Acknowledgements

I have long been interested in the foundations of cognitive science, in particular the relationship between classical cognitive science and connectionist cognitive science (Dawson, 1998, 2004, 2013). I believe that these two approaches are more similar than one might believe from reading the literature. This belief is supported by a research methodology in which networks are first trained on classical tasks, and then have their internal structure interpreted. In many cases, one can find very classical theories inside networks, in spite of typical claims that connectionism is quite distinct from the classical approach. Several years ago, we began to explore this methodology by training networks on very basic musical tasks (Dawson, 2009; Yaremchuk & Dawson, 2005, 2008). While this research provided additional support for the general research position—we pulled very formal theories out of these musical networks—it raised some interesting new issues. In particular, we discovered that the formal properties inside the musical networks were frequently quite different from the typical formal properties described in Western music theory. This book provides an extended investigation of these results, and of their implications.

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