Researching the Teaching of Drawing

By The Drawing Lab at NSCAD University
Founded in 2005

as a collaboration of scholars from
NSCAD and Dalhousie Universities

Edited by
Raymond M. Klein

Series in Education

Vernon Press

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In the rest of the world:
Vernon Press
C/Sancti Espiritu 17,
Malaga, 29006
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Series in Education

Library of Congress Control Number: 2022933661

ISBN: 978-1-62273-946-2

Also available:
978-1-64889-423-7 [Hardback, Black&White]

Cover design by Vernon Press.
The scenes on the cover were created by Bryan Mayccock, photographed by Jack Wong and drawn by one of our participants, Celeste Cares.

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Acknowledgments

The Drawing Lab at NSCAD University was established in 2005 by a 3-year grant from the Social Sciences and Humanities Research Council of Canada (SSHRC). Despite sporadic funding, we have been in more or less continuous operation since then. We are grateful to the community of reviewers recruited by SSHRC to evaluate our proposals and to the administration at NSCAD University (particularly Kenneth Honeychurch who was helpful during our early years) for providing us with laboratory space and institutional support. We also appreciate the time and energy of the staff and reviewers at the Saint Mary's Research Ethics Board, who reviewed and eventually approved all of our research protocols.

Our work would not have been possible without the following individuals who have assisted us in various way (conducting experiments, drafting ethics protocols, advising, coding, drawing, rating, transcribing etc.): Carrie Allison,Victoria Bass-Parcher, Carly Belford, Patrick Burgomaster, Amanda Burk, Rob Cameron, Lucie Chan, Christopher Dean, Patti Devlin, Thomas Elliot, Tim Fedak, Michael Fernandez, Suzanne Funnell, Simon Gadbois, Amelia Hartin, Sara Hartland-Rowe, Sarah Holt, Austin Hurst, Daniel Hutchinson, Jolanta Lapiak, Alex Livingston, Geniva Liu, Julie Longard, Barbara Lounder, Gillian Maycock, Marilyn McAvoy, Ian McKinnon, Bryanne Morris, Jonathan Mulle, Sheila Provazza, Patrick Rapati, Janet Robertson, Caitlin Saltmarche, Jenny Shi, David B. Smith, Mara So, Lucy Sowerby, Julie Stanfield, Charlie Young, Susan Wood. We apologize if we have missed anyone.

Needless to say, we thank the numerous students and members of the community who, over the years, have agreed to participate in our research studies.

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Bryan Maycock was an undergraduate of the Bath Academy of Art, UK (1965) and MA graduate from NSCAD University, Canada (1983). Maycock has taught students from primary to post-secondary including 29 years at NSCAD University until retirement in 2013. For 39 years, with primary interest in teaching observational drawing, Maycock specialised in working with students who were transitioning into university level work. In 1998, Maycock and Klein first discussed the idea of collaborating on drawing research, but it was 2004 before a first study was piloted at which time the work of the NSCAD Drawing Lab began.

While he works in a variety of media, Maycock is primarily a painter and, since coming to Canada in 1969, he has had 18 solo exhibitions in public galleries and has had work included in juried and group exhibitions across Canada, Europe, Australia and China. For a complete record: bryanmaycock.com. Contact address: 5 Horizon Court, apt 718, Dartmouth, Canada, B3A 0C4. Email: bmaycock@nscad.ca

Mathew Reichertz, originally from Montreal, completed his BFA at Concordia University and his MFA at NSCAD (Nova Scotia College of Art and Design) University. Halifax, Nova Scotia, Canada. In 2005 Reichertz was the Eastern Canadian winner of the RBC Canadian Painting Competition and in 2006 was shortlisted for the Sobey Art Award. He has had numerous exhibitions nationally and his work can be found in a number of institutional collections including the Nova Scotia Art Bank, the Art Gallery of Nova Scotia and the Dalhousie Art Gallery. In 2006 he became a tenure track member of the Faculty at NSCAD University where he is now an Associate Professor. In 2009 he joined the team at the NSCAD Drawing Lab. Contact address: 2552 Gottingen St, Halifax, NS, Canada B3K 3C4. Email: mreichertz@nscad.ca

