idea journal

co-constructing body-environments

vol. 17, no. 02

2020

the journal of IDEA: the interior design +
interior architecture educators' association

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the journal of IDEA: the interior design + interior architecture educators' association

about

IDEA (Interior Design/Interior Architecture Educators' Association) was formed in 1996 for the advancement and advocacy of education by encouraging and supporting excellence in interior design/interior architecture education and research within Australasia.

www.idea-edu.com

The objectives of IDEA are:

1. Objects

3.1 The general object of IDEA is the advancement of education by:

(a) encouraging and supporting excellence in interior design/interior architecture/spatial design education and research globally and with specific focus on Oceania; and

(b) being an authority on, and advocate for, interior design/interior architecture/spatial design education and research.

3.2 The specific objects of IDEA are:

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(b) to support the rich diversity of individual programs within the higher education sector;

(c) to create collaboration between programs in the higher education sector;

(d) to foster an attitude of lifelong learning;

(e) to encourage staff and student exchange between programs;

(f) to provide recognition for excellence in the advancement of interior design/interior architecture/spatial design education; and

(g to foster, publish and disseminate peer reviewed interior design/interior architecture/spatial design research.

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co-constructing body-environments: provocation

Presenters at *Body of Knowledge: Art and Embodied Cognition Conference* (*BoK2019* hosted by Deakin University, Melbourne, June 2019) are invited to submit contributions to a special issue of idea journal "Co-Constructing Body-Environments" to be published in December 2020. The aim of the special issue is to extend the current discussions of art as a process of social cognition and to address the gap between descriptions of embodied cognition and the co-construction of lived experience.

We ask for papers, developed from the presentations delivered at the conference, that focus on interdisciplinary connections and on findings arising from intersections across research practices that involve art and theories of cognition. In particular, papers should emphasize how spatial art and design research approaches have enabled the articulation of a complex understanding of environments, spaces and experiences. This could involve the spatial distribution of cultural, organisational and conceptual structures and relationships, as well as the surrounding design features.

Contributions may address the questions raised at the conference and explore:

+ How do art and spatial practices increase the potential for knowledge transfer and celebrate diverse forms of embodied expertise?
+ How the examination of cultures of practice, Indigenous knowledges and cultural practices offer perspectives on inclusion, diversity, neurodiversity, disability and social justice issues?
+ How the art and spatial practices may contribute to research perspectives from contemporary cognitive neuroscience and the philosophy of mind?
+ The dynamic between an organism and its surroundings for example: How does art and design shift the way knowledge and thinking processes are acquired, extended and distributed?
+ How art and design practices demonstrate the ways different forms of acquiring and producing knowledge intersect?

These and other initial provocations for the conference can be found on the conference web-site: https://blogs.deakin.edu.au/bok2019/cfp/.

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Russell Tytler
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in this issue

introduction: unknowingly, a threshold-crossing movement

Julieanna Preston
Executive Editor
idea journal

It is in this special issue that the editorial board holds true to our promise to expand the horizons and readership of *idea journal* while reaching out to associated and adjacent art, design and performance practices and drawing connections to seemingly distant disciplines. The articles in this issue have provenance in a 2019 conference event, Bodies of Knowledge (BOK), which was guided by a similar interdisciplinary ethos. With an emphasis on cultures of practice and communities of practitioners that offer perspectives on inclusion, diversity/neurodiversity and disability, this conference, and this subsequent journal issue, aim to increase knowledge transfer between diverse forms of embodied expertise, in particular, between neuroscience and enactive theories of cognition.

This brief description suggests that there are shared issues, subjects and activities that have the potential of generating new understanding in cross-, inter- and trans-disciplinary affiliations and collaborations. My experience in these modes of inquiry points to the importance of identifying what is shared and what is not amongst vocabulary, concepts, pedagogies and methods. Holding these confluences and diverges without resorting to strict definition, competition or judgement of right and wrong often affords greater understanding and empathy amongst individuals to shape a collective that is diverse in its outlooks, and hopefully, curious as to what it generates together because of that diversity.

cite as:
Preston, Julieanna. 'Introduction: Unknowingly, a threshold-crossing movement,' *idea journal* 17, no. 02 (2020): 08 – 12, https://doi.org/10.37113/ij.v17i02.412.

The breadth of the knowledge bases represented within this issue necessitated that the peer reviewer list expanded once again like the previous issue. It was in the process of identifying reviewers with appropriate expertise that the various synapses between scholarly and artistic practices became evident. It is these synapses that shape sturdy bridges between the journal's existing readership, which is predominantly academics and students in interior design, interior architecture, spatial design and architecture, and the wide range of independent scholars and practitioners, academics, and students attracted to BOK's thematic call for papers, performative lectures and exhibitions. At the risk of being reductive to the complexity and nuances in the research to follow, I suggest that the following terms and concerns are central to this issue, aptly inferred by its title, 'Co-Constructing Body-Environments': spatiality; subjectivity; phenomenology; processual and procedural practice; artistic research; critical reflection; body: experience. All of these are frequent to research and practice specific to interiors. In this issue, however, we find how these terms and concerns are situated and employed in other fields, in other ways and for other purposes.

