

# Haunting and Hauntology in AI Collaborative Image-Making

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**Abstract.** This paper documents the Author's experiments with 3D-based AI image generation software, identifying within the visual outcomes a tendency towards hauntology that is seemingly the result of the collaborative image-making process as well as a material quality of the method. The paper suggests that a combination of the authors own aesthetic concerns and working methods, combined with the tendencies inherent within the training method used to develop the Stable Diffusion AI model, results in images that are haunting in a number of ways that align to the conceptual framework of Hauntology: through unexpected traces and glitches; anachronism; notions of shared dreaming / remembering; and through the invocation of the poor image.

**Keywords:** AI, Artificial Intelligence, 3D, Hauntology

## 1 Introduction

The promise - and threat - of Artificial Intelligence has had an incredible impact upon the public imagination in recent years. During the early 21<sup>st</sup> Century advancements in AI research have transformed a seemingly distant futuristic fiction into a real and tangible force within our daily lives. With increasing computing power in both networked, home and mobile computing, many of the tools and systems that we regularly engage with have become increasingly augmented or replaced by machine learning and AI tools – from predictive text, search engines, and intelligent image-manipulation and refinement, we interact with unseen and unknown AI systems on a daily basis.

However, the release of publicly available AI models such as Dall-E and Midjourney has brought powerful and new image-making methods into the hands of creatives - who are both keen to test and explore the creative possibilities of these tools, as well as anxiously imagining the potential impact of these same tools upon their own professions. AI tools seemingly offer up a double-edged sword to the artistic community - at once promising to revolutionize swathes of creative practice through their speed and ability to collaboratively produce professional-quality images or provide rapid idea-generation [1], [2], but also raise philosophical questions regarding notions of creativity and the role of professional artists [3], [4], [5], [6], or even threatening to replace wholesale entire creative practices [7]. Whilst it is obviously relevant to consider how creative AI might impact upon professions and livelihoods in future, such musings are better covered elsewhere, and are beyond the scope of this paper.

However current thinking tends to gravitate towards a belief that AI offers strong potential to augment creative practices, acting as a collaborative tool and enhancing creative practices rather than supplanting existing roles or methods. There then arises questions of materiality and affordances – what does this medium or process contribute to the image making process and outcomes, and how might a collaboration create different kinds of images than those that can be achieved alone? This paper explores one particular case study of AI / human collaborative image making, documenting the authors own experiences of using a 3D-based AI tool (Dream Textures) in combination with 3D software (Blender); and locates within these images artefacts and features that align to notions of haunting and Hauntology.

Fisher's writings on Hauntology are used as a lens for reading and contextualising these images, as they seek to address questions of technology and notions of the future or futures; appropriation and re-appropriation; and presence and absence – each of which are concerns that have been raised in relation to AI, and which mark themselves as relevant issues in the documented visual outputs of this research.

## 2 Dream Textures

Before exploring the visual outcomes and findings of the author, it is worth taking a moment to describe the software and processes behind the image-making. The research made use of Blender 3.4.1 with the Dream Textures AI addon installed.

Blender is an Open-Source and free 3D software package. Blender combines modelling, texturing, animation and video-editing, and can be used in the production of a range of media outputs and formats. Blender's Open-source nature allows for interested parties to build and share addons – modifications to the core software - that augment, extend, or modify Blender's toolset and processes. Dream Textures, developed by Carson Katri, is one such addon that implements the Stable Diffusion AI within Blender to allow for the creation of images, textures, and renders that can be applied to 3D models.

The Stable Diffusion AI model uses natural-language text 'prompts' in order generate images based upon the user's input. The user describes through a short sentence what they would like to see in the image, and the AI interprets this into an image or set of images. Starting from a random noisy image as a starting point, the AI iteratively refines the image, selecting what to retain and what to augment within the image. This is achieved by comparing each iterative outcome with the AI's learnt model based upon its' subsequent fit with the textual prompt. In order to successfully identify when the image is correctly fitting the textual description, the AI is trained on large sets of captioned images, and each subsequent AI model is a culmination of its training and dataset. Early models such as Dall-E 1 exhibited surprising if somewhat limited abilities to approximate human-made images, however its second iteration (Dall-E 2) has been notable for its ability to produce images that are often indistinguishable from professional outputs, able to render high resolution images and excelling at portraits and the simulation of a number of styles and media.

