

Authorship, Copyrightability, and Synthography

Comments Submitted to the US Copyright Office with Respect to Questions 18 and 19, September 2023

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INTRODUCTION

I am an Andy Warhol Award winning art critic and art historian who has penned articles for *ArtForum*, *Art in America*, *Sculpture Magazine*, *The International Review of African American Art*, and many other national and international publications. I am also a member of the International Art Critics Association and a contributing editor of *Art Papers* magazine. I graduated from Harvard University with a degree in comparative literature and from the Georgia Institute of Technology with a master's degree in digital media and human-computer interaction (HCI).

The current regulations rest on the notion that a distinction can be made between an image or parts of an image “generated by AI” versus an image or parts of an image created by a human. No such distinction exists in practice, and any copyright regime relying on such a distinction will necessarily be brittle, incoherent and self-contradictory. All images “generated by AI” are in fact created by a human.

I am also a practicing artist. I have practiced oil painting, photography, graphic design, calligraphy, and digital media art professionally since 1992 and now own a production business in the publishing industry, serving clients internationally.

I have spent approximately the last year studying and using generative AI art platforms.

I would like to address Question 18 and Question 19 on the issue of copyrightability particularly with respect to visual art:

SYNTHOGRAPHY

I will use the term “synthography” to refer to the practice of creating still or moving images using AI

processes in whole or in substantial part.¹ Synthography has overlap with photography, painting, com-

¹ I follow others here in building upon the work of Erin Reinhuber. In “Synthography – An Invitation to Reconsider the Rapidly Changing Toolkit of Digital Image Creation as a New Genre Beyond Photography (2022), Reinhuber proposes the use of a new term to account for the proliferation of AI tools working under the hood of most digital cameras, tools that not only improve but in some sense co-create photographs taken with them.

puter programming, and even poetry. But it is not any of those things. From an art historical standpoint, synthography is not a shortcut for making paintings or a shortcut for making photographs; it is a separate artistic medium that—like any medium—has its own constraints, its own processes, and its own aesthetic requirements.

A comparison to the nearby art form of photography is instructive. At bottom, all photographs are made thusly:

1. Point
2. Focus
3. Shoot

Those are the only actions required to produce a copyrightable image. There need not be any plan in place; there need not be any specific level of competence or skill deployed. One need only point a camera with intention and click the shutter button. (The problem of autofocus was solved decades ago,

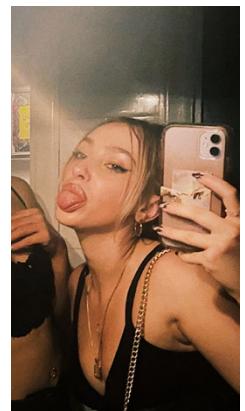
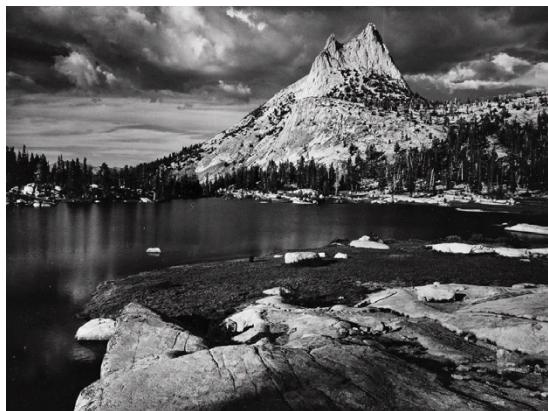
and in most cases the photographer can choose not to be concerned even with that aspect.) The final result need not be educational, politically relevant, morally uplifting, or aesthetically pleasing.² It need only exist in a fixed form.

Synthography works by analogous mechanisms:

A **photographer** points a machine (a camera) at a region of physical space and creates an image using available or supplied light. A **synthographer** points a machine (a computer) at a region of virtual space and creates an image using available or supplied code and language. Conceptually, these activities are parallel. To speak of the parts of a photograph created by a photographer vs. the parts of a photograph created by a camera is a nonsensical distinction. Likewise, to speak of the parts of a synthograph created by a synthographer vs. the parts of a synthograph created by an AI is a nonsensical distinction.

1. POINT

Substantially the same machine (a camera) gives rise to these three very strikingly different images:



Figs. 1-3: (l-r) Ansel Adams, Gordon Parks, Malina B.

In each case, the photographer had a different personal vision and executed that vision in a photograph.

² Per Feist: “the requisite level of creativity is extremely low; even a slight amount will suffice.”