This is healthy exercise. To stretch one's reach, literally and metaphorically is to travel the distance between the me and the you, to be willingly open to what might eventuate. Imagine shaking the hand of a stranger—a somatic experience known to register peaceful intent, respect, courage, warmth, pressure, humour, nervous energy, and so much more. This threshold-crossing movement is embodied and spatial; it draws on a multitude of small yet complex communication sparks well before verbal impulses ensue. This significant bodily gesture sets the tone for what might or could happen. Based on my understanding of the research presented in 'Co-Constructing Body-Environments,' I propose that this is a procedure in the Gins and Arakawa sense that integrates theory and practice as a hypothesis for 'questioning all possible ways to observe the body-environment in order to transform it.'[01] I call this as *unknowingly*—a process that takes the risk of not knowing, not being able to predict or predetermine, something akin to the spectrum of 'throwing caution to the wind' and 'sailing close to

the wind'. My use of the word 'unknowingly' embraces intuition where direct access to unconscious knowledge and pattern-recognition, unconscious cognition, inner sensing and insight have the ability to understand something without any need for conscious reasoning. Instinct. The word *unknowingly* also affords me to invoke the 'unknowing' element of this interaction—to not know, to not be aware of, to not have all the information (as if that was possible)— an acknowledgement of human humility. I borrow and adapt this facet of unknowingly from twentieth-century British writer Alan Watts:

> This I don't know, is the same thing as, I love. I let go. I don't try to force or control. It's the same thing as humility. If you think that you understand Brahman, you do not understand. And you have yet to be instructed further. If you know that you do not understand, then you truly understand.[02]

Unknowingly also allows me to reference 'un' as a tactic of learning that suspends the engrained additive model of learning. Though I could refer to many other scholarly sources to fuel this concept, here I am indebted to Canadian author Scott H. Young's pithy advice on how to un-learn:

> This is the view that what we think we know about the world is a veneer of sense-making atop a much deeper strangeness. The things we think we know, we often don't. The ideas, philosophies and truths that guide our lives may be convenient approximations, but often the more accurate picture is a lot stranger and more interesting.[03]

In his encouragement to unlearn—dive into strangeness, sacrifice certainty, boldly expose oneself to randomness, mental discomfort, instability, to radically rethink that place/ your place/ our place, suspend aversions to mystery—Young's examples from science remind us that:

Subatomic particles aren't billiard balls, but strange, complex-valued wavefunctions. Bodies aren't vital fluids and animating impulses, but trillions of cells, each more complex than any machine humans have invented. Minds aren't unified loci of consciousness, but the process of countless synapses firing in incredible patterns.[04]

Figure 01:
Meeting the horizon; A still image from Shore Variations, a 2018 film by Claudia Kappenberg that reimagines *Waning*, a 2016 live art performance by Julieanna Preston. https://vimeo.com/user11308386.

In like manner to the *BOK2019* conference which was staged as a temporally infused knowledge-transfer event across several days, venues, geographies and disciplines, I too, ingested the materials submitted for this issue in this spirit of unknowingly. The process was creative, critical, intuitive, generative and reflective—all those buzz words of contemporary research—yet charged with substantial respect and curiosity for whatever unfolded, even if it went against the grain of what I had learned previously. For artists, designers, architects, musicians, and performers reading this journal issue, especially academics and students, this territory of inquiry may feel familiar to the creative experience and the increasing demands (and desires) to account for how one knows what one knows in the institutional setting. 'Explain yourself,' as the review or assessment criteria often states. If you are faced having to annotate your creative practice or to critically reflect on aspects that are so embedded in your making that you are unaware of them, I encourage you to look amongst the pages of this journal issue for examples of how others have grappled with that task such that the process is a space of coming to unknow and know, unknowingly.

There are a few people I would like to acknowledge before you read further. First, huge gratitude to the generosity of the peer reviewers, for the time and creative energy of guest editors Jondi Keane, Rea Dennis and Meghan Kelly (who have made the process so enjoyable and professional), for the expertise of the journal's copy editor Christina Houen and Graphic Designer Jo Bailey, and to AADR for helping to expand the journal's horizons.

Okay, readers, shake hands, consider yourself introduced, welcome into the *idea journal* house, and let's share a very scrumptious meal.

acknowledgements

I am forever grateful for what life in Aotearoa/ New Zealand brings. With roots stretching across the oceans to North America, Sweden, Wales and Croatia, I make my home between Kāpiti Island and the Tararua Ranges, and in Te Whanganui-A-Tara/ Wellington. I acknowledge the privilege that comes with being educated, employed, female and Pākehā, and the prejudices and injustices that colonialism has and continues to weigh on this land and its indigenous people. I am committed to on-going learning and practicing of Kaupapa Māori.

notes

01 Jondi Keane, 'An Arakawa and Gins Experimental Teaching Space; A Feasibilty Study,' *INFLeXions* 6 (2012), accessed 29 October 2020, http://www.inflexions.org/n6_keane.html.

