



LOST AND FOUND IN THE
GRUNEWALD WITH THE
SPATIAL COGNITION GROUP
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I was born in 1943 in Portland, Maine, and graduated from Swarthmore College in 1965 as a major in Psychology with minors in Mathematics and English; M.A. in Psychology at the University of Pennsylvania; Ph.D. University of Toronto, 1970, where I have been ever since, currently as Professor of Psychology and Zoology. I (finally) became a Canadian citizen in 2003. My research concerns learning and cognition in animals. Since beginning my Ph.D. research, my goal throughout experimental studies with various small mammals and birds has been to connect the psychology of animal cognition with evolution and ecology. Thus one might say that behind it all is an interest in the evolution of mind. This integrative approach was developed in a book, *Cognition, Evolution, and Behavior*, published by Oxford University Press in 1998. I have published over 80 peer-reviewed journal articles and book chapters and co-edited two books. I am on the editorial boards of three journals in my field. I was a Guggenheim Fellow in 1981 and a Visiting Fellow at Magdalen College, Oxford, in 1997 and in 2003 was elected as a Fellow of the Society of Experimental Psychologists. In Toronto, I am a Senior Fellow of Massey College, a graduate college with similar ideals of cross-disciplinary communication as the Wissenschaftskolleg. – Address: Department of Psychology, University of Toronto, 100 St. George St., Toronto, Ontario M5S 3G3, Canada.

In the six months of Fellow Colloquia during my time at the Wissenschaftskolleg, I don't think there was one that omitted to begin with thanks to the wonderful staff of Wiko for making our lives here so easy and so rewarding. The people who encouraged and helped us to come to Wiko in the first place were rarely mentioned, but I want to begin this ac-

count of my stay with profound thanks to Permanent Fellow Rüdiger Wehner, without whom I would never have even heard of the Wissenschaftskolleg, let alone been persuaded to spend nearly six months here. It was he who first suggested I consider coming to Berlin and then encouraged Ken Cheng and me to gather an interdisciplinary Spatial Cognition Focus Group to be here together. And so Ken and I, Janellen Huttenlocher, and John Riesen found ourselves spending regular afternoons in Ken's and John's spacious office in the Villa Jaffé explaining our research to each other, having long discussions with a succession of visitors, all of whom were generously and unquestioningly supported by Wiko, and ultimately, to our own surprise, embarking on a joint writing project.

The Spatial Cognition Focus Group made sense because not only do all creatures need to find their ways around in the world, there is increasing communication about to how they do it across biology and psychology and among researchers working with creatures as diverse as human babies, adults, ants, pigeons, and rats. Janellen and John study humans of all ages, Ken now studies mainly ants and honeybees, but in the past he has also studied my primary subjects, birds, and small mammals. Our discussions throughout the winter gradually revealed that an important theme cutting across all our specific interests is how creatures integrate the diverse sources of information that support wayfinding. For example, in some of my experiments with rats, the animals can normally find their way using both their internal sense of direction (dead reckoning) and visual landmarks. In Janellen Huttenlocher's experiments with college students, remembering where to place a dot on a circle is coded as two memories: what imagined quadrant of the circle it was in, and where exactly within that quadrant. Are diverse sources of spatial information always combined to improve performance, and if so how? What determines the different patterns that are found across species and situations? Some of the psychophysical experiments that John Riesen drew to our attention provide quantitative models of information integration, and we spent some time discussing how they suggest general principles. Notwithstanding that in formulating our proposal for the Focus Group we had firmly resisted encouragement to commit to a tangible joint project, we have begun work on an article exploring these issues and will continue developing it by e-mail and when we meet at two upcoming conferences.

The spatial metaphor of setting out in one direction (or no direction) and finishing up somewhere else serves equally as well for all my other experiences here as for the work of the Focus Group. In my own work, I arrived hoping that, apart from whatever collaboration with the group might bring, I would have time to come to grips with whether and how I would revise or rewrite my now 5+ year-old book on animal cognition, *Cognition*,

Evolution, and Behavior, or start another one. Instead, it took much longer that I had planned to lay the groundwork, in terms of analyzing and writing up the results of the last two to three years of experimental work in my lab. Five substantial empirical papers co-authored with post docs and students were completed and guided into the editorial process and a sixth is nearly ready. There were of course many distractions, and it was wonderful to be free from teaching and administration to be so distracted. There were exciting opportunities to visit labs in Berlin, Leipzig, and Zurich. The spatial group's Leibniz discussions with Horst Bredekamp, Fellow Colloquia, and chance to meet with numerous visitors like Helga Nowotny's young "science in society" fellows and the participants in Jim Hunt's social insect symposium were among the many occasions to think about issues and ideas I would never have time or stimulus to consider at home. Preparing my Colloquium, in which I presented to my co-Fellows some issues in contemporary research on animal minds, provided the stimulus to reread some of Darwin and, thanks to Christof Rapp, become acquainted with some of what Aristotle had to say about animal minds. All of this provoked me to start thinking about some aspects of my own research in a new way, and a visit by former Fellow and philosopher of science Sandra Mitchell later in the year was opportunity to pursue these ideas a bit more.

While spending my working hours considering how ants, rats, honeybees, and other creatures find their way around, I was regularly confronted at other times with all sorts of navigational problems myself. There was the hilarious occasion when Janellen Huttenlocher and I set out to find a cup of tea in the Villa Jaffé's basement kitchen and found ourselves not only lost but with Janellen trapped behind a locked door. And of setting out a little too late for a memorable performance of *La Traviata* at the Deutsche Oper, emerging from the Bismarckstraße underground, and heading off in exactly the wrong direction, disorientation and the unhelpfulness of landmarks in symmetrical environments being one of the topics the spatial group had been discussing. And there is no better evidence of error in the human sense of direction than getting so carried away with the pleasure of biking in the Grunewald that what seems to be the path back to the S-Bahn station turns out to be a trail emerging from the forest 5 km down the road toward Potsdam.

Quite apart from all the care and attention to every detail that the staff of the Wissenschaftskolleg lavishes on Fellows, I cannot imagine a more ideal setting. To be located where a walk in the Grunewald and an evening at the opera are both equally possible (and frequently indulged in) is truly paradise. Fondly remembered too will be Stefan Litwin's musical evenings, exploring the streets, museums, and restaurants of Berlin, lunches and

Thursday dinners, the walk to the *Hauptgebäude*, the extended family in the Villa Walther (thanks especially to John, Huttenlochers, and Curnoe-Chengs), and waking up to the sound of the ducks quacking happily when the ice finally left the lake.