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## APPENDICES

### APPENDIX A: Letter of consent



Faculty of Humanities  
Department of Visual Arts

**An Autoethnographic practice-based study**  
**Exploring the use of Generative Adversarial Networks within the working processes of**  
**Printmaking.**

Consent Form to take part in the Research Questionnaire

To whom it may concern,

You are invited to participate in a research questionnaire conducted by Amy Jane van den Bergh, from the School of Arts at the University of Pretoria.

#### PURPOSE OF THE RESEARCH QUESTIONNAIRE

The aim of the research is to explore and describe the effects of using Generative Adversarial Networks (GANs) as a tool within the working process of printmaking. The researcher uses GANs in the generative phase of their working process and aims to create a body of GAN-inspired prints to be exhibited. In so doing, the research aims to come to grips with this relatively new image-making technology (GANs) to explore and describe what this technology may mean for the future of printmaking and how it may potentially reinvigorate the practice.

GANs were pioneered in 2014, forming part of the fast-growing field of machine learning,<sup>1</sup> and are continuously improving in their capabilities (Goodfellow et al. 2014)<sup>2</sup>. Amongst their various features, GANs are capable of generating images. GANs are programmed to find patterns among pixels within thousands of images of a specific subject (for example, portraits). Once these patterns are learnt, the GANs are further programmed to generate a unique imitation of the learnt subject (in other words, they will generate a made-up portrait).

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<sup>1</sup> Machine Learning is a field of computer science that is concerned with the capability of computers to solve problems through the use of mathematical algorithms (Mitchell 2006).

<sup>2</sup> Goodfellow, I, Pouget-Abadie, J, Mirza, M, Xu, B, Warde-Farley, D, Ozair, S, Courville, A and Bengio, Y. 2014. Generative adversarial nets. Paper presented in Advances in neural information processing systems, 8-11 December, Montreal, Canada.

Most smartphone owners have encountered GAN technology without realising it. Apps on smartphones such as FaceTune or Snapchat apply GANs to create age, beauty, gender and background filters over portraits (Gu et al. 2019)<sup>3</sup>. These are rudimentary applications of the complex technology but illustrate how accessible this technology has become.

The researcher has used GANs within their working processes to generate visual studies. The researcher has organised a print consultation with a selection of printmaking peers who are familiar with the researcher's printmaking practice, to receive feedback about the GAN-inspired body of work being created.

Using the research questionnaire, the data gathered from this print consultation will focus firstly on how the participants (as the audience) view and react to the new GAN-inspired prints. It would further examine how implementing GANs into the printmaking working process affects the aesthetic of the new body of work in comparison to the researcher's previous works. Thirdly, the questionnaire will address whether or not an emotional response is evoked through the new prints. Lastly, based on how the researcher has experimented with and implemented GANs into their working process, the printmaking peers will be asked if they see merit in possibly exploring the medium themselves.

If you choose to participate in the research questionnaire:

- Your identity will remain confidential
- You will be given a link to the research questionnaire, a Google form, to fill out anonymously
- Your responses will be used as part of Amy Jane van den Bergh's Discussion Chapter in her dissertation
- Your responses must be honest and unbiased as they will impact the integrity of the research. There are no 'correct' or favourable responses.

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<sup>3</sup> Gu, S, Bao, J, Yang, H, Chen, D, Wen, F & Yuan, L. (2019). Mask-guided portrait editing with conditional gans. Paper presented in Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition , 15-21 June 2019, Long Beach.

- Your data will be stored confidentially on Amy Jane van den Bergh's Masters research Google Drive until downloaded by Amy Jane van den Bergh. They will then be deleted from the Google Drive
- Your data will be printed and submitted as appendices alongside Amy Jane van den Bergh's Masters Dissertation
- According to the University of Pretoria's *Policy For The Preservation And Retention Of Research Data*, your data will be stored for 10 years in the University's Research Data Repository

In consideration of participation in the research questionnaire, I, \_\_\_\_\_, (Research Questionnaire Participant), hereby give Amy Jane van den Bergh (Researcher) and those persons acting with her permission and authority, the right to read and discuss my responses to the research questionnaire.