02 Alan Watts, *Creating Who You Are* (Video) (n.d.), accessed 29 October 2020, https://vimeo.com/76888920.

03 Scott H. Young, 'The Art of Unlearning' (2018), accessed 29 October 2020, https://www.scotthyoung.com/blog/2018/04/12/the-art-of-unlearning/.

04 Young, 'The Art of Unlearning.'

hidden worlds: missing histories affecting our digital future

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abstract

This art project examines non-binary and transgender identity through training machines to generate art based on Greek and Roman statuary. The statuary is binary in nature and appeals to the concept of pinnacles of masculinity and femininity but what of those of us who fall between, what of transgender bodies, gender non-conforming and non-binary bodies and intersex bodies?

Image recognition algorithms have a difficult time classifying people who fall outside the binary, those who don't pass as cisgender and those who present in neutral or subversive ways. As image recognition becomes more prevalent, we need to have a past and a future for everyone who doesn't fit neatly into one of the only two boxes on offer. We need to open up the categories, allow people to self-identify or to scrap the concept of gendering people mechanically all together.

As a spatial installation, *Hidden Worlds* also explores the embodiment of interactive augmented reality bodies in the space between physical and digital worlds. I have worked with a classifier and some deliberately abstract figure works, generated by machine, to explore where gender is assigned in the process and what it looks like when you aren't neatly classified, and the disconnect that is felt when misgendered. The generated captions have flipped around gender and as the figure resolves and each section is submitted to the narrative writer you see a different set of pronouns, a disconnection between what you see and what you hear. I will explore the assumptions we make about classical art; the way it can inform how we represent gender minorities going forward and how art can illustrate the gaps that exist in the training of these important machine learning systems.

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keywords:
machine learning, artificial intelligence (AI), augmented reality (AR), sculpture, gender

Figure 01:
The various stages of the work as it is experienced by viewers, the print, the app overlay and an installation view of the work positioned on a plinth with the artificial reality sculpture hovering above it.
J Rosenbaum, 2018.

development

The start of *Hidden Worlds*, as with any work involving machine learning, is the curation of the dataset, a collection of data that comprise the knowledge and experience that the algorithm will draw upon. In this case, I collected images of Greek and Roman statuary scraped from Google. Classical statuary is the perfect source for images that are instantly recognizable and often considered by viewers to be perfect images of humanity, pinnacles of masculinity and femininity. There is also a wealth of imagery readily available making them ideal training subjects. Algorithms require a lot of data to perfect their understanding and the variations of pose and structure available while limiting the colour palette and subject make for an interesting training set of images.

After curating the collection, I cropped the images, and doubled my collection by flipping them horizontally in a batch to create 'new' images from the old ones, a new perspective on the works for the machine to take in.

After the collection and curation stage, it was time to train the algorithm. The generation of new images based on the knowledge I gave it in the form of the dataset. Generative Adversarial Networks (GANs) create images by being pitted against each other in a cycle of creation and critique. An image is created by one neural network based on the dataset. Another neural network critiques the image based on what it sees in the dataset and either passes or fails the work. Both Algorithms learn from each other and their mistakes and as they improve at understanding the core content, the images improve as well. The cycle of creation and learning, the 'min-max game' used to create new images is documented in the original *Generative Adversarial Networks* paper.[01]

