
Artists and master-coders in the consensual domain

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CHI'20, April 25–30, 2020, Honolulu, HI, USA
ACM 978-1-4503-6819-3/20/04.
<https://doi.org/10.1145/3334480.XXXXXXX>

Abstract

This paper describes an art/technology collaboration through an iterative User-Centred Design project. In 2019, ANU post-graduate student Weidi Wang, from the Research School of Computer Science, was paired with artist and educator Dr Tony Curran from the ANU School of Art & Design to develop custom software that would assist Curran to produce new work. Wang and Curran developed collaborative approaches aligning with George Whale's concept of symmetrical collaborations and Stephen Jones's cultural systems approach to collaboration, drawing from the canon of hybrid-arts practices that emerged since the 1960s art and technology movements. The collaboration produced a new tool for digital drawing (<https://drawing-tool-project.firebaseioapp.com>) and unexpected forms of artistic experimentation. The resulting works produced by the software provide an opportunity to consider traditional collaborations as a form of *symmetrical* collaboration.

Author Keywords

user-centred design, master-coder, creative code, collaboration

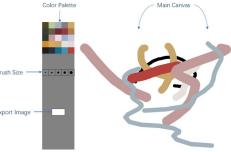


Figure 1: Phase 1 demo



Figure 2: Phase 2 demo

Introduction

The current boom in computer science enrolment [1] poses several challenges, including, finding and supervising “capstone” projects to challenge and interest dozens (or even hundreds) of final-year undergraduate or postgraduate students per semester. One promising solution to this problem is that instead of CS faculty setting the CS projects, the students are paired with professional artists as a support to the artist’s work using students’ computing skillsets. But how can we ensure that both CS students and artists gain from the experience? In this paper, we explore those questions by retrospectively examining a collaboration involving the authors: CS student Weidi Wang, artist Tony Curran and CS faculty member Ben Swift.

User-Centred Design

User-centred design [10] is a common problem-solving approach where the user is the central focus for the design process. User-centred design starts with understanding the user’s requirements [9] and ends with a solution tailored to the user’s unique expectations. Attention to the users’ needs helps build an understanding and empathy with the user that will focus design iterations [7]. Since the user and the developer may come from different domains and knowledge bases, involving the user in the project will help contribute practical or “folk knowledge” that the developers do not have [12].

In a specific artist-technologist collaboration context, it is sometimes argued that a computer expert should play a supporting role while working with artists [4], or that the work posed by the artist is beyond the technologist’s professional field, and the technologist should defer to the artist’s expertise [11]. This notion of “master technologist” assigns the computer expert to a subordinate role in relation to the

artist, with the latter credited with having the greater creative vision that shapes the resulting artwork.

Proposing the master-coder

Since the 1960s, artists have increasingly worked with digital technology while collaborations between artists and experts outside the arts has become more commonplace [3]. According to surveys, 90% of artists working with digital technology have worked with technicians in other fields [2]. Compared with artists having to turn themselves into “computer experts”, collaborating with computer experts can generate opportunities for more ambitious creative projects.

The idea of the master-coder comes from a traditional idea of an artist’s collaboration with a technical expert. The master technician (traditionally a craftsman such as a printmaker) owns the infrastructure, equipment and skills needed to execute a manufacturing process, and these skills are developed over the entire career of the so called “master”. American Master Printer Kenneth Tyler is an internationally celebrated example of the master craftsman as a collaborator [13]. Having worked with many different artists from the gold standard stable of Leo Castelli Gallery, Tyler has developed a reputation for co-producing ambitious works in collaboration with top 20th century American artists [8].

Whale views this traditional collaboration as different from his ideal of a symmetrical collaboration in which both artist and technician benefit. Implicit in Whale’s characterisation of the artist-master printer collaboration is an asymmetry in which the printer is the expert, positioned to realize the artist’s vision rather than to contribute their own creative or artistic vision. However, looking closely at Tyler Graphics reveals that Tyler’s input was substantial as someone who harboured immense experience working with some of the