The Stable Diffusion AI model which underpins the Dream Textures addon used in this research is trained on massive image datasets. These datasets, which are comprised of millions of captioned images, are drawn from across the internet and collated by the LAION (Large-scale Artificial Intelligence Open Network) organisation. According to Baio [8], the LAION dataset includes images taken from a variety of popular websites such as Pinterest, Blogspot, Flickr, Deviantart, and Etsy, as well as more established image-repositories such as Getty and Shutterstock. As such, the AI model is able to present outcomes based upon training that utilises publicly available images (not necessarily publicly licensed images!), including historic and contemporary paintings, illustrations, and photography, produced by both amateurs and professionals. As such the AI is capable of reproducing or imitating a very broad range of processes and can imitate to varying levels of success recognisable artistic styles – as long as these styles feature and are identified within the model's training dataset.

Whilst many of the currently available image-making AI models exhibit similar properties in their text-to-image abilities, the Authors' interest in Dream Textures - and one of the innovative features of the addon - is its' ability to utilise depth information from a 3D scene in order to guide image generation and composition. Many examples of AI image generation such as Midjourney can build new images based upon existing visual images as a seed or starting point (instead of a noisy seed image), however most existing models are restricted to using the colour information from a prompt image only. In comparison, Dream Texture is able to read information such as the depth and colour of objects within the scene in order to accurately map images to the 3D space. As such Dream Textures not only presents a more natural approach to AI image making within the authors own creative work process, but also enables greater levels of control which reflects the kind of processes and methods that professional artists are more frequently accustomed to. Unlike in previous models, issues of layout, composition, and depth can now be addressed and easily revised without relying upon crude textural description. In other words the authors' own 3D models provide the basis for building a scene or final image.

## 3 Process

For this research project the process of image generation started quite simple, with the author using primitive shapes (cubes and planes) to build a rough approximation of a physical space – a kind of 3D sketch. Initial experiments built from single objects to more complex scenes made up of walls and a few suggestive items of 'furniture'. Primitive objects such as cubes would be laid-out in front of the 3D camera in a basic composition that would test the AI's ability to read and engage with depth information (e.g overlapping shapes, arranged using

perspective rather than plan or side projections). Unlike in other methods of 3D image-making, lighting was not utilised, and the set-up of the scenes was relatively quick, often taking minutes rather than the more laborious process of modelling and spatial arrangement that would be recognisable to other 3D artists. Subsequent iterations of this process would go on to add more sophisticated shapes and a greater number of objects (although these were still relatively primitive constructions) that allowed for increasing refinement and control of the outcomes. For example, in later tests, houses were made which consisted of boxes with triangular roofs. Simple 'windows' and 'doors' were added to bring architectural details, and crude boxy shapes were added to suggest vehicles or other street furniture. However there was always a level of unpredictability as to how the AI might interpret and render shapes within the 3D space or object within it. The AI appeared consistent in its ability to render chairs and tables, but in one instance turned a primitive car shape into a hedge or collection of dustbins.

Following the initial 3D setup of the scene, the AI would be given an appropriate textual prompt to interpret and apply to the space. Prompts were simple, using a single line of description such as a particular room or place. The AI add-on used in this research was capable of texturing (adding colour and fine detail) to single objects or multiple objects at once, and so the experiments proceeded with an approach that would treat the whole scene at once, creating a complete image in one pass. This was deemed to not only be a quicker approach, but also more satisfying visually as it created more unified and visually consistent spaces than ones made of individually rendered components.

For each new image, subsequent iterations of this AI texturing would be deployed using the same prompt in order to allow for identification and selection of the best images, usually working with batches of 10-15 images in total. In later versions of the process, objects within the 3D space would be moved or removed, re-scaled or rotated to further refine the visual outcomes and help guide the AI towards 'seeing' aspects of the scene. In some rare instances, single objects within the scene might be individually selected and prompted to be re-textured by the AI in order to assign a different particular look or feel, however many of these examples were less successful than the more holistic scenic approach to rendering and later iterations abandoned this approach.