- I voluntarily agree to participate in this research questionnaire. I will not be paid for my involvement. I am free to withdraw from the project at any time, without reason.
- I have read and understood that all data provided will be treated in strict confidence, and that my name will be anonymised.
- I understand that my data will be used within Amy Jane van den Bergh's Masters Dissertation and will be stored for 10 years in the University's Research Data Repository
- I understand that I will not benefit directly from participating in this research.
- I understand that this research has been approved by University of Pretoria Ethics Committee.
- I have read and understood the explanation of the research project provided to me. I have had the opportunity to ask any questions and they have been answered to my satisfaction. By proceeding to take this questionnaire, I agree to take part in this research project and to the above statements. Any statements I have concern with I will discuss with the principle researcher prior to commencing.

Any questions you have about this study can be directed to Amy at 082 264 3810 or [hello@amyjanevdb.com](mailto:hello@amyjanevdb.com), or the supervisor of my mini-dissertation, Natalie Fossey at [natalie.fossey@up.ac.za](mailto:natalie.fossey@up.ac.za). If you have any questions concerning your rights as a research subject, you may contact the University of Pretoria's Research Ethics office at 012 354 1330 or [fhsethics@up.ac.za](mailto:fhsethics@up.ac.za).



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

**Faculty of Humanities**  
Department of Visual Arts

-----  
Signature of participant

-----  
Date

I believe the participant is giving informed  
consent to participate in this study

-----  
Signature of researcher

-----  
Date

## APPENDIX B: Questionnaire

## An Autoethnographic practice-based study exploring the use of Generative Adversarial Networks within the working processes of Printmaking.

Print Consultation  
Research Questionnaire

Based on your first reaction to the researcher's GAN-inspired body of prints, do you believe that the use of GANs as a tool within her printmaking working processes has been successful? \*

- Yes
- No

Was any emotional response was evoked in you when engaging with the researcher's new prints? \*

- Yes
- No

If you answered YES to question 2, what do you believe you are responding to when you experienced these emotions? (tick all relevant boxes) \*

- The capabilities of GANs
- The aesthetic of the art object
- The concept behind the art object

As a colleague of the researcher, you are familiar with their printmaking practice and previous body of work. \*  
How does this new GANs-inspired body of prints compare aesthetically and conceptually to their previous work?

Long answer text

---

As a printmaker, do you believe than GANs offer a potential new tool within your working process? \*

Yes

No

The researcher has described to you how they have implemented and experimented with GANs in their working process. Based on this, where on the scale would you consider exploring GANs in your own working processes? \*

Not at all      1      2      3      4      5      Very much

Do you have anything you would like to add or elaborate on? \*

Long answer text

---

## APPENDIX C: Print consultation responses

### Question 1

Based on your first reaction to the researcher's GAN-inspired body of prints, do you believe that the use of GANs as a tool within her printmaking working processes has been successful?

[View options](#) ▾

Yes

4 responses

### Question 2

Was any emotional response was evoked in you when engaging with the researcher's new prints?

[View options](#) ▾

Yes

4 responses

### Question 3

If you answered YES to question 2, what do you believe you are responding to when you experienced these emotions? (tick all relevant boxes)

[View options](#) ▾

- The capabilities of GANs
- The aesthetic of the art object

---

1 response

- The capabilities of GANs
- The concept behind the art object

---

1 response

- The capabilities of GANs

---

1 response

- The concept behind the art object

---

1 response

#### Question 4

As a colleague of the researcher, you are familiar with their printmaking practice and previous body of work. How does this new GANs-inspired body of prints compare aesthetically and conceptually to their previous work?

I think the GANs are a good sound-board for the overall creative process. I know the researcher has previously been concerned about their previous work/aesthetic being labelled as too illustrative, though this is no longer the case. The researcher's work is narratively rich and I think the GANs-inspired work offer another perspective or way of telling the same stories. I particularly liked Figure 12 in the presentation, which reminds me of a beautiful post-apocalyptic landscape. The process of conversation between the GAN and researcher is the most curious and interesting, it brings up a lot of questions around the source or origin of creativity and the process of creativity. Is the GAN an extension of the creative self?