Substantially the same machine (an AI platform) gives rise to these three very strikingly different images:



Figs. 4–6: (l-r) Reddit user 1stumbler, Eric von Stein, Reddit user Simon_Sonnenblume

In each case, the synthographer had a different personal vision and executed that vision in a synthograph.

Every synthograph that is produced, just as every photograph that is produced, is the result of a human author's desire to express some particular vision of the world. That vision may be profound or shallow, revolutionary or banal. The vision may be

extraordinarily detailed or it may simply be a series of dim impressions. But in all cases they are the result of a human actor, and in all cases *the human actor's vision is decisive*.

How much of this image was made by the machine (the camera) and how much was made by the artist?



Fig. 7

How much of this image was made by the machine (the AI platform) and how much was made by the artist?



Fig. 8

The answer is the same in both cases: **All of it was made by the artist via directed use of a machine tool**. Confusion arises under the mistaken belief that an AI platform exercises independent agency. It does not. An AI platform is little more than a sophisticated statistical engine. It makes no "decisions"; it does not "author" anything. It merely presents a statistically probable set of pixels based

on the **user's input**. If there is any vision or artistry, it must necessarily be supplied by the human user. Authoring implies intent and discretion; an artificial intelligence has neither of those things.

If the vision of the human artist were not decisive, we should expect either a completely random distribution of aesthetic approaches across all output

or a nearly uniform treatment of aesthetics across all artists regardless of the user's intent. Instead we

observe that varying aesthetics arise because varying human authorial visions are being expressed.



Figs. 9–12: (clockwise from top left) Kira Xonorika, Josh S. Rose, Tonio Inverness, Malik Afegbua. Note the internal unity of color palettes, compositional choices, mood, lighting, usage of costume, and so forth. It is unlikely that this would have arisen in the absence of successful efforts to direct and guide the work of the AI tools.

2. FOCUS

A photograph is made by eliminating the entire universe of potential subject matter to focus on a single possible subject. A synthograph is made by eliminating the entire universe of potential subject matter to focus on a single possible subject.

In photography, the mechanisms for further focusing an image are selecting a specific region of physical space along with a selection of lenses, film stocks, and so forth. In synthography, a specific region of virtual space³ is selected via the mecha-

nism of the prompt along with a suite of tools, settings, and parameters that guide the ultimate output. The exact suite of tools varies from platform to platform, ranging from minimal (equivalent to a point-and-shoot camera) to extensive (orders of magnitude more complex than the most complex cameras in existence).

The development of one image, *Jiji* (my own work from 2022) will demonstrate one possible process.

Issues of gender identity have been an important political touchstone in recent years, and I'd like to portray some aspect of this issue in an image. So I have decided to make a portrait of a drag performer perhaps backstage or simply in a nightclub setting.

Let's try an initial prompt:

Prompt: man backstage preparing for a drag performance
Basic Settings: Steps: 20, Sampler: Euler a, CFG scale: 7, Seed: 2918326088, Size: 512x512, Model hash: fe4efff1e1, Model: sd-v1-4, Version: v1.5.1⁴

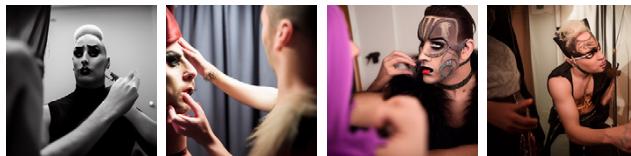


Fig. 13

These are terrible in my opinion and not at all what I had in mind. Let's make a change (highlighted):

man onstage doing a drag performance
Steps: 20, Sampler: Euler a, CFG scale: 7, Seed: 1583879833, Size: 512x512, Model hash: fe4efff1e1, Model: sd-v1-4, Version: v1.5.1



Fig. 14

These images are still nowhere near what I had in mind. A couple more changes:

closeup photo of a man onstage doing a drag performance
Steps: 20, Sampler: Euler a, CFG scale: 7, Seed: 2918326088, Size: 512x512, Model hash: fe4efff1e1, Model: sd-v1-4, Version: v1.5.1



Fig. 15

Better, but I don't want anything quite so exaggerated or clownish. After a few more failed attempts, I realize that I want a character that is less like a drag queen and more "Las Vegas" in style:

closeup photo of a man onstage doing a performance in las vegas with lots of glitter and glamour
Steps: 20, Sampler: Euler a, CFG scale: 7, Seed: 2062972261, Size: 512x512, Model hash: fe4efff1e1, Model: sd-v1-4, Version: v1.5.1



Fig. 16

³ The more precise term for this phenomenon is "latent space." Just as physical space contains an infinite number of potential images depending on where a camera is positioned, the latent space contains an infinite number of potential images depending on how the AI is manipulated. Prompt engineering is largely the practice of navigating this latent space to explore and exploit its contours and terrain.