In a more successful approach, camera locations would be adjusted in order to refine the composition or achieve different perspectives on the scene. However it is worth noting that the method of applying textures relies on UV projection which is akin to wrapping a gift with a 2D piece of paper, or attaching a 2D map onto a 3D globe. The method of projection used in this case is however somewhat crude, assigning each 3D object a texture as if projected from a set viewpoint. As a result, any change to the camera settings and viewpoint would subsequently result in heavy distortion that, whilst not undesirable in some cases, warranted a revision of the AI prompt to update the scene for anything but minor changes to the viewing-angle.

#### **4 Haunting**

The initial visual enquiry into the process of making collaborative human/AI spaces started with few preconceptions or preconditions. The author had previously used other AI image generators and was aware of some of the methods for rendering particular styles or kinds of images, and had also seen videos exploring techniques for using dream textures. However the first experiments focused more on setting up very simple shapes (some flat 'walls' and a couple of cubes as stand-ins for some kind of undefined furniture, as well as a more carefully modelled table) and a simple prompt ('a stylish modern apartment'). The AI model defaults to a photographic method of rendering a scene absent of any contravening instruction, and this method was chosen as the most useable method as it would not entail any recognisable artistic or generic style that might impact upon future uses of these images.



Fig. 1 *A Modern Apartment (7)*. (2023) Paul Roberts and Stable Diffusion.

The early images were highly surprising, not only in their technical refinement and verisimilitude to real photographs, but also in their relative consistency. Each image gave prominence to visual signifiers of Modernism (rather than notions of being modern), which was particularly pronounced in the rendering of furniture - which exhibited a strong mid-century aesthetic. The AI images also tended to create some elements that were suggestive of strange machines reminiscent of alternative televisions or communication devices, large audio speakers or retro-futuristic fireplaces. Paintings and décor also featured heavily, with examples alluding to a range of 20<sup>th</sup> Century styles. Finally, the images overall tended to use the 3D shapes to suggest features, but never mapped textures fully to these objects. This left visible signs of the projections falling across multiple objects, such that table legs might be projected on to walls instead (or vice versa), and ghostly traces of the initial 3D space persisted in each image.

Within subsequent scenes the author would variously emphasise textual prompts that would play up the historical focus and request that the AI featured particular periods, or attempt to create specific historic styles – with varying but often limited success, and the majority of experiments avoided overt allusion to a time period or stylistic instruction. Overall, the outcomes exhibited a number of consistent and re-occurring features of these visual experiments that would define these images as strongly hauntological and were evidence of an emerging materiality of the process:

Firstly each image exhibited a *trace*, or *traces* which are presented either through the lingering palimpsest of the 3D model, or as visual artefacts that hint at unresolved (and under-rendered) manifestations of human or other presences in the training images, strongly reminiscent of ghostly apparitions.

Secondly, images tended to feature *anachronisms* that point less to objects / spaces being out of place, but rather being out of time altogether, as if drawn from an alternative timeline.

Thirdly renders overall exhibited features reminiscent of Steyerl's description of the *poor image* – indications of visual degradation, but also of *poor visual recall* as if the image was a facsimile of a badly remembered space from a dream or old memory.

And finally, as is right for hauntological media, these aspects of haunting also manifested within images that at the same time appeared vaguely familiar, recognisable and homely, whilst simultaneously appearing 'other' – unused, unspecific, out of time - resulting in a sense of the *unheimlich* or *unhomely* (the 'uncanny').

The following sections will explore these features in more detail, examining where these features may varyingly point towards material qualities of the medium, and where such manifestations are the result of conscious interventions by the author.

## 5 Trace and palimpsest

The palimpsest is the surface upon which an image or writing is superimposed, obscuring or erasing that which is underneath. In a much broader sense within the arts, a palimpsest may represent an image that is over-painted, a structure that is built upon, its original form erased.