Jack Wong became involved at the NSCAD Drawing Lab, Halifax, Nova Scotia, Canada, as a student after participating as a research subject in various experiments, and eventually served as the manager of the lab from 2015 to 2018. With dual backgrounds in engineering (BASc 2008, University of British Columbia) and visual art (BFA 2014, NSCAD University), Wong was uniquely poised to both steward the technical research of the lab and convey its concerns to an art-oriented audience. Outside of contributing writing towards the lab's current publication, Wong conducts his own research and writing in contemporary art history: his paper *Remapping the Constellation of Walter Benjamin's Allegorical Method* is published in American, British and Canadian Studies, Vol 25, No. 1 (2015). Contact address: 7111 Churchill Drive, Halifax, NS, Canada, B3L 3H7. Email: jackytkw@gmail.com)

1. Prologue

Raymond M. Klein

The authors are an interdisciplinary team of art educators (primarily at the Nova Scotia College of Art and Design University and cognitive scientists from the Department of Psychology and Neuroscience at Dalhousie University. In 2005 two of us (Klein & Maycock) received funding from Canada's Social Sciences and Humanities Research Council that established the Drawing Lab at NSCAD University as an interdisciplinary and multi-institutional effort to bring the scientific method to bear upon drawing pedagogy. The Nova Scotia College of Art & Design, now NSCAD University, has a long tradition of training professional artists, crafts persons and designers and many of these have gone on to be leaders in their fields as practitioners and educators. Drawing, as a discipline in its own right and as means to enhance and inform sister disciplines, has always been taught at the college. NSCAD University, therefore, represented an ideal community within which to situate drawing-based research projects.

After a few years, we recognized that success of the Drawing Lab into the future would require us to recruit some younger colleagues. From NSCAD, Reichertz and from Dalhousie, Christie, joined us. In this book, *Researching Teaching Drawing*, we describe the carefully designed research that has so far been conducted at Drawing Lab. Wong, with both an engineering and fine arts background, was the manager of the lab during much of the research described here. Most recently Amanda Burke, an art educator at Brock University, and Tim Fedak, geology curator at the Nova Scotia Museum, have joined the lab.

It is noteworthy that the questions we pursue are typically generated by the experiences of the art educator members of our team while possible methods for answering these questions are typically offered by the team's scientists; the final choice of methodology is achieved by collaborative interaction. Almost all of our research has focussed on the accuracy of observational drawing, an emphasis that raises several questions.

Drawing can be viewed as both an art-form and a skill. One might ask, “Why has the Drawing Lab focussed on accuracy rather than creativity?”; and “Why have we focussed on observational rather than other forms of drawing?” The answer, which may not satisfy all readers, is straightforward: Our emphasis on the skill of drawing accurately from observation is rooted in the belief that such a skill is at the foundation of many of the tasks in which a drawer may engage. Of course, for this reason, the skill of drawing accurately from observation is regularly evaluated by drawing instructors. We are not alone in this emphasis. As Chamberlain and Wagemans (2016) note: “Accurate perception of the subject and of the drawing is at the heart of drawing proficiency” (p. 195). Importantly, some scientists (e.g. Ericsson, 1999) have cogently argued that expertise and skill are prerequisites for truly creative productivity and the prerequisite level of skill often requires decades of foundational work (Simonton, 1997). This doesn’t mean that creativity can’t be studied, but it does suggest that it would be difficult to study; particularly when the principal participants are students attending an art college.

Our first project was a comparison of expert drawers (NSCAD instructors) with novice drawing students as they progressed through their first year of training. Described in the book’s second (*Collaborating*) and penultimate (*Learning*) chapters, this longitudinal project was characterized by our combined use of eye monitoring and videography. This technology provided a detailed record of the looking and drawing behaviours of our participants which revealed several things. Among these, there was much more variability in the behaviour of the experts than we had imagined there might be. Although the work of the Drawing Lab began as an exploration of possible differences between experts and novices (see Kozbelt and Ostrofsky, 2018, for a recent and cogent analysis) partly because of this variability, our subsequent projects have been concerned primarily with the typical drawing student.

