Contingent Dreams

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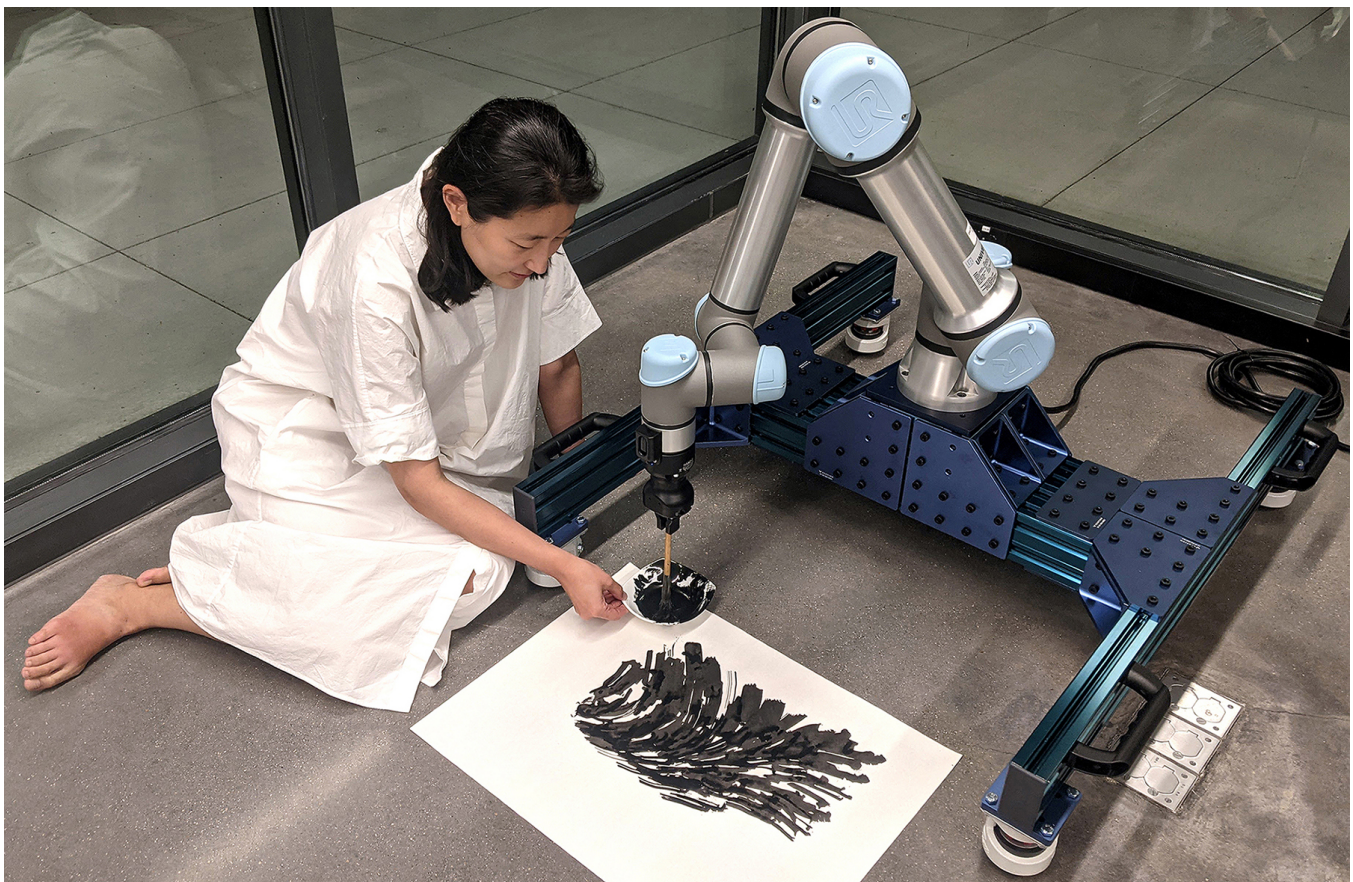Baton Rouge, Louisiana, USA
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Figure 1: Collaborative drawing with a robot

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ABSTRACT

Robots are usually considered tools, devoid of agency and thus creativity. This robotic art performance – Contingent Dreams – explores the generative role of the human artist, algorithm, machine, medium, and environment in art making. In this performance a robot, programmed and assisted by the artist, draws an algorithmic composition in ink. The drawings – derived from recordings of everyday sounds – represent the noise of cities in Louisiana, rendering

an ephemeral aspect of the city in unruly mechanical brushstrokes. The drawings come to life as the precise paths of the algorithm are translated into bold, enigmatic brush strokes and anomalous drops of ink. The drawings emerge not just from the imagination of the artist, but also from the sounds of the city, the code of the algorithm, the mechanical motion of the robot, the physics of the brush bristles and ink, and the texture and absorbency of the paper. Each aspect of the performance adds meaningful contingency to the process, resulting in drawings that evoke, as accidents accumulate into meaning, the multiplicity of urban experience.