By its nature the crude projection of a texture onto a 3D object that is inherent to this process is always likely to both erase or overwrite the structure underneath but also retain traces of

the original. As the AI experiments developed the author sought at first to find ways of removing these traces – hiding the starting model or fixing the texture to feel more accurately mapped to the object - but eventually settled to retain and in some cases emphasise these traces due to their desirable and haunting presence. As with many aspects of haunting manifested in each of these images, the disjoint between the elements brought about a satisfying contrast and highlights interesting contradictions of the process – for example, the projection appears more real (although distorted) than its 3D palimpsest despite its artificial origins. The trace highlights the crudeness of the underlying form, which acts as a prototype, but an imperfect one. And importantly the trace points to the notion of presence that Fisher highlights in his *Metaphysics of Crackle* [9]. For Fisher the crackle of Vinyl recordings reminds us of the physicality and presence of recording, as well as the absence of the artist at the same time. In a similar way the presence of the 3D model points towards the artificiality and constructed nature of the image, as well as the trace of a maker.



*Fig.2 We moved here to be closer to the sea (2). (2023) Paul Roberts and Stable Diffusion. Image shows the crude overlay of textures on primitive 3D models leaving traces of the palimpsest.*

The second aspect of trace present in these experiments manifested through spectral images of human-like forms that appeared in renders of meetings rooms or corporate spaces. It is likely that such apparitions are a result of AI training on images saturated with human presences (stock images of office spaces no-doubt feature countless smiling faces sat around desks and laptops), and of training methods that prioritise everyday imagery over more controlled and carefully captioned image sources. However these apparitions are doubly haunting – both in their unrequested manifestation (all ghosts are surely unwanted presences?) as well as their seeming displacement within the visual space. These figures do not occupy the space comfortably and instead ghostly office workers awkwardly intersect vases and walls like some form of badly applied sticker or transfer; neither part of them, nor apart from them.



*Fig.3 Meeting Room 12. (2023) Paul Roberts and Stable Diffusion. Ghostly apparitions of office workers (middle left) appear as artefacts of the AI image generation process.*

## 6 Anachronism

For Hauntologists and scholars of Nostalgia in the late 20<sup>th</sup> and early 21<sup>st</sup> century, a defining feature of modern culture was a sense of asynchronism and anachronism. In asynchronism, artefacts, styles, fashions and objects co-mingle irrespective of their origin and supposed belonging. Retro games from the 1980s are played on Mobile Phones, whilst the music of the 60's and 70's plays on Bluetooth ear-buds. In anachronism, objects appear out of time or out of place - the 'ghost' belongs neither to the past nor the present and is strange in both.

Author's such as Mark Fisher, Simon Reynolds, and Franco Berardi - themselves drawing upon the writings of Baudrillard and Virillio as much as Derrida - highlight how the perceived collapse of time and space in contemporary society is a result of tele-technologies, media that bring distant objects close and vice versa. But for these later writers the technologies of the digital era present more far-reaching effects than the cinema or live television broadcasts and 24 hour news. As Fisher explains,

But here we have a first reason why the concept of hauntology should have become so attached to popular culture in the 21<sup>st</sup> century. For it was at this moment when cyberspace enjoyed unprecedented dominion over the reception, distribution, and consumption of culture. [10]

Thus, unlike previous technologies, the internet provides a more saturated experience of this collapse, in which notions of the linearity and contextual nature of other media are increasingly broken down. An AI trained on the modern internet can only experience and re-present visual culture as an a-historic, asynchronous or anachronistic mass of image-data. However the production of the asynchronous and anachronistic is where AI seemingly excels. It is not by accident that much of the more compelling examples of AI artwork produced by *Dall-E* or *Midjourney* have been in the production of concept art, science fiction and fantasy images, in which strange combinations of objects and people can unproblematically co-exist.

However the sense of anachronism in these particular images is less related to ideas of objects or things being out of place within the image space itself – but rather related to the notion that the space of the rendered image and all of the content depicted within it is not real and does not belong to a particular space or time. These images allude to photography - to acts of documenting; to a chemical or digital verisimilitude based upon light falling on a film or sensor – but no such original exists, and the image is merely a dream and the simulation of a photographic effect based upon a kind of digital remembering.