In Chapter 3 (*Lighting*) we explored the effect of the method of lighting (direct/diffuse) on the drawings and the drawing strategies of our participants and on the effect of directing the attention of drawers to the nature of the lighting. We conclude that "Drawing instructors who invest time and energy in carefully lighting a scene can be encouraged by the fact that, even though changes in lighting may sometimes result in only subtle differences in drawing strategies, having one's attention drawn to the effects of light on a scene does appear to translate into behaviors that are both practical and useful." (p. 40)

Instructors often suggest, with the impression that it will generate a better drawing, that their students describe a scene carefully before drawing it. In Chapter 4 (*Describing*) we explore whether, and if so how, providing such a description affects drawing accuracy. Whereas we found that describing isn't much better than simply waiting before drawing (perhaps because either waiting or describing allows the drawer to acquire a more useful representation of the scene than beginning to draw immediately) we also found that the accuracy of the drawings was positively correlated with the length of the descriptions. This finding supports the impression that was the inspiration for this project.

When drawing from observation, students often concentrate on details, to the detriment of overall composition and form. This leads some drawing teachers to have students squint to eliminate detail and colour information, thus making form, lighting and spatial relations more salient. The cognitive neuroscience of vision (see, e.g., Livingstone, 2014) suggests that this practice may be rooted in the fact that central and peripheral visual pathways are specialized for transmitting to the brain qualitatively different information. In Chapter 5 (*Masking and Filtering*) we describe how we applied two methods, masking and filtering, to explore this possibility. In one study art students drew from observation with only peripheral or only central vision of the scene. In a parallel study, aimed at the same visual pathways, different students drew the same scenes after spatial filtering was used to remove all of the high or low spatial frequencies from the scene.

As predicted we found that removing peripheral vision or all the low spatial frequencies had a more deleterious effect on the accuracy of drawings when compared to removing central vision or all the high spatial frequencies.

Traditional art education involving observational drawing has been slow to adopt new technologies. This is, in part, because traditional methods have a long history and are readily accessible. However, the fairly recent arrival of drawing tablet technology allows for a drawing experience that effectively mimics traditional technologies; consequently, the possibilities related to drawing instruction have expanded considerably. Moreover, because it is possible to store a sequence of drawing actions digitally, scripts written to play back the evolution of a drawing mark-by-mark can be used by drawing instructors to create demonstrations for their students. For students, such demonstrations and routines may be developed as a kind of independent feedback loop for their own drawings. By playing back a student's drawing, an instructor could, for instance, identify the exact part of a figure study where a mistake in proportion was made and then trace its consequences through the rest of the drawing. To explore the pedagogical utility of drawing tablet technology the Drawing Lab offered free tutoring sessions, using this technology, for members of the NSCAD community. In Chapter 6 (*Exploring*) we describe our findings from these tutoring sessions.

An observation made during these tutoring sessions (in the digital drawing tablet environment students seemed to use the eraser more frequently than in an analogue environment) provided the impetus for the experiment described in Chapter 7 (*Erasing*). Whereas this project began with a focus on erasing behaviour its design allowed for more general findings about the two drawing platforms. We not only confirmed that overall there was more frequent use of erasing in the tablet environment, this was true when erasing was used for correcting or for creating light. However, erasure for smudging was observed more frequently in the analogue environment. In this study, participants were given a choice of pencil or charcoal drawing tools and we found that charcoal was deleted more often in the analogue than in the digital environment. Despite these differences in tool use, we found no differences in drawing accuracy between the two drawing environments.

The Drawing Lab's emphasis on the accuracy of observational drawing, naturally raises the question, how does one generate a quantitatively analyzable measure of a drawing's representational accuracy? Our approach so far has been to ask individuals (either experts, such as drawing instructors, or novices (such as experimental participants) to rate the drawings when displayed with a photograph of the scene being drawn on a series of questions such as those used in Chapters 2, 3, 4, 6 and 8. In Chapter 8 (*Evaluating*) we explore the relative costs and benefits of using experts versus novices and propose a study that would compare getting ratings from a small number of experts, via crowdsourcing and using a specific form of artificial intelligence that relies upon machine learning.

Researching the teaching of drawing is a work in progress. This book describes what the Drawing Lab has done so far to explore the topic. Our work is ongoing; it excites us and our students. In the Epilogue (Chapter 10) the newest members of the Drawing Lab point to some of our ongoing and future projects. We hope that our efforts will be of interest to drawing educators, people who like to draw, and scholars who study the acquisition of skill in the world of art. And if the projects described here stimulate further research by such scholars, our efforts will have been aptly rewarded.

