have found have resulted in further problems which are more difficult to solve than the ones we started with. So our skill at solving problems was, in part, a function of the sheer number of problems we caused, including the Cold War.

This capacity to solve problems while inadvertently causing more problems does not mean that humans are wicked and greedy in a way that separates them from the rest of nature. Rather, the process was inevitable. A species so well-equipped for sophisticated thinking, with a body that could work in a way that corresponded to that thinking, was powerfully adaptive to its environment for 100,000 years. Then *Homo sapiens* began to adapt the environment to suit it, tens of thousands of years ago [3]. At first, such adaptations of the environment were small: the intentional use of fire to manage foliage and grazing [3], or the collection of grass seeds in the fertile crescent in order to sow it in a specific well-watered location [4].

In addition to achieving what was intended, some problems' solutions produced unanticipated effects. Planting grass seeds allowed small populations to remain in one place for longer, reducing the need to travel and more predictable food supplies made it possible to establish larger family groups [5]. The consequent rise in population afforded our ancestors more protection from predators and from competing bands of humans [6]. Escalation of agricultural technology ensued, providing a competitive advantage over humans who did not plant seeds [6]. Technology compounded, with success growing on the back of technological success [7]. But no-one anticipated the inevitable problems associated with such success. How could *Homo sapiens* have anticipated such problems?

Until around 50,000 years ago, nothing humans did compared to the environmental change wrought by beavers (as noted in Chap. 1). Had beavers been equipped with learning brains and grasping thumbs, they might have caused far more environmental degradation than they did, at a rate that would have put humans in the shade. However, super-specialisation locked them into a niche that was hard to break out of, and even in 20 million more years, beaver descendants may still be dam engineers. In contrast, humans were generalists, able to run (slowly), climb (poorly), fight (weakly), build (badly) and learn adaptively. While we may be slower than cheetahs, weaker than gorillas and less architecturally intuitive than termites, our learning capacity means

that we will almost inevitably land a human on Mars. That is, unless the compounding problems associated with our compounding solutions catch up with us first! An Earth human population which crashes to several million, say, following an environmental cataclysm, is going to have problems visiting the neighbours on the other side of the stream [8], let alone getting off the planet.

Given human brain capability and our anatomy, it was inevitable that human capacity got us to this point of compounding problems. An interesting example of inevitable, compounding problems cropped up yesterday when I attended a public presentation on quantum computing [9]. The presenter argued that quantum computers would be able to hack existing digital security protocols within the next five years. The only remedy he presented for this was the adoption of new quantum computer-generated security systems. Such a state of affairs is reminiscent of a self-fulfilling prophecy, where the need for a technology is, in part, created by the existence of the technology. A reflection on the inevitability of this process may take some of the pressure off us. We are a self-incriminating species, and it can help to pause and understand that we are, or were, part of the biosphere—not especially weird or holy or special.

However, understanding the inevitability of a deteriorating Earth is not an excuse to say, 'that's fine'. We can now see the entirety of the planet and understand our place in it. Indeed, since Yuri Gagarin's journey in 1961, we have been able to see the whole Earth from space [10]. With our information gathering and sharing, we can now perceive in great detail our impact on the planet, and with that knowledge we have a chance to make global deterioration a little less inevitable. More than ever, we are able to see the extreme social stratification and isolation, environmental degradation and species extinction, as well as escalations in our capacity to annihilate. But our ability to observe these problems does not guarantee that we will do anything effective about them.

6.3 Evitable Earth

If we continue in our very intelligent ways of solving problems, then maybe the fate of the Earth is sealed: inevitable species extinction and a human population crash. For a model of the scale of crash possible, the Mayan civilisation was thought to comprise between 15 and 30 million people at its peak, and the population crashed to thousands in several decades [11]. If a crash of similar severity were to hit the planet in 2023, this would mean that the population of 8 billion humans would be reduced to a few million. Such a crash has happened more than once in large and small human populations, and it could happen on a global scale [11].

There are not currently any palatable solutions to mitigate the problems we face with a large human population. In 1979 or earlier, China elected to minimise its

population growth through the one-child policy. This resulted in the 'prioritisation' of boys over girls, with estimates of girls 'missing' in China varying from 20 million to 160 million [12]. As is common, our solutions often have perverse and unpredictable consequences that cause more problems.