CCS CONCEPTS

• **Applied computing → Media arts**; • **Human-centered computing → Collaborative interaction**.

KEYWORDS

Arts, collaboration, creativity, robotics

1 INTRODUCTION

Contingency is the freedom of uncertainty, an openness to possibility. Jazz musicians, for example, leverage contingency creatively in their performances, with calls and responses, riffs, re-purposed mistakes, quotations, and recursion. Now jazz playing, sociable robots have been developed to add meaningful, non-human contingency to performances [9] and "produce new, unpredictable, and 'interesting' jazz music" [2]. In robotic art such as Tinguely's Méta-Matics [8], Everyware's Bitscape [5], and Deussen's e-David [7], contingency is often used to highlight non-human agency and collective creativity. The harmonic motions of Tinguely's Méta-Matic drawing machines, for example, are disturbed by the machines' imperfections, introducing contingency and giving the resulting drawings a gestural quality. Drawing on theorists such as Deleuze and Latour, Bennett argues that things have power, that agency is distributed and arises from contingent interactions between human and non-human forces [1]. To explore the creative agency of humans and non-humans – of algorithms, machines, media, and the environment – we created Contingent Dreams, a generative art performance with a collaborative robot.

2 PROCESS

In Contingent Dreams, a collaborative robot draws an algorithmic composition derived from audio recordings, rendering the sounds of the city in sumi-e ink. The artist not only programs the algorithm, but also helps the robot, wetting the brush with ink. At first glance, this work may seem rigid and predetermined for the robot follows a prescribed set of rules, executing the design automatically with mechanical precision. The data, the performance, and resulting drawings, however, are dynamic and full of surprises. The audio, recorded while walking the streets of the city, captures the cacophony of everyday life. The drawing medium, ink, is fluid. The

Figure 2: Robotic drawing as performance

controlled, mechanical motion of the robot is juxtaposed by the fluid spontaneity of the ink, the dance of the brush's horsehair bristles over mulberry paper, and the energy of the drawings. The drawings are the result of interactions between the artist, algorithm, machine, medium, and environment united in performance. These drawings are not just an expression of the artist's vision, but rather of the creative contingency of the fluid dynamics of the ink, the paper's resistance and absorption, the play of the brush's drying bristles, the lively noise of the city, the algorithm's translation of sound to space, and the artist's reactions. The drawing technique – unlike e-David's [6] – is intentionally naive, for the lack of finesse in the brushstrokes, of control over the bristles and ink, accentuates this creative contingency and gives the drawings their expressive power.

3 DISCUSSION

Contingent Dreams explores distributed artistic agency. It is about the transformation of the artist's original intention through the

Figure 3: Contingent Dreams

collective agency of the performance. In Contingent Dreams artistic intention is continually refigured through performance mediated by machine, material, medium, sound, and environment. The drawing emerges as audio data is translated into an algorithmic composition, the composition is plotted as series of robotic joint movements, and the robotic brush strokes – with drops, splatters, and streaks of ink from wild brush hairs – create new forms (Fig. 2). Meaning emerges from the accidental and unexpected. As the brushstrokes converge and the ink accumulates (Fig. 3), a space emerges suggesting Deleuze's fold [3], a site of perpetual becoming – here, a semiotic convergence of human, machine, material, and environment. The regular spacing of initial brush strokes connotes control, while the dissolution of the pattern evokes chaos, creating an aesthetic tension that calls attention to distributed, polyvalent agency.

The accumulation of accidents, from the cacophony of noise to the layering of ink, evokes the myriad of ways the city acts and is experienced.

4 CONCLUSION

This work calls attention to the role of the non-human in art, craft, and design. The material properties of non-human things define artistic media. A medium's role in art is to set limits – functional limits of material and technology – that can be creatively transgressed [4]. In this sense paper and ink are actants, playing an active role in the creative process by restraining intention, while introducing contingency through useful accidents. Data, algorithms, and robots can also play active roles in the creation of art and construction of meaning. In this work the transcription of sound into ink evokes the dynamism and multiplicity of urban experience. Contingent Dreams aims to awaken us to this power of things.

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