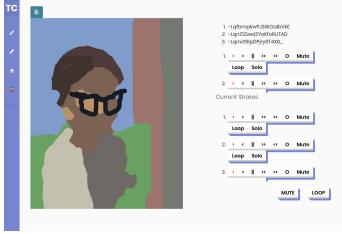


Figure 3: Phase 3

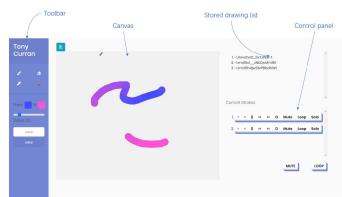


Figure 4: Phase 3

worlds most influential artists and gaining experience at solving artistic questions at immense scale. Furthermore, Tyler used his collaborations with artists as a means to test his workshop against the needs of artists and when artists outgrew the workshop or wanted to do something beyond Tyler's technical scope, the master was known to extend studio infrastructure, acquiring new printing presses, warehouses and inventing techniques to fulfill artists' growing ambitions [6].

Master-coder collaboration in COMP8755

When describing a collaboration that is symmetrical, Whale explains that both artist and technologist need to have expertise in their field and need to benefit equally from the collaborative relationship. Wang and Curran's collaboration was structured within the postgraduate capstone project course *COMP8755*. CS Masters student Weidi Wang was enrolled in the course, and was supervised by Dr Ben Swift. Dr Tony Curran's involvement was voluntary, at the invitation of Dr Swift and comprised a series of meetings over the course of Semester 2, 2019.

The problem to solve

Tony Curran's art practice involves smartphone/tablet apps and their touchscreen affordances for observational drawing. After an outline from Curran on his studio art practice—both previous work and current explorations—it was revealed that a particularly convoluted workflow employed by Curran could be streamlined by custom developed drawing software.

Using the Brushes app (<http://www.brushesapp.com>) since 2012, Curran has developed a practice of drawing from life, using the iPad, and then exporting the video playback of those drawings to excavate shapes and marks that can be post-produced into compositions for subsequent paint-

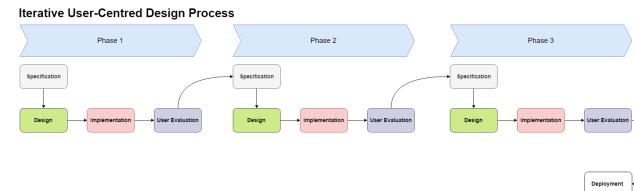


Figure 5: Iterative user-centred design process used in the project

ings. Curran's workflow was interrupted in 2015 by iOS updates which killed the Brushes app. Workarounds were time-consuming and unreliable, which significantly curtailed Curran's art practice.

The design brief negotiated between Wang and Curran was that (1) the project would be a drawing/digital painting application that would be compatible with iPad, whether as a native or browser-based application that responded to touch events; (2) the application would save every shape (mark) drawn by the artist, and each shape would be able to be individually selected, replayed and edited; (3) the data would be able to be exported in some way for subsequent use; and (4) Wang was invited to be playful with the system and invent conditions which might generate new forms of art.

Communication: feedback, common languages and patience
Following the standard COMP8755 project course process, Wang was responsible for selecting his research method and chose an iterative user-centred design model (Figure 5). Fortnightly meetings enabled Wang to demonstrate his development and invite Curran to test-run features and respond to them openly. Phase 1 included the first introductory meeting in which Wang watched and listened to the workflows of Curran and devised a timeline within the con-

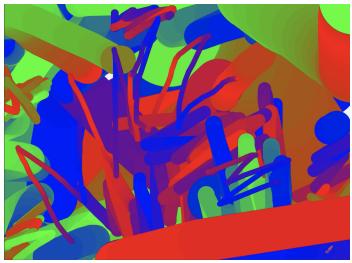


Figure 6: Tony Curran. Study for a Dynamic Attention Machine (detail), 2020



Figure 7: Tony Curran. Study for a Dynamic Attention Machine (detail), 2020

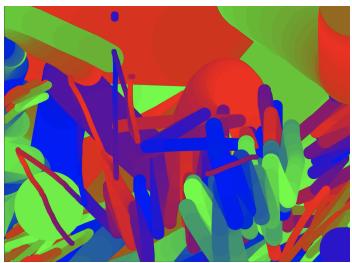


Figure 8: Tony Curran. Study for a Dynamic Attention Machine (detail), 2020

fines of the semester to assess the scope and milestones of a project. These concerns and goals were worked into a prototype that was demonstrated to Curran and evaluated through conversation, discussion and studio experimentation (Figure 1). Phase 2 involved applying these insights into a second prototype (Figure 2) and phase 3 was a final implementation and evaluation of the work and its capacities to be a useable tool that Curran would select in the studio (shown in Figures 3 and 4). The final drawing app is publicly available at <https://drawing-tool-project.firebaseioapp.com>, interested readers are invited to try it out.