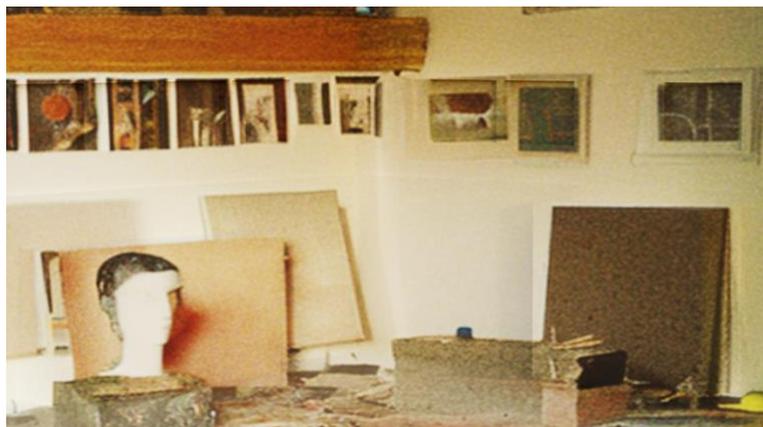
The best example of this anachronism comes from a set of AI generated images made by the author based upon a UK living room. The initial 3D space upon which the AI images were based was loosely modelled upon the author's Grandmother's living room, however the space could have been any living room, anywhere. The real house upon which this model was based was originally built in the 1920s and containing furniture and features acquired over a period stretching from the 1950's to the early 2000's. However the 3D seed model presented little of this information besides indicating the rough forms and placement of vernacular items: sofa and some armchairs, the location of a fireplace, suggestion of shelves, a table, a television. The AI was given the prompt of "A Vibrant Colour Photograph of a British Lounge".

The resulting AI-generated images produced numerous approximations of objects which at once were both familiar and alien. Within the images, gold-edged frames contained hazy black and white images, shelves were adorned with approximations of porcelain statues, and the television stand-in transformed variously into boxy abstract paintings, or weird machines reminiscent of 1950's or 60's sci-fi props. These objects were at once vaguely familiar and yet out of time and out of place. Absent of the historic markers of brands or familiar cultural iconography (a Haywain or Jack Vettriano reproduction, an Ikea shelf, a vintage clock, or Sony TV), each object and each image betrays its sense of inauthenticity through its failure to connect to particular memories or remembered objects. In an inversion of Barthes' famous discussion of his mother's photograph [11], there is nothing familiar here, nothing that speaks of a recognisable presence or absence. There is no 'Punctum' as there is nothing to recognise that might prick us. No-one has ever lived in these spaces, or ever will. They are apparitions, mimics, empty stage sets for a drama never to take place.



*Figs.4 There's a paper on the side table (13) and Fig.5 There's a paper on the side table (10). (2023) Paul Roberts and Stable Diffusion. Strange entertainment machines and photographic memorabilia occupy the AI-imagined lounges.*

In another set of AI-generated collaborations the author set a prompt for the creation of an artist's studio. These images presented the working spaces, canvases, and sculptures of forever unknown artists, their reference images hung on the wall, used materials scattered on the floor.



*Fig. 6 The Studio (2) (2023) Paul Roberts and Stable Diffusion. 'Documentary photograph' of the working space of an unknown artist (who never existed).*

In a 2022 article for SFReview, Emma Dee describes the production of a series of images by Hiroyuki Masuyama that re-create lost historic artworks originally created by the Romantic painter Caspar David Friedrich. As Dee elaborates, the set of 5 images were carefully formed from historical records in order to re-compose and remake these lost artworks. Dee suggests that '[t]he image is essentially haunted by the lost works, created by a series of digital memories and yet not of them.' [12]. In comparison the AI-produced images of the studio series are haunted not only by one artist or their work, but by the thousands of artists who form the 'digital memories' of the AI Model's dataset – and yet also by none at all.

## 7 The Poor Image

Ultimately, the visual outcomes of this research might be described as ‘poor images’. That is that despite high resolutions the images exhibit traits of both being heavily processed (fuzziness, pixelation, distortion, visual artefacts) which is symptomatic of their final production method<sup>1</sup> more often than of the AI models’ inability to create hi-resolution images. Moreover these images tend to fit with Hito Steyerl’s description of the poor image: itinerant, expressive of errant ideas, reformatted, and defying a sense of patrimony, national culture or copyright. In particular, we might wish to assert that these visual outcomes are very much the product of images that have been...

