AI through the Technologist's Eye

by Luba Elliott

(The essay contains two pictures by Klingemann:" Butcher's Son (2017)" and "Decontamination Chamber (2017.)

The semi-coherent shapes, blurred colors and disfigured face of Butcher's Son (2017) misguide many an untrained eye in search of the familiar. Francis Bacon seems to weigh heavily here, but the artist's scrapbook bears not a single Bacon, Magritte or Picasso, nor the canvas a trace of paint. Entering Mario Klingemann's studio, one encounters a collection of tools set out neatly for an artist living and breathing the Age of Machine Intelligence — computer humming tirelessly from creation, algorithms hungrily improving themselves on the artist's data of choice: today, old yearbook portraits of men; tomorrow, French singers. Meanwhile, the artist smokes a pipe at his desk, impatiently awaiting the arrival of further images of confused figures, uncanny faces and latent monsters.

Klingemann is known in the machine-learning and creative-coding community as one of the artists pioneering creative experimentation with neural networks, stretching the limits of their capacities and exposing their boundaries. Since he began programming thirty years ago, he has sought to develop algorithms to be autonomously creative, devoting his practice to code, data and the digital realm.

Over the past couple of years, advances in deep learning, computer vision and reinforcement learning techniques have brought the possibility of creative machines ever closer: Google's DeepDream showed machines hallucinating pagodas at the mere sight of a human; style-transfer algorithms masterfully applied Van Gogh's style to our holiday snapshots; and text generation systems added an illogically philosophical flavor to our short films, theater and improv comedy. The new wave of AI-first artists has arrived.

Klingemann's experimentation with machine learning has been preoccupied with faces, bodies and identities ever since the GAN (generative adversarial network) stumbled into existence. Developed by Google Brain researcher Ian Goodfellow in 2014, this approach to digital problem-solving has given rise to an aesthetic of odd anatomies, uncanny faces and mismatched edges, courting fascination from the technology community for its potential to produce higher quality images. GANs work by having two neural networks — one generating images, the other discerning those that appear real from those that appear fake. The technical community's obsession has brought media interest as well as experimentation from the artistic community, while a number of AI researchers and creative coders consider GAN-built work to be an entirely new art movement.

What attracted Klingemann to GANs was their ability to "generate surprise and serendipity; […] whilst you can train them towards performing a certain trick, they still seem to have their own will and do not always follow your instructions by the letter." The latest GAN models can be trained with relative ease, enabling him to test out a plethora of different visual ideas, with those yielding surprising results often serving as starting points for further projects. The artist sees similarities with traditional painting approaches: "You could compare it with a painting you start but leave unfinished only to pick it up a few weeks later, overpaint it, but maybe leave some elements that were good." He has also recently addressed comparisons with photography:

A photographer goes out into the world and frames good spots. I go inside these neural networks, which are like their own multidimensional worlds, and say, "Tell me how it looks at this coordinate, now how about over here?"

To complete his "Pose-to-Picture" (2017) series, Klingemann developed his own neural network model based on existing research on GANs and human pose estimation. This model was then trained on a dataset consisting of pairs of photos and stick figures. When asked what inspires the work, he

explains the meticulous logic of his process as if walking me through a flow chart — changing course as soon as he hits a roadblock. Uninterested in traditional techniques of painting and drawing by hand, Klingemann's strength lies in augmenting and transforming existing images. Interesting source material is imperative, yet Klingemann is uncomfortable with found imagery, citing the feeling of "piggybacking on something that is already good [such that] the results do not feel like mine." Taking his own pictures is not always attractive either, due to the difficulty of escaping the aesthetics of conventional photography to produce more abstract visuals. Neural networks provide a solution, producing images that have both realistic and abstract characteristics.

In this scenario, it is the human form that becomes the natural subject matter for the artist. The output of a poorly trained neural network bears a close resemblance to abstract art's less defined forms, edges and textures. A realistic portrayal of the human form thus poses a challenge to this technology: it is much harder to produce convincing, high-quality results from a neural network, particularly when judged by humans — experts in recognizing members of their own species. Presently caught between realism and abstraction, neural networks add a different perspective to the figurative tradition, revealing the human form in various degrees of contortion, with facial features dissolving gradually into abstraction — melting clocks for the Information Age.

The artworks Klingemann creates are based on large datasets of images, frequently made available by technology companies, as well as museums and other institutions, or scraped together from social media. For the "Pose-to-Picture" series, he harvested primarily pornographic photos from Tumblr because they provided him with full-figure imagery to facilitate an understanding of human poses. As pairs of photos and stick figures, this dataset was then fed into the neural network model to produce images on demand: Not happy with the picture? Generate another. Notice that all the images generated have similar figurative errors? Tweak the parameters inside the neural network. The initial results are almost like preliminary sketches; the works may be rough, but as the neural network learns and the artist tweaks, the forms' elegance increases. Indeed, his role is not unlike that of a curator:

The problem with any generative approach is that you can quickly get hundreds or thousands of images in a short time. Depending on the nature of the model you use, many of them can look very similar, and on the other hand some results might be very rare. I built a tool that allows [one] to browse through the results very quickly by using the classic "Tinder" swipe-left/swipe-right approach. This tool allows me to go through a few thousand images in an hour.

Mario Klingemann has painstakingly optimized the process of creating art, from generating variations to selecting those that best match one's taste. Yet one test still remains for him to pass: Will somebody write him and the GANs into the history of art? This, it seems, is the one thing out of AI control.

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