---

1 response

It continues to show her love of being playful with mediums, technology and new skills. The artworks themselves are a joyful exploration, but feel aesthetically mechanical, which is how they were conceived so it is true to the process! I responded most to the pieces that used the GANS output as a springboard for more playful, spontaneous monotypes and collages, as a platform to build confidence in abstraction.

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1 response

There is a nice link between the artists process and the GAN's works. I think the GAN's work can provide an interesting starting point for the process of new works

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1 response

The artworks show bold and experimental themes, bright colours and whimsy which is exactly in keeping with all of Amy's previous work.

---

1 response

### Question 5

As a printmaker, do you believe than GANs offer a potential new tool within your working process?

[View options](#) ▾

Yes

3 responses

No

1 response

### Question 6

The researcher has described to you how they have implemented and experimented with GANs in their working process. Based on this, where on the scale would you consider exploring GANs in your own working processes?

	1	2	3	4	5	
Not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Very much

---

1 response

	1	2	3	4	5	
Not at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Very much

---

1 response

	1	2	3	4	5	
Not at all	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very much

---

1 response

	1	2	3	4	5	
Not at all	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very much

---

1 response

## Question 7

Do you have anything you would like to add or elaborate on?

I think this masters work shows an incredible amount of hard work and engagement with new technology and new ways of thinking about the art making process. It made me think about how printmaking already has such a mechanised process underpinning it and how as artists one can be tempted to produce artworks in a GANS-like manner (often encouraged by galleries) simply to secure and maintain collectors of your work. It made me think about how the very first printmakers embraced new technology in presses and silkscreens - how its commercial benefits for repetition have always driven progress towards efficiency. I think this masters is successful in drawing attention to the stereotypes that we still find in the artworld - that something that can repeat and mechanised a process makes the output somehow less original, less personal than an artist drawing/painting/shaping a medium directly with their hands. Printmakers, photographers, collage artists - they fight these stereotypes daily in finding an audience for their work. I don't think Amy's GANS output inspired works were less "Amy", but almost too "Amy", as if they were trapping her in old ways of working. When she used them as sources of inspiration, rather than sources for reproduction, there was an excitement evident in the work about new ways of working. I am fascinated by Amy's use of GANS and to see future applications of such technology. How exciting to be playful with something right when it's just beginning!

1 response

I'd be curious to see how the GANs would react to being fed portions of images as opposed to full images, and to what degree they can interpret the disintegration of images. Would the output be completely different? I also really enjoyed how process driven and collaborative the GAN-inspired work is. Printmaking is for the most part a creative collaboration between technology (and machine in some cases) and human.

1 response

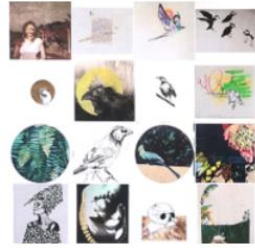



I loved that the body of work came full circle. Amy collaborated with the GAN's, it learnt from her and then she learnt from it. A truly unique and fascinating process and conclusion.





1 response

I think there is a lot of potential in using AI and machine learning in the art making process, especially in a time of NFT's and the evolving Metaverse

