

Preface

When I was a lad of about five, my grandfather – God bless his soul – would take me to the airport in the afternoons. This was in the early 1970s, and it was a wonderful time to be exposed to the sights, sounds and smells of civil aviation. Pan Am had just started Boeing 747 services to the Far East, and a highlight of my (almost) daily visits would be scanning the horizon for the earliest indication that that wondrous double-deck white and blue aircraft was on final approach to Paya Lebar, Singapore.

These visits to the airport continued into my primary school years, and somehow granddad and I would always find time to sneak away from home to fill our lungs with wafts of jet fuel. Things got really exciting when British Airways and Singapore Airlines started joint services to London via Bahrain on the supersonic Concorde; memories of that pencil-thin fuselage with its amazing delta wing and thunderous afterburner-charged roar seem as fresh in my mind today as they were forty years ago.

Yes, on a busy day, the apron at Paya Lebar would be filled with all manner of aircraft of different shapes and sizes – from the 747 to Concorde and almost everything conceivable in between. As a young boy, these repeated visits to the airport left an indelible impression upon me and left me wondering how each of these aircrafts – regardless of their differing propulsion systems, wing shapes, fuselage configurations, sizes and weights – could somehow all *fly*.

So it was on a diet of Ladybird books and engaging granddad in conversation that as a young boy I learnt about principles of chord design and fluid dynamics way beyond my grade level and about lift, thrust, drag and weight and about yaw, pitch and roll. Through the pages of those books, these complex relationships were explained in terms that I could understand, with nary a ‘Bernoulli’ or a ‘resultant vector’ in sight. It wasn’t until I entered secondary school at the upper grade levels that I learned about such codifications of canonical knowledge in mathematics and physics lessons. By then, of course, it all made so much sense to me because I was finally able to explain – using epistemically appropriate discourse structures – the stuff that I had seemed to just ‘know’ all along.

I first started thinking about the disciplinarity of intuitions in early 2011. The ideas were precipitated through a series of discussions with teachers who were reflecting on lessons which they had been conducting using immersive environments

over the preceding two years. The lessons had been designed using a framework that I had designed (the Six Learnings curriculum framework) and had been yielding results which the teachers were happy with, not only in terms of grades but – just as importantly – in terms of ‘softer’ observable aspects such as the dispositions of students towards learning. Through the discussions, the teachers and I were trying to put our finger on why the lessons were ‘working’.

It took us a bit of time to come to the realisation that the approach was working because it was affording the students opportunities through which to develop and surface nascent and tacit intuitions about the respective domains, and this – in turn – was laying the foundation for more enduring first-principle understanding.

From these early beginnings, my colleagues and I formed a reading group in May 2012. We soon realised that there was a field at the nexus of curriculum, learning, practice and psychology which was ripe for investigation, and we approached Springer with a proposal to lay the foundations for this. We were awarded a contract that November, and the authors of this book worked hard to ready the manuscript and meet our deadlines.

Just like this trip down memory lane, this book also begins with the story of a young boy. The book itself is divided into three parts, with Part I laying the theoretical and historical foundations for Disciplinary Intuitions. In the first chapter of this book, Hung and Lyna introduce us to Nathan and his adventures at the local bowling alley, as he auditioned for and eventually trained as a member of his school bowling team. Through his story, we come to have a clearer appreciation of the interplay between the individual and his or her social others, particularly from the perspective of embodied cognition.

If you’d like to know more about the theoretical foundations of Disciplinary Intuitions, then continue reading Chapter 2, as Tan and I explore the nature of intuition and the disciplinarity thereof. We take a stand against the prevailing tide of interdisciplinarity and concludes the chapter by submitting for the reader’s consideration the case for what the authors of this book have come to refer to as Disciplinary Intuitions, as a theory of learning. We then hand the baton to Yuen, who traces intuition from the perspective of the classical Chinese philosophy. A second Tan continues the theoretical narrative and – in Chapter 4 – gamely frames the philosophical arguments from the preceding chapters through the lens of practice, specifically the lens of constructivism. By doing so, she helps us understand how the Disciplinary Intuitions approach to learning and curriculum design stands distinct from existing literature on misconceptions.

Part II of the book takes the concept of Disciplinary Intuitions and applies it to various disciplinary domains. Thus, for example, both Tans collaborate in Chapter 5, in which they revisit some of the theses from the preceding four chapters and recast them specifically with a focus on the nature of intuitions in the natural sciences.

Chapter 6 sees Mohamed Suffian introducing us to his intervention with students of the subject known as design and technology in the Singapore curriculum, in which the intuitions of young learners with respect to the way complex forms might be deconstructed into their constituent primitives are explored and mediated.

In Chapter 7, I address you – dear reader – directly, as I share my thoughts on Disciplinary Intuitions as they relate to the domain in which I received my initial academic enculturation, namely, geography. We return to the theme of travel and I take you on a whirlwind tour of the world – from the Nile to the Hawaiian archipelago – so hold on tight and bring your passport.

After that world tour, you might have the taste to pick up a new language. Together, Yin and Paul weave a finely crafted narrative of the nature of intuition in language learning. As you might imagine, this is an expansive topic, and that is why the two authors have chosen to address this in no fewer than three chapters, namely, Chapters 8, 9, and 10.

Chapter 11, picks up the storytelling theme and recasts it in quite an unexpected and refreshing direction – the chapter is written by Lee and Chia, who as my interns are the two youngest contributors to this book; as you'll see for yourself, their youth belies their conceptual discourse.

In Chapter 12, Cho and Hong continue with stories, as they weave a fascinating tale which literally tells stories in mathematical intuition, using examples from the Korean education.

Part III of the book represents a coda to the preceding chapters. Chapter 13 is a thinkpiece by Baildon, who draws from his vast experience in the classroom and from his own scholarly understanding, to artfully synthesise many of the strands introduced by the various contributing authors in the preceding chapters through the lens of the social sciences.

Last but certainly not least, we end this book on Disciplinary Intuitions with Howe's eminent contribution in Chapter 14, as she draws the entire book to a coherent and convincing close using her established research trajectory from the natural sciences. Going out with a bang, and true to our combined stance as members of the authorial team, the concluding chapter of this book dialectically couples theory with practice and the two with implications to policy.

The book may conclude there, but for your online reading pleasure, please feel free to browse <http://sites.google.com/site/disciplinaryintuitions/> as – in many ways – the story of Disciplinary Intuitions has only just begun. On behalf of my authors, I am very pleased to share with you our thoughts on Disciplinary Intuitions as a theory of learning.

Granddad passed away many years ago, and the airfield at Paya Lebar is no longer used for civilian traffic. The world is a very different place from where it was in the early, pre-oil crisis, the 1970s. Some of the promises of that era have still not yet been fulfilled. But whenever I step into an airport departure lounge, I remember that five-year-old boy from (not) so long ago and think of granddad and those trips to the airport.

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