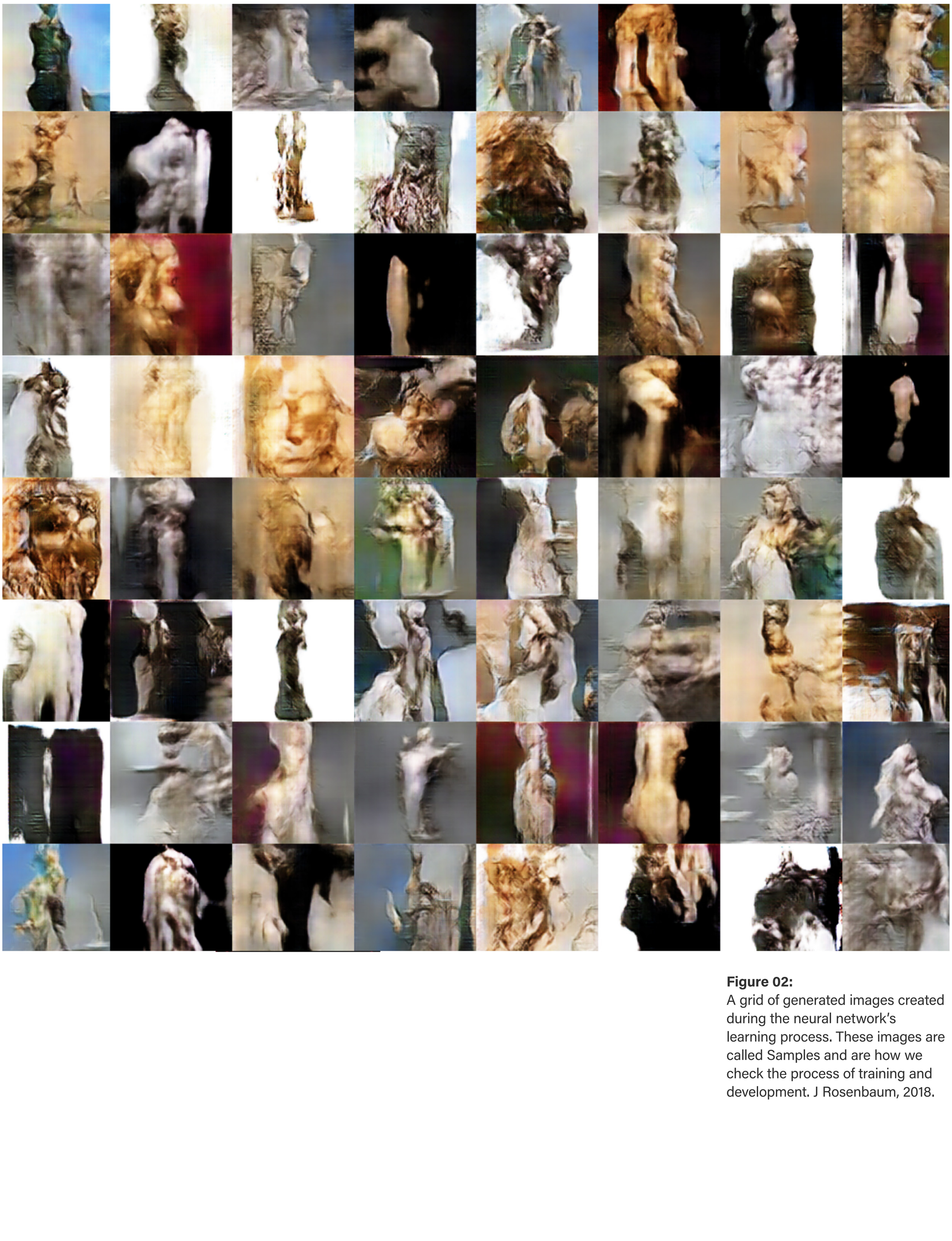

Figure 02:
A grid of generated images created during the neural network's learning process. These images are called Samples and are how we check the process of training and development. J Rosenbaum, 2018.

The specific GAN I am using is a Deep Convolutional Generative Adversarial Network as described in the paper *Unsupervised Representation Learning with Deep Convolutional Generative Adversarial Networks,*[02] an early GAN with consistently interesting results that is well suited to a small dataset such as the one I am working with. The results are shown to the operator as sample images produced during training and as numbers which can express the learning loss of the generator and the discriminator. As an artist, however, I find I pay little attention to the numbers and more attention to the evolution of the images and the samples produced as the machine learns. I am often less interested in the final results of training and more interested in the process of learning and seeing and developing. The process of creation and learning to create. The images are undefined at first but gain definition and resolve as the neural network learns and grows.

The process of curating the individual pieces that stand out is constant through the training process, as some of the most successful images come from the early training stages. It is up to me, as the artist, to feel which images I can work with and which ones will communicate the best. In machine learning this is called 'cherry picking' and is usually to select the best examples, but in this case I am not after the most realistic examples or the best ones that represent the dataset, but the results that speak to me, that feel like something that can be explored further and worked with in a collaborative way with my machine and processes.

The images can be produced in a grid or in single format. In this case I felt like I had more options and flexibility with the grid. At sixty-four images at a time, I had a great many images to choose from and curate. Much of creating art with Artificial Intelligence is curation, curating the dataset, curating the results, learning from the results to work in concert with them and draw upon their potential. A world exists inside the images waiting to be discovered. With a small dataset it is often like looking for images in clouds, the works are abstract and curious in nature. It takes an artist's eye to tease out the images from the thousands produced that say something. It is easy to become overwhelmed with the massive selection of work, and I find myself slipping into a trance like state as I sift through all the works looking for the nuggets of gold, the pieces that speak to me. I take those images and work with them to create a drawing of what I see, clarifying the results. I look for images that have a solidity, a sense of a statue to them, some materiality of stone or some ambiguous gendering in the attributes. I found myself hoping for bodies missing limbs, reflecting the amount of broken statuary, and figures blending gender characteristics. I wanted to create new, un-idealised sculptures for those of us who never got to see ourselves realised as gods.

Figure 03:
A selection of images that were cropped out of their grids to work with through drawings, 3D modelling and captioning. They were all interesting to work with, but none ended up as part of the final five works that were ultimately developed. J Rosenbaum, 2018.