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2. Collaborating

Where to Begin? Eye-Movement When Drawing[1]

Bryan Maycock, Geniva Liu and Raymond M. Klein

Abstract

For over a century, drawing from observation, at least at the introductory level, has been integral to many secondary and most post-secondary art school programs in Europe and North America. Its place in such programs is understood to develop an ability to see and interpret on a flat surface the real, three-dimensional world; this skill, in turn, provides support to related mental processes such as memory, visualization, and imagination. Where an artist looks when drawing from observation may not be arbitrary and can be observed, quantified, and analyzed. Our interest in examining the first few minutes of the drawing process takes its lead from the novice's question, "Where should I begin?" Attempting to understand these first few minutes led to a collaborative study between art educators and cognitive-perceptual psychologists: the former interested in implications for practical pedagogy, the latter in applying expertise in eye movement and scientific methodology in service of a specific real-world question. The stated purpose of the study notwithstanding, contrasting histories and practices in art and science provided contexts for discussion beyond the collection and interpretation of data. This article seeks to report upon and further that discussion.

Keywords: drawing from observation, art education, experimental psychology, interdisciplinary collaboration

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[1] With minor modifications and with permission of the authors and the publisher this chapter is reproduced from: Maycock, B., Liu, G., & Klein, R. M. (2009). Where to begin? Eye-movement when drawing. *Journal of Research Practice*, 5(2), Article M3. A more detailed presentation of the methods and results can be found in chapter. 9 (*Learning*).

1. The Beginning

In 2005, colleagues from the Nova Scotia College of Art and Design (NSCAD) University and Dalhousie University undertook to combine their disparate experiences for the purpose of studying how students view and scan a scene when they are about to draw it from observation. As research and collaboration, the study promised to blur the boundaries between art and science, and to challenge practitioners in visual arts and perceptual psychology to work outside their respective comfort zones. For visual artists, the comfort zone entails posing open-ended questions, often working in ways that risk the failure of their materials, creating without recourse to imitation, using intuition as a deciding factor, etc. The comfort zone of a perceptual psychologist entails operational definitions, quantification, logic, and the application of conventional scientific methods to discover general underlying principles.

In *drawing now: between the lines of contemporary art*, the editors/curators recognize this challenge of collaboration, suggesting that "investigation might or might not benefit from a more scientific approach to understanding the cognitive nature of the artistic operation of drawing," but then proceed to the more provocative notion that "the drawing process provides exactly the ambiguous arena that might challenge scientific methodology" (Downs, Marshall, Sawdon, Selby, & Tormey, 2007, p. xx). While not the focus of this research, this second notion has, throughout the 4-year project, played a role in our conversations.

Research, in common practice, is a systematic process of inquiry in order to discover facts, generate and test theories, and examine applications of theories. This process is most readily recognized as integral both to science and commerce, and is invariably organized in a manner that anticipates replication. Its aims are defined, its methods are systematic, and its outcomes are reproducible. As in scientific research, art practice both probes, problem-solves and has the goal of discovery; therefore, art practice can be considered as research. But art research tends to be open-ended and is rarely, if ever, aimed at generating reproducible results. As Strosberg (2001) stated, “science, working towards collectively recognized and precise objectives, tries to remove ambiguities, which art accepts and even emphasizes as inevitable in the realm of subjective experience” (p. 13). While this can be considered an overstatement of the case, it reflects some truth in that scientists gravitate towards seeking general explanatory principles, whereas artists gravitate towards differentiation in individual experience.

Much is written about the cultural convergence of art, science, and technology (Wilson, 2002), but the notion of the artist as researcher is relatively new. NSCAD University, for example, published its first strategic research plan in 2003. Indeed, appropriation of the research mantle in art may have as much to do with politics, in particular the politics of funding, as it has to do with shared intellectual aspirations with scientists. But the two worlds do occasionally collaborate with mutual benefits; although, such collaboration can pose intellectual and practical challenges, some of which are discussed in this article.

There also exists a commonly accepted model for collaboration wherein individuals and/or organizations seek to blend experience, skills, and interests in order to arrive at an end that is useful and, often, original. In commercial endeavours, such division of thought and labor provides for efficiencies and, for the most part, scientific practice also assumes this model. In visual arts, such examples of collaboration also exist, from teamwork in Renaissance ateliers where artists, artisans, and their students divided tasks according to discipline and level of competence, to more contemporary activity such as that of performance artists Gilbert and George, for whom collaboration is the very essence of their work. Gilbert Proesch and George Passmore came to prominence in the late 1960s using themselves as raw material to make living sculpture. Since that time they have continued the collaboration in a variety of media.

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