⁴ This string of technical details sets various parameters for the creation of the image and can be thought of as setting the overall conditions for how the AI will operate: what its range of aesthetic qualities will be, what solutions will be more easily derived from it, the relative weight of the prompt, and so forth.

Aesthetically this is much closer to my intention, but now I have lost the gender aspect that was my initial concern. Let's make some more adjustments as well as some technical refinements:

closeup photo of a man dressed as a las vegas showgirl with lots of glitter and glamour

Steps: 40, Sampler: DPM++ 2M Karras, CFG scale: 7, Seed: 2523240115, Size: 512x512, Model hash: fe4efff1e1, Model: sd-v1-4, Version: v1.5.1



Fig. 17

I make some more technical adjustments to refine the aesthetics. I also decide that I would like a young Asian man as the main character, as that is an underrepresented type of person in these sorts of scenarios:

photorealistic film still of handsome young korean man dressed as a las vegas showgirl with lots of glitter and glamour, light reflections

Steps: 40, Sampler: Euler a, CFG scale: 9, Seed: 129405205, Size: 512x512, Model hash: fe4efff1e1, Model: sd-v1-4, Version: v1.5.1



Fig. 18

This is very close to my vision now. A few more changes and experiments. (I suspect, for example, that the AI is interpreting "glitter" in a distracting way, so I remove that.) I add "threatening and ominous mood" to my prompt because I would like to give a dark undercurrent to the results. I change "man" to "guy" because "guy" often yields fresher feeling faces:

photorealistic film still, closeup shot of a handsome young korean guy, dressed as Las Vegas showgirl, in a nightclub, clear detailed, reflections, threatening and ominous mood, colorful reflected lighting

Steps: 45, Sampler: Euler a, CFG scale: 6.5, Seed: 635050356, Face restoration: CodeFormer, Size: 512x512, Model hash: fe4efff1e1, Model: sd-v1-4, Version: v1.5.1



Fig. 19

Even closer. Now I will add "JJ Abrams lens flare" to the prompt to reinforce the ethereal quality. Note that I am not requesting that anything produced by film director JJ Abrams himself be replicated here. Rather, I am seeking a particular quality of light for which that film director is well known. Invoking and adapting the aesthetics of other artists is a common artistic strategy. Known of course as "influences," all artists have them; AI requires you to name them:

photorealistic film still, (closeup:1.2) shot of a handsome young korean guy, dressed as (Las Vegas showgirl:1.3), in a nightclub, clear detailed, reflections, threatening and ominous mood, colorful reflected lighting, JJ Abrams lens flare, cinematic lighting

Steps: 45, Sampler: Euler a, CFG scale: 6.5, Seed: 1078008803, Face restoration: CodeFormer, Size: 512x512, Model hash: fe4efff1e1, Model: sd-v1-4, Version: v1.5.1



Fig. 20

After a few more tweaks and trial runs with further adjustments to the prompt and parameters, I produce a generation that speaks to me. It has a regal sense of elegance with a touch of wistfulness. I do a bit of cleanup in Photoshop (10 minutes of minor photo editing), and I am happy with my final image. I do wish I had gotten the lens flare, but I was not able to achieve that.⁵ Let's call him *Jiji* because he looks like his friends might call him that:

⁵ Some images contained the desired lens flare. Some did not. This unpredictability is not evidence of a lack of authorship. Any photographer can relate a story of attempting a particular outcome but failing to achieve it. For example, in a traditional photography scenario any attempt to catch a sun flare might be equally hit-or-miss, depending as it does on the position of the camera with respect to the sun, an object that is constantly in motion. Similarly, a watercolor painter may covet the gauzy color effects of JMW Turner, but manage to



Fig. 21

I have condensed the production process here. But note that this process can take hours, days, or even weeks of working through multiple prompts, settings, and parameters. This is a simplified version of “prompt engineering,” which consists of the practice of coaxing the desired output from an AI by subtly or dramatically altering the input. This practice can become extremely complex—word choice, word order, word quantity, spelling, intentional misspelling, grammar, and more all become relevant in the same way various solvents, pigments, turpentine, canvas textures, and so forth become relevant in the overall aesthetics of a painting. Aesthetic progress is made by experimenting with the “materials” (words) in order to make the output match the artist’s vision ever more closely.