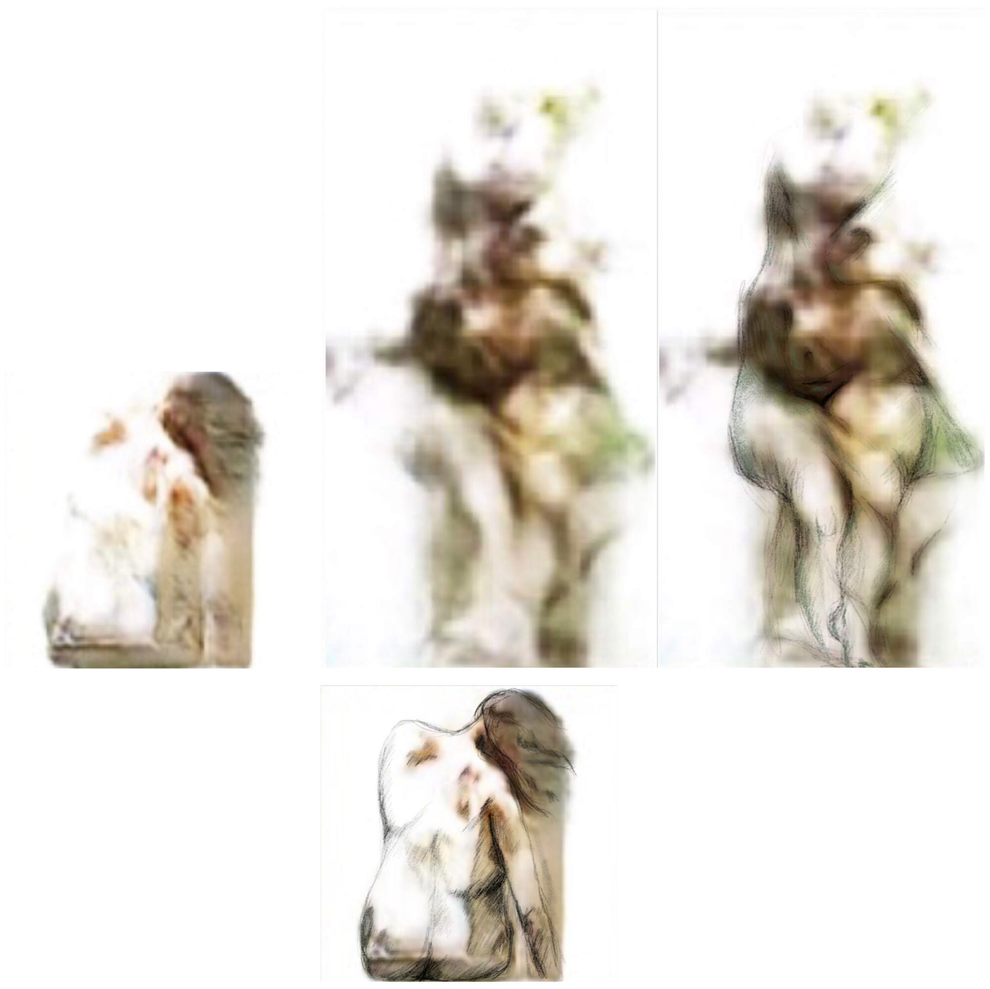

Figure 04:
Two images created by the neural network and two drawings overlaid showing what I see in the image the neural network produced and how I would develop the work.
J Rosenbaum, 2018.

Generative Adversarial Networks do most of their work in an area called latent space. The black box area of learning where the AI works with the raw data and compares its similarities and differences. The output of this learning process is seen in the generation of sample images and is often more interesting to me than the final output works. These images, produced during learning, show the progress the algorithm is making and is an insight to the development of the work. Browsing the samples generated is rather delightfully called walking the 'landscape of the latent space' by Radford, Metz and Chintala.[2] All images presented in this installation were located on my many walks inside this particular latent space, created during training rather than at the end of the process of training.

From there I look to the drawing and the original creation to build a 3D model of what I see, a refined, new Greek sculpture based on the feelings that I gain from the work.
The gendered attributes seen are assigned by me based on pose, gendered shadowing I can see in the abstract design and a feeling or connection with the work. It could be I see what I want to see, and make a gendered assumption where none exists, but that is part of the work itself. I am looking to create a

historical representation for gender minorities who don't necessarily feel represented by the work out there and the heavily binaristic depictions so prevalent in sculpture.

Having created the 3D model and the drawing, I take a render of the model, the drawing and the original creation and submit them to a different neural network. Neural Storyteller is an image classifier blended with a text generator trained on romance novels. It analyses the image and generates a series of captions for it. From the captions it then creates a romanticised passage of text about the work using 'Skip-Thoughts.'[03] In the generated text it is interesting to note that the gender of the subject changes seemingly at random. This is because neural networks such as this are not very good at holding small details in their short-term memory, so each sentence rarely impacts or relates to the preceding one. This effect is discussed by Janelle Shane in her book *You Look Like A Thing and I Love You*.[04] Beyond the technical explanations I think that it can make a greater point about misgendering and the way that people seem to have difficulty internalizing a transgender person's new pronouns and name. There is a discomfort when you see the captions switch, especially when they don't appear to match the gender of the person you see before you. This is how it feels to be misgendered, a disconnect between what a person is saying about you and what you know to be the truth. Neural storyteller gets its captions from MSCOCO, 'Common Objects in Context'. What is interesting about COCO is that 'For the training and validation images, five independent human generated captions will be provided.'[05] While the classification for a person in an image is simply 'person' within the image classifier, the captions used to generate the written content have been written by unnamed research subjects who have been assigned images in the dataset and written captions for each. When these images contain a human, they have often been gendered, even when not relevant to the image. This is where the gendering creeps into the generated captions and why the potential for misgendering is so strong. It reinforces gender binaries, but it also reinforces assumed gender roles. As Artificial Intelligence is prone to amplifying the bias of its datasets and training, we need to be more mindful than ever about bias and not teach neural networks bad habits. We have an opportunity while image classification and identity recognition are in their nascent stages to improve the way we classify humans so that we don't reinforce bias and we consider all genders including gender minorities.