Therefore, it is no longer enough for us to merely solve problems. We need minds that can genuinely anticipate problems that will result from solutions and mitigate these or, even better, look for solutions that 'first do no harm'. If our education systems can produce critical thinkers capable of creative solutions that anticipate subsequent problems, our earth's immediate future may be a little less inevitable. In order to lead us to a trajectory where planetary destruction is not assured, these thinkers will need to be primarily 'constructive', rather than self-serving or ideology-based, and have had a mind-expanding education. With a connected education informed by MELT, they could prompt a less fated, more evitable earth trajectory with room for hope.

6.4 Retheorising Theory in Education, from 'Competition' to 'Complement'

From a MELT perspective, each passionately held theory and approach can help the community to build a little towards a mind-expanding education. Let educators and parents with different perspectives talk and, if they are 'poles apart', at least perceive the ground between the poles. For example, a big focus on content acquisition may have some great advantages in terms of discovery learning, if students have learned some key and pertinent ideas. Likewise, discovery learning might be a great motivator towards learning content. In *Parachute* (Chap. 1), Shelly knew about independent and dependent variables, and she may have acquired these concepts in a *prescribed* context. She applied these tricky concepts in a personal instance of discovery learning that was *open-ended*. Although she faced many difficulties, she applied the concepts of experimental research effectively, and conducted research that demonstrated sophisticated thinking in a science context.

From the MELT perspective, there is no philosophical law against jumping from facilitating *prescribed* to *open-ended* learning nor from *unbounded* to *bounded* learning. But teachers implementing a curriculum need to have discernment and power to implement their well-reasoned judgements about what is best for each situation. MELT can enhance the capacity for discernment, because as an analytical tool, it is functional, addressing the practical questions, 'what do these students need?' and 'how much guidance?'

If we treat theories, by definition, as competitive, then we may continue to have a problem. Given the complexities of learning and teaching, educational theories may need to complement each other more and fight less. Seeing theories and perspectives as more metaphorical and less literal might help educators to at least acknowledge theories that are a pole away from their own perspective.

In Chap. 1, I proposed the enterprise of educating human brains so that they have the capacity to solve problems without causing unanticipated additional problems. This educational wiring would involve brains that have a substantial content knowledge base of fundamental concepts. It would also involve brains that take risks, delve into issues and problems, and are highly discerning. While learning content and learning through delving can be presented in mutually exclusive ways, in MELT they belong to the same *continuum of learning autonomy*. Rather than conflicting with each other, they are complementary.

Tara's resilient understanding of content in *Stupid* was contrary to the scientific canon. She showed that we cannot merely say, 'Give students lifelong learning skills. All the information they need is available, so they just need to know how to access it.' This is a very tenuous position to hold, no matter how often it is said. If we don't understand ideas, we won't even know what we are holding, and we certainly won't be able to readily synthesise multiple ideas.

This next billion humans born from 2023–2030 may be the make-or-break generation. They will inherit all the problems of the planet, including those which have been made, inevitably, by the 100 billion other brains that came before them. They will enter formal education from 2024 onwards, and most of those billion will complete their compulsory education around 2050. The problems we face and will face are still improperly identified,hidden or not yet created, and the solutions are out of our present-brained generation's league. Overall, MELT is an opportunity to put into the hands of the billion the sophisticated thinking tools that they will need. These are the tools of the inquiring ape, because these tools of sophisticated thinking are the best we have. But now we need to connect disparate efforts and contexts so that we can 'rachet up' our sophisticated thinking to enable us to solve problems with solutions that first do no harm.

6.5 Conclusion: It's Only When We Relate to Divergent Practices, Concepts and Places in Education that We Will Solve Our Educational Problems

As a species, we named ourselves the 'wise man'. For an animal that destroyed its own environment through desertification, salinification, heavy-metal contamination and warfare, the word 'wise' seems a little off-the-mark. Beavers, with their smooth brains and genetically stored behaviours for dam construction radically altered their environments, but at such a pace that ecosystems were able to evolve along with the change. Our learning brain seems to learn too fast for ecosystems to catch up, but not fast enough to enable us to craft solutions that don't make things worse. We are both too smart and not wise enough.

If we haven't been particularly '*sapiens*', could we become a little more aware? Business, military, health and even educational interests compel us on the same inevitable trajectory as that taken by the 100 billion brains born so far. Maybe MELT can help broker a broad union of educational perspectives so that, working in mutually reinforcing ways, our species may become *sapiens* in action as well as in name, following a new, more evitable earth trajectory.

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