This is authorship. The process is tedious and the tools are blunt. However, an artist’s process need not be efficient or sophisticated to enjoy copyright protection.

Prompt engineering is not a series of random rolls of the dice. The process is analogous to carving down a block of raw marble to achieve ever more faithful representations of the desired output. It is a skill that some perform better than others. Each manipulation of prompts and settings is a chipping away of marble in order to reveal the intended sculpture beneath.

That is how I proceeded step-by-step from a relatively distant starting point:



Jiji may now form the kernel of a series in the same vein, further filling out a specific artistic vision. Images in the series include a variety of specifications (including prompts with details such as “dyed hair”, “blues, greens, yellows,” “marabou”, “ostrich feathers”, “elaborate headpiece”, “looking at the viewer” etc., as well as a wide variety of parameter settings for different aesthetic effects.)

Figs. 21–24: Images from *Glitters* (2022), Tonio Inverness. Stylistic unity points to an underlying authorial intention and control.

achieve only a muddy mess in painting after painting. Failure to achieve some part of an intended artistic vision does not invalidate the artist’s authorship.

In its rejection of Kris Kashtanova's application for copyright of *Zarya of the Dawn*, the Copyright Office stated:

It is relevant here that, by its own description, Midjourney does not interpret prompts as specific instructions to create a particular expressive result. Because Midjourney "does not understand grammar, sentence structure, or words like humans," it instead converts words and phrases "into smaller pieces, called tokens, that can be compared to its training data and then used to generate an image." ... To obtain the final image, [Kashtanova] describes a process of trial-and-error, in which she provided "hundreds or thousands of descriptive prompts" to Midjourney until the "hundreds of iterations [created] as perfect a rendition of her vision as possible.

...

Rather than a tool that Ms. Kashtanova controlled and guided to reach her desired image, Midjourney generates images in an unpredictable way. Accordingly, Midjourney users are not the "authors" for copyright purposes of the images the technology generates.⁶

Here the Office appears to disregard the cumulative effect of building prompts and settings. Each prompt is not a fresh new lottery ticket. Rather, artists typically build prompts through successive trials (or using their own accumulated knowledge) that reveal more and more how to derive the desired result from the AI system. Midjourney does generate images "in an unpredictable way," but as the prompt becomes refined (or as unworkable options are discarded), the window of unpredictability becomes narrower and narrower until a desired outcome is reached. From an artistic standpoint, that is precisely a process of "guid[ing]" the AI.

The Copyright Office would appear to believe that because an AI artist cannot control everything that they therefore control nothing. This reasoning is enough to disqualify every known visual art form,

each of which includes some aspect that lies beyond the control of the artist.

Trial-and-error in the process of refining a vision is a well established component of art making. A painter or sculptor may attempt and fail in hundreds of combinations, brushstrokes, and compositional strategies before arriving at a solution that achieves their artistic vision. Indeed they may try hundreds of options and still never achieve the intended vision. None of this invalidates the artist's authorship. The criterion that an artist must achieve their vision with no tolerance for misses or consideration of alternatives along the way is a standard to which we hold no other art form.

An examination of a photographer's contact sheet demonstrates that creating an image has always been as much an act of discovery and searching as it is an act of explicit planning.



Fig. 25: Contact sheet by Michel Compte

⁶ Excerpt from correspondence from US Copyright Office to Kris Kashtanova rejecting authorship of *Zarya of the Dawn*, as reprinted in *Reason*: Eugene Volokh, "No Copyright for Certain AI-Generated Works, but Maybe Yes for Others, if Prompts are Detailed Enough," 21 August, 2023, <https://reason.com/volokh/2023/08/21/no-copyright-for-certain-ai-generated-works-but-maybe-yes-for-others-if-prompts-are-detailed-enough/>

It is rare that a photographer or a painter mentally conceives of an image in complete, minute detail and then simply goes about mechanically executing it in a straight line to a final product. Improvisation, discovery, and stumbling through many blind alleys and false starts nearly always feature as a part of the artistic process, including many cases where the model, the weather, the paint chemicals, or the passage of time does as much to influence the final outcome as the artist. Historically, the Copyright Office has been indifferent as to whether 1000 false starts were required or none at all; whether the artist planned for a rain shower or the rain shower was a mere coincidence; whether a painter's model came up with her own pose or whether it was dictated by the painter. None of these are dispositive in determining claims of authorship. Because an artist cannot control *some* aspects of a work does not mean that they control *no* aspects of a work.