> Because [Automatic Gender Recognition] treats gender as a binary and physiological phenomenon... there is the potential not just for active harm (misgendering or the enabling of violence) but also erasure; the perpetuation of a normative view that trans people do not exist as a population with needs.[06]

Having gained some interesting captions, the work lacks cohesiveness, it needs to be united into an artwork.

```
import generate
z = generate.load_all()
generate.story(z, './images/cassils.jpg')
```

```
NEAREST-CAPTIONS:
 a big long line of people walking through the snow
 a bunch of people that are walking through the snow
 some branches have been ttied together with other branches
 a bunch of people are walking through the snow
 a couple of people that are walking through the snow

 OUTPUT:
 I had a few people in the back of the snow, just as I thought. In fact, my heart was beating so much that I couldn't help but notice that the snow had fallen out of its shape. By the time I walked into the cabin, she was asking for permission to leave him, and he put his arm around her waist and pulled her close. The wind made no sense at all. It was a stark contrast to the snow, as if it were some kind of fairy tale. God, it felt like they were going to fall apart in less than five days.
```

The wind made no sense at all. It was a stark contrast to the snow, as if it were some kind of fairy tale. God, it felt like they were going to fall apart in less than five days. I had the color of black and white, and I felt a stab of pain in the back of my head. For some reason, it seemed to be the most sacred thing in the world.The man who looked at her as if she were the most beautiful man I had ever seen, I simply stared at him for a long moment, trying to think of more ways than I should have been.

Figure 05:
An image and the captioning code, nearest caption results and the generated caption. This was a multi-stage process where I had captions generated for three stages of the work's development. I then edited the resulting captions together into a final result as shown. J Rosenbaum, 2018.

presentation

One of the more intriguing ways to bring work together is Augmented Reality, allowing viewers to experience a digital work beyond a static print on the wall and into a virtual realm of possibilities. It opens the work up to another space and the interactivity allows viewers to enjoy the multi-phase aspects of the work as a cohesive whole. Augmented Reality is the bridge between the physical and the digital worlds. My world is digital and my creations live inside my computer and on walls and in phones as a way to connect with them, a reminder that our worlds are merging across a digital gap and becoming more computerised.

The works are displayed on a wall, simple prints on textured paper to lend a physical sense of materiality to the prints and to enrich the depth of tone. One work is presented on a simple plinth, with a softly glowing lightbox. The presentation is deliberate, designed to highlight the quality of the small prints and the white box aspect of gallery spaces. It is when the viewer interacts with the work with a device that they observe a change within the print. Animated drawings play over the top of some works and others gain a floating sculpture in front of them, a view into the mind of the artist. These sculptures are the embodiment of the figures in a space that is observable, but not real. They have a presence; it feels like you could reach out and touch the sculpture, but it does not exist in any physical space. The heavy looking marble material is belied by its lack of adherence to natural physics. The sculptures float, disconnected, but tethered to the artworks by the shared subject. The print is the anchor, the starting point for everything you experience inside the app. The application requires the print to operate and detects certain intersections of line and tone in order to place the correct interaction in the virtual space with the work. It is fitting, in a way, that the work that is entirely made by machine is printed and mounted on a wall in the real world, while the human interpretations exist in a digital space inside the viewer's phone. The works change on the device, overlaid onto the real-world prints as animated drawings or 3D sculptures abstract and change depending on the viewer's position. As the viewer moves closer to the work, the sculptures become abstract, translucent and rough-hewn. As the viewer moves further away with their device, the work becomes coherent, marble, detailed. The abstractions tie the sculpture to the generated work and show the resolution of the final piece, the slow coming into being of the works. It hints at the idea of latent space, a process that is largely hidden and not always understood but exists as a digital space for learning and growth. The text, generated by AI, becomes a digital voice over with captions, the synthesised voice adding to the generative nature of the work and lending the machine a voice.

It is interesting to observe people interacting with the work, their phones held up as they move around, near, far, to the side, on angles you rarely use to view a print work. Their physical presence affects the appearance and the sense of personhood of the digital augmented reality figures. This viewer interaction shows the relationship between the viewer and the viewed. You, as the viewer, control the view, you control how close you get, but the sculpture breaks away, becoming less resolved. The closer you get, the less you see. This calls to mind the reality of being queer in public, especially if you are transgender. The scrutiny of others can cause a reaction, even a dissociation, between the person and their selves that the viewer may not understand. As the interactivity of the work allows viewers to plumb the depths beyond what you see on the wall, it is my hope that they will see people as more than just their surface. That everyone is a deep well and that gender, in particular, is more complex than a simple binary classification.

discussion

In digital spaces we are not confined by our bodies or the perceptions of others. We can curate our identities and our presence to show our inner selves rather than the one people can see. Augmented reality allows us to build onto the world, to remake it into a place that is more beautiful, more welcoming or more fitting to the construct of our selves which is beyond the mere container our identities sit in. Similarly, our personhood is more than our bodies, just as our gender is more than our genitalia. We extend beyond the confines of our bodies and our influence has the ability to spread and touch more lives than our own. Much like augmented reality has the ability to move past the screen and the real world. Extended reality such as virtual and augmented reality creates a blurring of labels, of worlds, of reality, as many of us as gender non-conforming and non-binary people aspire to do in real life. With virtual spaces, and particularly augmented and virtual reality the power is becoming available to tailor our world to better encompass all that we are and to perceive more of people than what is constrained by their bodies.