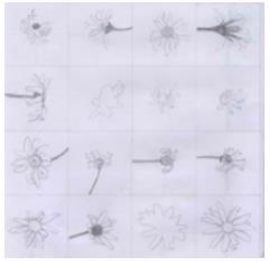



1 response

APPENDIX D: Table documenting the use of GANs within the research

GAN application	Description of dataset	Example image of dataset	Description of resulting GAN images	Sample image of GAN generated images	Researcher's emotional response to the GAN images	Creative response to this iteration	Resulting body of work/creative iteration	Example image of body of work	Gan-led vs GAN-inspired
1	One thousand images of the researcher's work over the last 10 years. This dataset included drawings, sketches, paintings and prints. The subject matter included a range of birds, nature, florals, portraits, cats and a few landscapes. The styles ranged from realistic to cartoon and illustrative. Overall, the dataset represented a wide variety of images.		The sample set received was abstract and visually vague. Images were pixelated and nondescript. There were a few noticeable repeated elements in the images. These include the use of green, pink, turquoise and gold. The use of a circular composition was also repeated. Lastly, texture and mark-making elements from charcoal sketches were evident.		Initial disappointment. The researcher had hoped to receive more representational images, or images that looked more like her initial dataset. The GAN images were a stark contrast to the dataset. After studying the images a number of times, however, the researcher found that the abstract images did seem to resemble landscape-like images.	The researcher selected twenty of the most landscape-like images from the sample set. She uploaded these into Adobe Photoshop and turned them into halftone positives for screenprinting. These GAN images were then screenprinted in neon pink onto handmade paper. Using the GAN image, the researcher attempted to replicate the colour through screenprint monotype, overlaid on top of the halftone pink layer.	<i>Imaginary Landscapes.</i> Twenty 2-layered screenprints. First layer: neon pink halftone exposed positive; second layer: screenprint monotype. 30x30cm on handmade paper.		This iteration was GAN-led, as the final artwork was directly based on the GAN image itself.
2	The same initial dataset was used.	As above	The same sample set as before was used.	As above	The researcher was now reacting positively towards the GAN images as she realised the inspiration they were providing was allowing her to create new work that she felt had creative potential.	The researcher had always wanted to make abstract landscapes but every attempt felt contrived. She also relied heavily on other artists' work for inspiration. Now, however, she was using her own work as inspiration, through the lens of the GAN. She would study the sample set and then make small 9x9cm screenprint monotypes landscapes.	<i>Studies of A Sense of Somewhere.</i> Two hundred screenprint monotype studies. 9x9cm of watercolour paper.		While relying somewhat on the GAN images, these studies are more GAN-inspired and less GAN-led. However, their reference image for this work still remains the GAN image itself.

4	As above	As above	As above	As above	The researcher is becoming more interested in the process of the GAN itself, and less in the GAN-output images. Towards the end of the GAN training, the images it generates are becoming densely saturated with texture or muddied colour. This starts to inspire a smaller body of work within the large two hundred monotype studies.	Instead of cleaning the screen between each print, the researcher is reapplying paint over the same areas on the screen and repulling the print several times. The result is a saturated image that mimics the process of the GAN training.	<i>Towards Saturated Ends.</i> Smaller series, each consisting of five prints, within the larger two hundred studies of <i>A Sense of Somewhere</i> . Screenprint monotype prints. 9x9cm on watercolour paper.		This body of work is GAN-inspired as the researcher's inspiration is shifting away from the GAN images and more into the process the GAN undergoes within its training. There is less reliance on the GAN images and the researcher's process is becoming more organic in its response to the process of both the GAN and screenprinting.
5	The two hundred studies created in the second application are used to make the next dataset.		A new dataset is generated using the two hundred screenprint studies from the previous iteration.		The new GAN sample represents a more coherent set of images that resemble the given dataset much more closely than the previous iterations.	At this point, excitement begins to stir up for the researcher. It is now clear that in order to generate a GAN sample that represents something specific, the researcher needs to create a dataset that is visually coherent and does not contain too much diversity of images. The GAN sample seems to refine some of the compositional elements and colour choices of the <i>Sense of Somewhere</i> studies. As such, the researcher uses these images to inspire new prints, drawing directly from the colour choices made by the GAN and the compositions as well.	<i>A Sense of Somewhere.</i> Fourteen screenprint monotype prints. 50x50cm on bamboo paper.		While relying somewhat on the GAN images once again, these prints are more GAN-inspired. Their reference image for this work still remains the GAN image itself, but the process is controlled by limiting the dataset to the studies created in the previous iteration.

