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THE PORTRAIT SECTION

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Making as critical interrogation An autobiographical reflection

It is nearly an insoluble pancake, a conundrum of inscrutable po

I have been invited to contribute this self-portrait, I believe, because of the dimensions of making practices. Here, I attempt to briefly explain how I was schooled (if you can call it that) at a very liberal art school in Adelaide, South Australia, in sculpture. I say 'if you can call it that' because for three years (after that time there were barely any classes and I recall being bemused at seeing my work to look at it): I was getting A grades for classes I didn't know I was e

laziness, my teachers (all formalist sculptors) left me alone to do what I wanted. I am deeply grateful for that. It was the best possible thing I could have done at the time because it gave me time to establish a well-founded position, a working method and rigorous self-critique.¹ I was sympathetic to the definition of art offered by Donald Brook, a local Anglo-Australian art critic: 'non-specific experimental modelling' (North 2006). 'Art' was for me a descriptor I could deploy that gave me license to pursue radically interdisciplinary practice-based research that to many appeared absurd.

As an undergraduate getting a first view of the art world, I recall saying 'I don't want to make cultural widgets for the gentry'. Then as now, I have a deep commitment to practice, but I cannot endorse the 'art world' socio-economic niche and the professionalized narcissism that it seems to encourage. While I know and respect a good many artists, I am suspicious of the 'wave-through' that is granted to someone (by some sectors of society) on the announcement that something they did is 'art'. All too often this seems like a free pass for sloppiness and lack of discipline in thinking or making. I've become increasingly reticent to identify myself as an artist or call what I do 'art'. I have a general suspicion that when someone calls their work 'art', it probably isn't. This leaves me in a bit of a dilemma when asked what it is I do. Today, I'd describe my practice as a combination of experimental design and engineering bricolage, with theoretical reflection.

The aspect of my art school education which I now value above all was the time I spent with Owen Broughton (one of three professors in the sculpture department at the South Australian School of Art, Adelaide), the things he taught me and the things I learned from him that he may have had no intention of teaching. Owen was a slight man, with curly white hair and an impossible stutter – he barked. Owen had been Henry Moore's foundry foreman and had been responsible for casting many of Moore's giant bronzes. He was a pacifist: when the Second World War broke out, he volunteered as a bomb diffuser. One day he saw his partner blown to bits. From then on, he had white hair and a terrible stutter. Owen was a treasury of knowledge about making and tools. He could tell you how the Romans cast bronze centurion's sandals or how Indians quarry granite with waterlogged wood. He brought his harmonograph to show us and taught us how to survey land on horseback. He would present large exhibitions from his collection – one month it was drill bits of all sorts, medieval ones and straight fluted ones from the Rolls Royce factory. The next month it was files. He had a collection of barbed wire in an album made of masonite pages. He could say precisely where each was found, when it was made and what the machinery and process was. He was an amateur archaeologist and would take long trip into the desert in his old Land Rover searching for artefacts, which often wound up in the South Australian Museum. The only things in his small, austere office were an exquisite set of Platonic and Archimedean solids he'd made, arrayed on two shelves. I learned toolmaking at the forge with him, experience I treasure. I recall him telling me to hit the glowing work piece on the anvil, and when I did, he barked: 'No! HIT IT'. He grabbed the sledgehammer, raised it over his head and brought it down with alarming force. I think I stood

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2. See my *Desire for Virtual Space* for an overview of that exciting time: <http://simonpenny.net/2010Writings/desireforvirtualspace.pdf>.
3. See <http://simonpenny.net/works/petitmal.html>.

wide-eyed at the show of strength and conviction from this little old whose value has steadily increased – a fascination with tools and them – the embodied knowledge of skilled tool use, that I now call the

My ‘practice’ was all over the place, at least that is the way it sometimes told me). After nearly a decade building machine and kinetic sculpture and video, teaching myself electronics and establishing an Art+Tech center in Sydney in the mid-1980s, I wound up landing a position at Carnegie Mellon University (PA – one of three centres of robotics and AI research in United States, Stanford) where my title was professor of art and robotics (I used to joke I was professor of art and robotics in the world). This was in the early 1990s, when interactivity was beginning to be recognized as the next big thing. In particular, there was a growing interest in interactivity.² Later it occurred to me that I got the job at CMU because I had demonstrated interactivity in/as art for the previous ten years, though neither I nor they articulated it, but I had an inchoate sense that the diverse things I was doing had

articulate it. At the time, I was in the process of building my autonomous robot show in Figure 1.³ Petit Mal is an artisanal, ‘bespoke’ robot. Its form was an eccentric design brief: I characterized it as ‘a sculpture you could dance with’. I was working in the spirit of the emerging school of ‘bottom-up’ or reactive sculpture movement (which itself was a reaction to the collapse of first-generation interactive art). My ideas had arisen autonomously out of a deep sense of the importance of embodied and bodily dynamics, a commitment I had developed, no doubt, through my work in performance and installation art, where the temporality and spatiality were always part of the larger work.

I was disenchanted with the lumbering research robots around me at the time, as technologically naive caricatures of robots by artists. Petit Mal had to be truly autonomous. I didn’t want to fake it. This meant I had to be going on at a deep level and design on that level. I set myself the task of building the whole thing from the ground up. I spent six months developing custom hardware with the functionality you can now buy for \$5 as an Arduino plugin.