Figure 06:
A collage depicting two of the final works in the series. The background image is the neural network training result, the two images in the middle are the images as displayed on the wall and the images above and below show the augmented reality view through the phone as the 3D models emerge. J Rosenbaum, 2018.

Classical art is the rock that a lot of art is founded on, but in addition to that it is the basis for our gender assumptions about history and how genders were perceived. We can see that in the posing of the figures, in the anatomy, the perfection of the forms. There is an idealisation to the works and beyond that, and idealisation of binary gender itself. We don't see many sculptures showing gender minorities. There is a loss there, a sense that gender minorities were not part of history even though there was discussion about gender and sexuality and its definition as far back as Aristotle and Pliny the Elder as described by Stephen Whittle and Lewis Turner in *Transgender and intersex:Theoretical, Practical, and Artistic Perspectives*.[07] This is a project designed around making a history for ourselves and showing representation where there is so little.

It shows a representation of the future where we can hope to progress beyond binarist thinking to creating a more welcoming space for all genders.

Conceptually this work explores how computers construct and see gender. Working with a DCGAN to create the works, then working back into them myself before submitting them to a classifier and writer shows how the machine perceives gender when it comes to transgender and gender non-conforming bodies. This series is also an exercise in working collaboratively with my machine, gaining inspiration from the machine output to create a new work then working with the machine definitions. The Augmented Reality app is the glue behind this work, it holds all of these disparate concepts together and entwines them, showing the collaborative process between human and machine in interactive sculptures and sketches.

While these works literally transform when viewed they are about the internal dialogue of transness and of hearing yourself correctly or incorrectly gendered. That disconnect that is felt when a pronoun that doesn't fit is used and the comfort of the correct pronoun. These works seek to create this discomfort in people who have never had cause to question the gender they were assigned at birth and hopefully challenge assumptions around assigned pronouns.

These works use multiple systems, none of which were designed for the express purpose I put them towards. They are tied together in a cohesive exhibition and application interlacing

Figure 07:
An installation view through the augmented reality application showing the print and the sculpture.
J Rosenbaum, 2018.

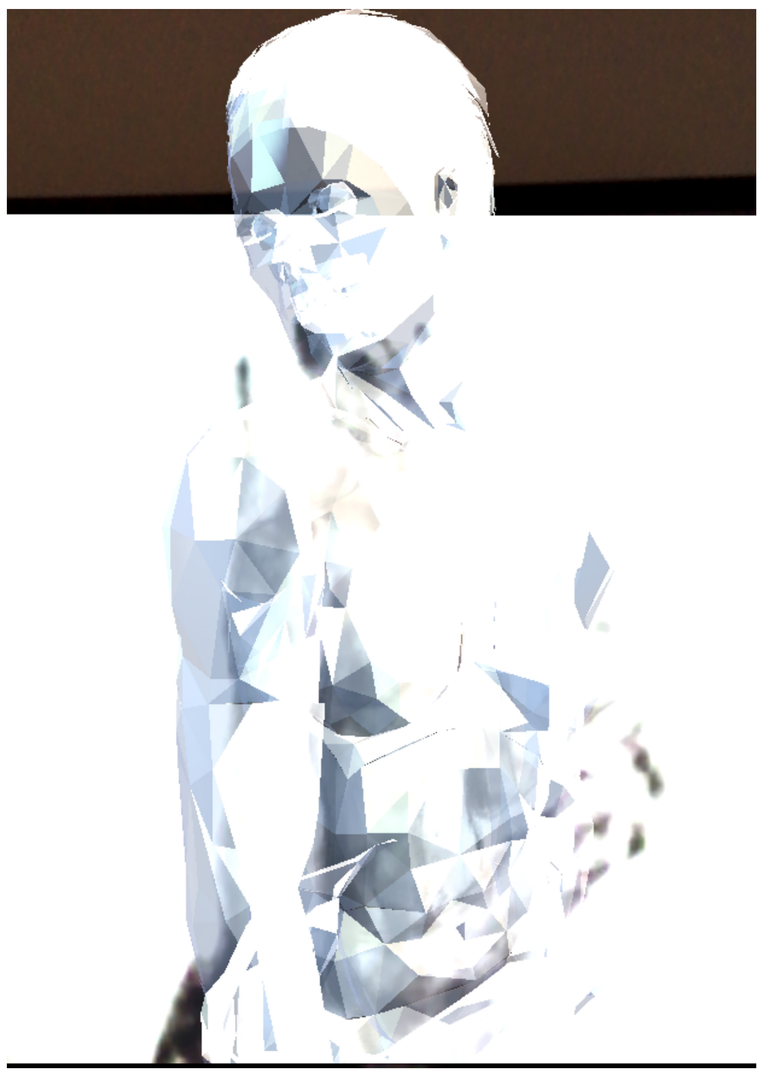

Figure 08:
A close-up detail of the work featured in Figure 7 as the viewer steps closer and the sculpture abstracts and becomes clear, more closely resembling the indistinct original machine learning creation.
J Rosenbaum, 2018.