...liberated from the vaults of cinemas and archives and thrust into digital uncertainty, at the expense of its own substance. The poor image tends towards abstraction: it is a visual idea in its very becoming. [13]

At present, AI models are trained on images of a specific resolution<sup>2</sup>, and thus have an accuracy and rendering output that by modern standards is somewhat limited, although improving at a pace, and capable of being upscaled. The resulting images used in these experiments thus tend to exhibit a grainy and imprecise nature, much more reminiscent of mid 20<sup>th</sup> Century amateur photography rather than the crisp digital images we are familiar with. Such features are exaggerated or can be further emphasised through the use of the 3D processes which underpinned these experiments.

However the images of AI production are not merely re-presented versions of some distant prototype – some kind of low resolution facsimile (fax?) - but are rather re-imagined illustrations of a conjured text, re-built from scratch, constructed from the building blocks of a digital ‘memory’. As such the notion of deterioration, compression, or reduction become redundant. The elusive ‘original’ image has not edited and re-distributed; it is instead pulped and atomised, absorbed, and then remixed with other images – homogenised – in the service of the production of an entirely new product or idea.

Like their 3D counterparts, the AI-imagined textures that would come to be projected within the virtual spaces of this research would be crudely made, distorted approximations - always slightly out of focus, lacking the detail that would give a precision to their form or function. Each of the AI ‘photographs’ contain approximations of chairs, tables, or books, which never fully cohere into or stable and distinctive features – they are always out of reach and out of focus, as if seen out of the corner of the eye. Whether an artefact of imprecision within its own source images (trained on photos with limited depth of field) or merely the AI’s own inability to comprehend exactly what it is that it is depicting each image presents itself as a kind of photographic sketch, or a montage made of crudely pieced together parts. To the AI it doesn’t matter if it fools us into believing that the thing described is present, but rather that it bears a resemblance to the thing described – it is a close match.

However this quality again aligns these images with notions of haunting. Each generated image presents itself as if drawn from an archive, it’s yellowing colours or hyper-saturated tones present themselves as if a result of some form of chemical degradation, the images’ fuzziness alludes to the use of cheap lenses and shaking hands as instruments of the production process. And these false documents of lounges and living spaces present as records of real lives – images found in a family album – rather than the more curated images of fashion magazines or furniture catalogues. Their sense of history is a fabrication, but is nonetheless felt in each iteration, if only fleetingly. Their imprecision in depiction forces us to fill in the gaps of knowledge, to assign a history to the families who we imagine as occupants of these rooms; or build narratives around the tragic lives of the unknown artists who painted abstract canvases in imagined brick and glass studios.

## 8 The Unheimlich

Fisher’s examination of the weird and eerie [14] contends with Freud’s notion of the *Unheimlich* or the *unhomely*. Fisher argues that the weird and eerie distinguish themselves from the latter through their relationship between notions of inside (*Unheimlich*) and outside (weird / eerie) – between the familiar, or *familial*, and the unfamiliar and external. Whilst

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<sup>1</sup> Each AI texture is mapped to the 3D model and then re-rendered at a relatively low sampling setting which results in a significant level of noise and grain.

<sup>2</sup> In the case of the Stable Diffusion model used in these experiments, a resolution of 512x512 pixels.

Freud's concept deals with the 'strange in the familiar', Fisher suggests that the weird deals with 'that *which does not belong*' (p10)- i.e that which comes from the outside and is not part of the familiar; whilst the eerie deals with the outside itself - such as the landscape – and 'is fundamentally tied up with questions of agency' (p11).

At first glance it might be possible to suggest that the hauntological features that present within these images are inherently of the domain of the unheimlich. Indeed, the majority of the examples present domestic and familiar settings (by design), and each engages with relatively 'modern' settings and themes instead of more alien worlds or fantastical landscapes. Moreover, each renders objects, furniture, spaces in ways that are both familiar and at the same time alien, not quite right. In other words, these images are constituted of the familiar and the unhomey.

However the weird and eerie come into play through an understanding of process rather than content of these images. The collaborative process of AI image making relies upon a hand-off by the artist to an external (non-human) other, and whilst a similar process is inherent in many digital processes, the extent to which this hand-off gives agency to the machine is of a more significant extent than previously experienced in other forms of image-making. Whilst it is a stretch to suggest these images represent a spontaneous act of creativity on the part of the machine, the machine does present itself as an agent, through the manifestation of its desires and its' dreaming. Indeed, anecdotal reports regarding AI such as ChatGPT (a text-based AI ) testify to hallucinations and fabrications; outright lies in the presentation of data and the creation of false information.