Control buttons developed out of conversations about music player and DJ interfaces which used familiar and cross-cultural symbols to express their functions, building on the user's familiarity with stereo music controls. Looking through music editing and sequencer apps led to a shared sense of possible interfaces.

Collaboration: the consensual domain

Each iteration built towards the intended goal but began to exceed those goals by demonstrating new capacities. This emergence was attributed to a playful atmosphere described by Stephen Jones as a "consensual domain", in which two discreet autopoeitic systems find common reciprocal ground to become one autopoeitic system in collaboration [5]. Jones defines autopoesis as a state of self-organization, treating the artist as an autopoetic self-organizing "machine" and the technologist as a separate self-organizing machine, until they reach a "consensual domain" and the two separate autopoeitic agents become the one autopoeitic machine.

The autopoesis, or consensual domain of both artist and technologist emerged during phase 3, in which Wang developed the tool to satisfy Curran's studio aims—to record

the activity of drawn marks as data which could be played and replayed under new speeds and play orders, and also exported. By virtue of the systems architecture that Wang employed, however, an unanticipated feature was incorporated into the interface, which provoked Curran to develop entirely new kinds of artwork.

The consensual domain occurred outside of Curran's prescriptions and through Wang's independent exploration. Without Curran having indicated any interest in working with gradients, a brush type was included that would change colour between two selected colours in a gradient form. This was not something Curran had encountered in a drawing app before but it did align with another project of Curran's in which the colour space of red, green and blue (RGB) was employed as a symbol of digital vision. This tool allowed a novel exploration into this colour investigation that was not otherwise apparent to the artist (see Figures 6, 7 and 8).

The collaboration benefited from a shared goal but the greatest value derived from both collaborators straying from the goal but straying *together*. The most valuable outcome of the collaboration ended up being a by-product of a system that could not have been conceived but for the goal-oriented process being first followed and subsequently corrupted. Although the goal of the drawing app was to simplify Curran's studio workflow, the introduction of a very simple tool, surplus to Curran's workflow, amplified his artistic possibilities and produced forms of art that he would not have produced with any other available tool.

The consensual domain emerges (and surprises!) when both artist and master-coder are empowered to chase their ideas to see where they lead.

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Author Bios

Tony Curran

Tony Curran is an Australian artist and sessional academic in painting, drawing, art history, theory and computer science. His research investigates the relationship between the programmatic forms of art and illusions of the spontaneous. Curran graduated with a PhD in Fine Art from Charles Sturt University in 2015 and has exhibited in Sydney, Melbourne and Canberra in solo and group exhibitions.

Curran has produced artworks with assistance from the Australia Council, The British Council, ArtsACT, the National Portrait Gallery in Australia and is represented in public collections in Australia including Artbank, Wagga Wagga Art Gallery, The Museum of the Riverina and Charles Sturt University.

Weidi Wang

Weidi Wang is a recent graduate of the ANU Master of Computing degree from the College of Engineering and Computer Science. He has a background in both design and code and a focus in blending design-based thinking with programming to produce creative outcomes.

In 2015, Wang was involved in the re-design, development, and release of a mobile application user-interface for Saab Group. Weidi lives and works in Canberra, Australia.

Ben Swift

Ben is a multidisciplinary researcher and Senior Lecturer in the Research School of Computer Science at the Australian National University. He's interested in computational art & music, human-computer interaction, AI/machine learning (particularly in pursuit of creative ends) and the intersection of code, creativity and culture as those boundaries dissolve in the modern world. He's the director of the code/creativity/culture studio within the ANU Research School of Computer Science.

He is a livecoder, and is the vice president of the Australasian Computer Music Association (ACMA). Ben is one of the inaugural ANU Reimagine Fellows, part of a \$300m+ investment from the ANU charged with re-thinking (and re-doing) what it is to be a computer scientist in the 21st century.