the narrative with the human created artworks and the machine generated artworks. Using a neural network designed for faces to generate bodily works, using a classifier that isn't trained on gender and a romance dataset shows that even without specifically fine tuning the datasets and the classification training I can produce something that makes us question gender. This all ties into my research exploring computer perceptions of gender. In this case it is clear that these works do not elicit a single binary reaction from the classifier. The pronouns from the narrative writer switch, seemingly at random, rendering them almost meaningless and challenging the notion of gender in the two binary pronouns. I want to continue that search for godlike representation started by classical sculptures so long ago, but while subverting that binary paradigm. Taking classical sculptures as inspiration for my machine while imagining a new way forward and a new idealised aesthetic. I want to show diverse bodies and diverse genders, recognizably classical styling rooted in history, but with modern sensibilities, showing that diverse genders have always been here and will continue into the future.

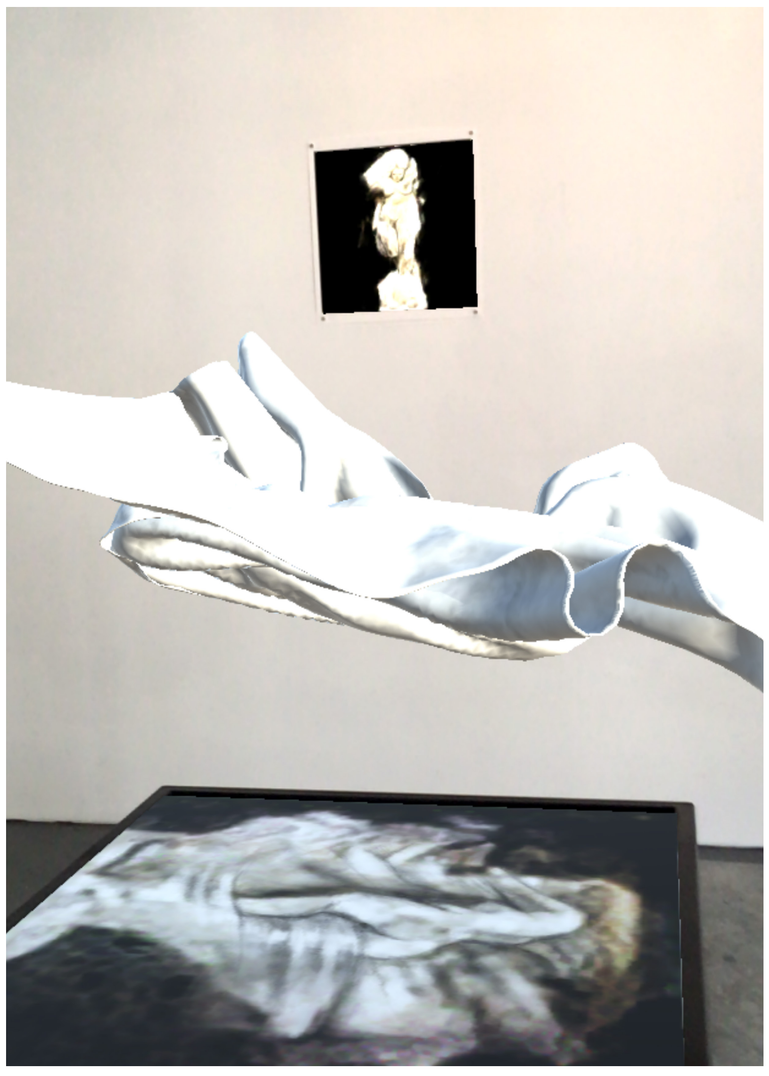

Figure 09 (left):
An installation view of two artworks through the augmented reality application. This shows the floating augmented reality sculpture above a plinth containing one of the prints.
J Rosenbaum, 2018.

Figure 10:
A drawing view of a print with the augmented reality drawing overlaid after it has finished animating. The installed print is visible in the background of Figure 09.
J Rosenbaum, 2018.

Figures 11-15:
The Final works. Downloading the Hidden Worlds application on the App Store or Google Play will demonstrate the Augmented Reality Features of these works.
J Rosenbaum, 2018.
http://onelink.to/d5aufh

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author biography

J Rosenbaum is an artist exploring the boundaries of technology and art. Their most recent works examine the nature of non-binary transness and their own gender and sexuality. They create technologically based art using physics-based rendering, Deep Neural Networks and Augmented Reality. They are continuing their research into computer perceptions of gender with their PhD at RMIT.

As a disabled artist, the human body has always been a source of interest in Rosenbaum's art with a focus on mythical and archaeological stories. This fascination continues in their Computer-Generated works with a basis in classical art and history.

notes

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