In many of the experiments undertaken during this project, the AI's sense of will was revealed through its 'creativity', as well as its seeming refusal to conform to the sense of order imposed upon it by its human collaborator. For example, in a series of street scenes, the AI demonstrates a surprisingly persistent predilection towards bay windows (a popular but not ubiquitous feature of some UK housing) in the rendering of a row of terraced houses - despite the seed image containing no-such feature, nor textual prompts to indicate their inclusion. Such an act would not be deemed unusual if undertaken by an artist – we might even assert this as a signature or creative flourish, a sense of personal style – however when performed by a machine, a sense of eeriness becomes the more pervasive mode of reception.

Of course notions of the agency of AI and machine learning lead us back to previous assertions and reminders that these processes are a function of their making and ultimately reflect our own human imprint on machines. The strange familiarity of these images is a testament to the fact that AI models learn from society's stored network memory, representing to us our collective conscience in visual form. The same images that we have stored, cherished, and saved in social media and Pinterest boards, alongside the images that saturate our media landscape are again being re-made for us as a form of digital hyper-montage. AI is merely a function of its creation and the circumstances of its training, in the same way that human artists are a function of their environment. This does not alleviate a sense of the unheimlich, strange, or eerie operating within these images, but it does explain why we might find so many of these images strangely familiar as well as strangely alien at the same time. And this also explains why we are likely to find within current and future AI images many of the biases, predilections and stereotypes that currently haunt our media and data landscapes as well as wider society.

Perhaps then, what ultimately haunts these machine-made images is not so much the AI; instead the human haunts AI images. We are the external agents that seek to bend machines towards our own dreams, desires, and experiences. We are the ghost in the machine. We are the external and weird.

## 9 Conclusion

The sense of *wrongness* associated with the weird – the conviction that *this does not belong* – is often a sign that we are in the presence of the new. The weird here is a signal that the concepts and frameworks which we have previously employed are now obsolete. If the encounter with the strange here is not straightforwardly pleasurable ... it is not simply unpleasant either: there is an enjoyment in seeing the familiar and the conventional becoming outmoded. [15]

AI image-making is a relatively new phenomena that has shown rapid advancement in the last decade but is still an incredibly young medium. It is likely that the ramifications of this technology are likely to be significant, as well as unpredictable - especially for creatives.

Whilst AI creativity will raise a number of technical, moral, philosophical, and legal questions in the future, it is also incumbent upon artists to consider questions of materiality and the affordances of this new medium. Whilst early engagements with AI have marvelled at the technical abilities of the medium, its' ability to reproduce a range of styles has been seen to be varied. In the same instance we might find exceptional rendering of portraits that are breath-taking in their realness and stylistic mastery, coupled with anatomical in-exactitude that is often comical, if not disturbing (hands with 8 fingers, limbs bent into torturous positions). Aside from questions of accuracy however, this research paper points towards other concerns such as the affect and emotional or intellectual resonance of AI images.

This paper has identified within these AI image-making a tendency towards the hauntological, a tendency that admittedly has been amplified through the collaborative process; but also a tendency that is seemingly inherent to the material process. It has been suggested that the method of training for AI models, based upon massive data-banks of human-made images, and bent towards mimicry or simulation, leads to outcomes that naturally draw out and reflect our own visual cultures. That these worlds appear as distortions is partially a result of glitches, errors, or failed learning – the machine has not been taught what is important, what makes a thing a thing, and within such images we might find disturbing apparitions. But these distortions also reflect the viewpoint of an outsider, an external viewer which is not always burdened with the expectations of the social or familial group.

Through this hauntological approach we might find within these AI images new possibilities, new ways of looking and seeing. Mark Fisher's writings on Nostalgia and Hauntology recognised nostalgia as a problematic symptom of the current social context – a perpetual present that constantly raids and remakes the past. But Fisher also recognised, a la Derrida, the potential for culture to identify within the past alternative futures, different ways of looking and seeing, or things that were missed:

[O]ne function of hauntology is to keep insisting that there are futures beyond postmodernity's terminal time. When the present has given up on the future, we must listen for the relics of the future in the unactivated potentials of the past. [16]

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