6	Return to the original dataset of one thousand images.	Same as first	Return to the first GAN samples created.	Same as first	The researcher has been studying the GAN samples for over a year at this point and has noticed that the GAN images are often a reassemblage of the images from the dataset. Rather than generating entirely new images, the GAN is taking aspects of a few images in the dataset and using them to make a new image.	This new insight inspires the researcher to act as the GAN does and reassemble her artworks into new collages. She cuts up hundreds of old prints and drawings to make new collages.	<i>Cut &amp; Paste</i> . Twenty collage artworks all ranging in size.		This body of work is GAN-inspired in regard to how GAN images are reassemblages of the initial dataset. As the researcher continues, she is less inspired by the GAN images themselves, and more interested in how the GAN generates these images.
7	The researcher makes use of the collages made for <i>Cut &amp; Paste</i> as a visual dataset of sorts in her process.		The dataset is not fed into a GAN.	Not Applicable.	Not Applicable.	The researcher selects a number of collages to inspire new screenprints. The collages resemble the GAN output images in the sense that they have a repeated colour palette, patterns and textures. They also resemble how the GAN generates its images through reassembling the dataset in a more representational manner. By choosing to turn them into screenprints the artist is refining their composition. The colour choices are inspired by the GAN itself and the researcher specifically intends not to choose colours that harmoniously work together, but to rather create surrealist disharmonious colour choices.	<i>Cut &amp; Paste &amp; Print</i> . A total of four reduction screenprints are made. <i>Deliver us from Kitsch</i> is a reduction screenprint, 50x50cm on bamboo paper.		<i>Cut &amp; Paste &amp; Print</i> is GAN-inspired, once again focusing on the process of how the GAN generates images.

8	A new dataset is created by the researcher drawing two hundred line drawings of daisies.		A new sample set is made representing GAN generated daisies. The daisies resemble the dataset quite well, but contain numerous visual glitches.		By refining and limiting the dataset the researcher is getting GAN samples that are more representational of the dataset. This process adds to the researcher's understanding of how the technology works and what type of dataset is needed. The GAN daisies themselves are visually interesting because of the glitches in the images. Specifically, watching the GAN daisies shift between iterations as the GAN is being trained on the dataset, gives inspiration to the researcher.	Inspired both by the GANs daisies and Anna Ridler's <i>Myriad (Tulips)</i> (2018), the researcher decides to create a body of work that represents the amount of work that goes into running GANs. She also wants to represent the insights she has gained from watching the GANs shift between iterations while training on her hand-drawn daisies. She selects one of the GAN daisies and draws it on a silkscreen. This daisy is redrawn and screenprinted two hundred times, each time altering the drawing slightly - just as the GAN alters the pixels of each of its iterations slightly as it attempts to generate a real daisy.	<i>Daisies</i> . Two hundred screenprint monotype prints. 10x10cm on 20x25cm watercolour paper.		The researcher is inspired by the process of the GAN, that is to say, how the GAN is trained on the dataset and generates images that subtly shift between iterations as it attempts to made a real image. This work uses one of the GAN daisies as a starting point but is not trying to represent what the GAN generated, but rather the process within the GAN. Therefore, the work is GAN-inspired and not GAN-led.
9	The same dataset used for <i>Daisies</i>	As above	The same sample set as <i>Daisies</i> .	As above	In the research, author Jim Noble (2002) expressed that the computer-led print can be made using an aspect of computer technology within the artmaking process, or it can be that a print is entirely conceptualised and made using a computer. As the researcher's practice has been focused on screenprinting throughout the research, she wants to create a hybrid print that is entirely computer-led to see how this will affect her	The researcher wants to create a GAN-led artwork in the form of a digital print and animation. The researcher creates an entirely computer-led print made up entirely of GAN generated daisies. This is inspired by the GAN daisies, Jim Noble's text, as well as the majority of GANist artworks she has studied. Most GANist works exhibit insight into the iterative process of GANs through moving images.	<i>Dancing Daisies</i> . A giclee print accompanied by a short animation accessed via the Artivive App.		This body of work is GAN-led. By comparison to her previous iterations, this work feels most disconnected from the researcher's practice as a printmaker. However, it illustrates the glitchy iterative process of the GAN that was the most inspiring aspect of using GANs in her research.

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