Unlike today, there were no sophisticated hobby robotics companies, for example, Amazon. Amazon didn’t exist, the web didn’t exist and the payoff of making it all yourself is that you are less likely to be sabotaged by the device you are working with that are antithetical to your goals. We have to accept today, one accepts choices that other people have made for you. We have to accept relevant criteria. The ongoing commodification of hardware and software

Simon Penny



Figure 1: *Petit Mal*, 1993. © Simon Penny 1993 and 2006.

designed based on mass market criteria of what will sell, what the market wants. To work with such 'stitched-up' commodities, a focus group had already decided you wanted to make. Digital painting seems to be a self-dismantling concept. To reverse-engineer such art is trouble, which is a major reason why I chose to stop working in the field.

As digital arts discourses developed, most of the voices talking about the world and in the computer/culture world generally – were talking about a keyboard while staring at a screen. To me, such work failed to critique a highly constrained context for art: a business machine set in a bureaucratic, disciplined body, unable to move or even adjust focal length, an interface that reduced the diversity of human action to poking 30 buttons. I saw the whole scene and this informed my ongoing critique of computer culture. All my interactions sized the material, the spatial and bodily dynamics, and staunchly avoided screens, or desks and chairs.

In building PetitMal, I struggled in my attempts to build systems that, first, I put this down to simple ignorance, but having become, by dint of being a hardware engineer, I chased 'bugs' – errors in technical realization. In fact, the problems I was encountering were *problems in principle*: all computers were built according to the assumption axiomatic to the discipline: it existed a dualist separation of (dumb) matter and (immaterial) information. These were undermining my attempts to create dynamic affective experiences through the integration of structures, mechanisms, electromechanical processes, analog and digital computational processes, which together – as an integrated system – were, I was, intuitively, rejecting the Cartesian dualism that structured computing. My embodied knowing that I wanted to create was antithetical to the reduction of information that is axiomatic in computing. As I've remarked since, the softening of mind-body dualism. All my subsequent work – while on the surface intended for an aesthetics of interaction – was driven by an active critique of the reduction of AI and computer culture. I wanted to build machines that, as objects, or at least critiqued, computational dogma. For me, computing offered, through the possibility of an aesthetics of embodied interactivity. It was this that this new aesthetic modality profoundly destabilizes the subject-object relationship – the traditional artwork-viewer relationship, because part of the art objects are aware of their own behaviour, they are no longer a passive external

As I became more deeply immersed in the culture of computing, I was drawn more deeply into a study of the philosophical lineage of computing culture, and into generally held assumptions about human cognition. As with my work in robotics, this inquiry brought me into contact with cognition researchers who were, in different ways, rejecting Cartesian / internalist perspectives. This research (classed variously as situated, distributed, embodied, enactive and extended) – along with ethology, neuroscience, anthropology and science and technology studies – provided me with a set of arguments that I've amalgamated to address the schism I sensed in working with computer / robotic systems: computational rhetoric was antagonistic to a holistic sense of embodied experience, the epitome of which, from my perspective, is found in the arts, broadly construed. This was the subject of my book *Making Sense* (Penny 2017).

My critique of the internalist dualism of computer science has been driven by my experience of making practices. This brought me full circle to focus on (the cognitive dimensions of) embodied making. Along with the concepts of 'know-how' (Ryle 1949) and 'tacit knowledge' (Polanyi 1966), I have found the work of Tim Ingold insightful:

the skilled handling of tools is anything but automatic, but is rather rhythmically responsive to ever changing environmental conditions. In this responsiveness, there lies a form of awareness that does not so much retreat as grow in intensity with the fluency of action. This is not the awareness of a mind that holds itself aloof from the messy hands-on business of work. It is rather immanent in practical, perceptual activity, reaching out into its surroundings along multiple pathways of sensory participation.

(Ingold 2006)

I have become increasingly invested in understanding the nature of skilled bodily practices and in the process have come to see the distinction between intelligence and skill as yet another version of the mind–body hierarchy that privileges the (presumably) 'pure' *abstract*, over the materially engaged. This, in my opinion, is a pernicious fiction that has served to reinforce hierarchies in the academy, as in culture at large. No! We are bodies that grew brains in order to more adeptly engage with the world we live in. Awareness, judgement, experience is the exercise of intelligence that humans evolved to enact. Mental abstractions and manipulations of symbols are charming pastimes, but in terms of understanding the cognitive dimensions of human experience, they are red-herrings. I am with the machinist at the lathe, with the apiarist with their arms in the hive, with the stonemason and the shipwright and the sailor – I feel the texture of the brass as it is cut with a fine steel tip, I finesse the lifting of the frames as bees swarm about, my mind is at the tip of the chisel as it bites into the grain of the rock, and in my bicep as I swing the maul. I know the strengths and weaknesses of the grain of a specific timber and can design and work with it accordingly. I pilot my craft, deftly



Figure 2: The Orthogonal project. © Simon Penny 2018.

improvising a dance, moment by moment, with the buffeting waves and the invisible wind I sense in the follicles of the hairs on my face, constantly attuning the tiller and the sails.

Currently, I have three major research projects, all of which reflect my ongoing focus on embodied skill. The Orthogonal project (Figure 2) is, like all my projects, multifaceted: over five years, I have built a radical 10 m (32 feet) sailcraft of my own design, loosely based on the principles of traditional Micronesian boat building. I hope soon to launch and test it. This project is nested inside a long interest in indigenous pacific navigation and seafaring, and activism to save these traditions before they are completely eradicated. I am designing and building a series of novel steam engines – this is the Greensteam project – *sustainable steam-power for the C21st*. Most recently, I am engaged, with Tom Fisher at Nottingham Trent University (and others), in study of the embodied skills of the ‘industrial crafts’. We see these as historically and cognitively novel because these practices involve the offloading of cognition (as well as labour) onto externally powered and semi-automated machines. They therefore stand as the missing middle term in the transition from traditional artisanal crafts to human–computer interaction (HCI).

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