The Office goes on to say:

If Ms. Kashtanova had commissioned a visual artist to produce an image containing "a holographic elderly white woman named Raya," where "[R]aya is having curly hair and she is inside a spaceship," with directions that the image have a similar mood or style to a "Star Trek spaceship," "a hologram," an "octane render," "unreal engine," and be "cinematic" and "hyper detailed," Ms. Kashtanova would not be the author of that image.⁷

A commissioned visual artist exercises aesthetic discretion and personal choice. An AI platform does neither. Platforms such as Midjourney merely present to the user a statistically probable arrangement of pixels correlated to the user's input. A synthographer's job is to discover and manipulate those statistical patterns to push the likely results away from some outcomes and toward others. The tool the user has for manipulating these statistical

probabilities is language. The user's authorship rests in the use of language supported by other tools such as settings and parameters to guide the AI's statistical model to a position of adequately fulfilling their vision. No other consciousness is in play. No other aesthetic decision maker is involved.

Copyright has been granted to parties participating in the creation of a work in far less intensive or direct ways, such as in *Brod v. General Publishing Group, Inc.* wherein book author Phillip Collins was deemed a co-author of a joint collection of photography because "Collins inspired and directed the production". Collins' contribution was deemed to rise to the level of co-authorship because he:

selected the subject matter of the photographs by conceiving of the idea to photograph vintage televisions and locating the actual televisions for the shoot. He collaborated with Brod on the composition of the photographs by selecting and positioning both the televisions and the props. He suggested camera angles and changes to be made before Brod triggered the shutter. Thus, Collins' contributions were sufficiently original and expressive to constitute a copyrightable contribution, even though he did not physically trigger the shutter.⁸ (emphasis added)

All of these actions have clear analogs for the synthographer who conceives, selects, suggests, and changes, until a suitable image emerges. The authorial work is performed in the generation stages. Post-production editorial work is, as it were, icing on the authorial cake. As summarized by Nigerian artist and filmmaker Malik Afegbua: "When it comes to AI, you put in a text prompt, it gives you something random—you keep going to different depths until you find what you want"⁹ (emphasis added).

It is not unusual for synthographers to spend significant amounts of time on prompts and other in-

⁷ Excerpt from correspondence from US Copyright Office to Kris Kashtanova rejecting authorship of *Zarya of the Dawn*, as reprinted in *Reason*: Eugene Volokh, "No Copyright for Certain AI-Generated Works, but Maybe Yes for Others, if Prompts are Detailed Enough," 21 August, 2023, <https://reason.com/volokh/2023/08/21/no-copyright-for-certain-ai-generated-works-but-maybe-yes-for-others-if-prompts-are-detailed-enough/>

⁸ *Brod v. General Publishing Group, Inc.*, 32 F. App'x 231 (9th Cir. 2002)

⁹ Malik Afegbua quoted in Gertrude Kitongo and Mark Tutton, "Nigerian AI artist creates a fashion show for elderly people," CNN, 23 June, 2023, <https://www.cnn.com/style/article/malik-afegbua-elderly-fashion-ai-art-spc-intl/index.html>

puts, confronting difficult aesthetic problems and seeking to resolve them. A smattering of comments

from two popular online forums devoted to AI art generations demonstrates the point¹⁰:

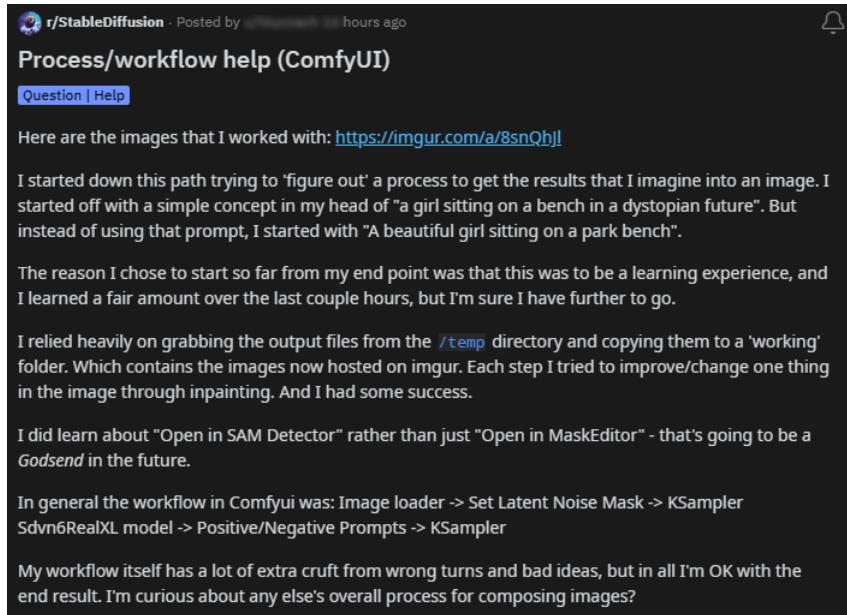


Fig. 26 Online forum comment

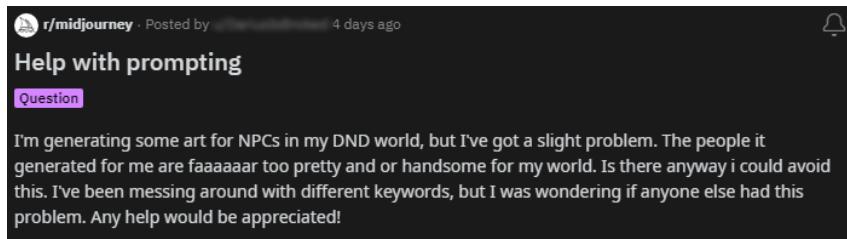


Fig. 27 Online forum comment

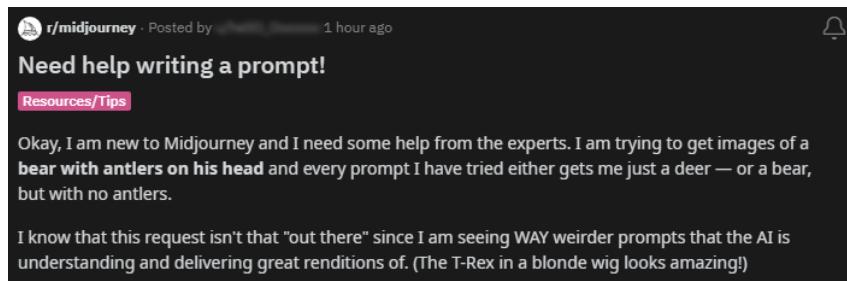


Fig. 28 Online forum comment

Absence of post-production work is not prima facie evidence that no purposeful human intervention has taken place. The development of *Jiji* is human driven from concept to completion. There is no AI action at any step independent of a human operator attempting to fulfill an artistic intention.

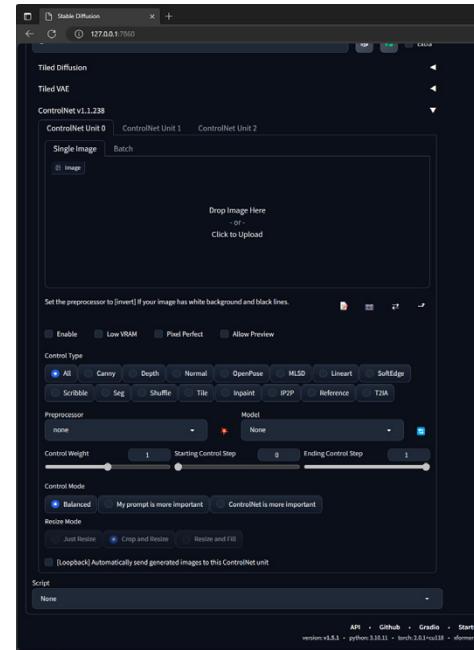
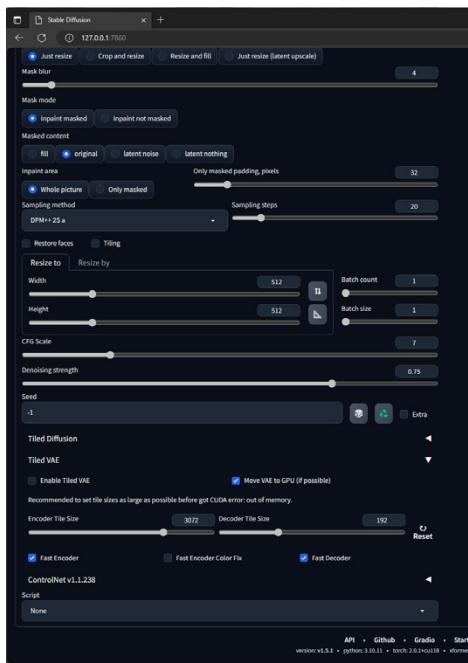
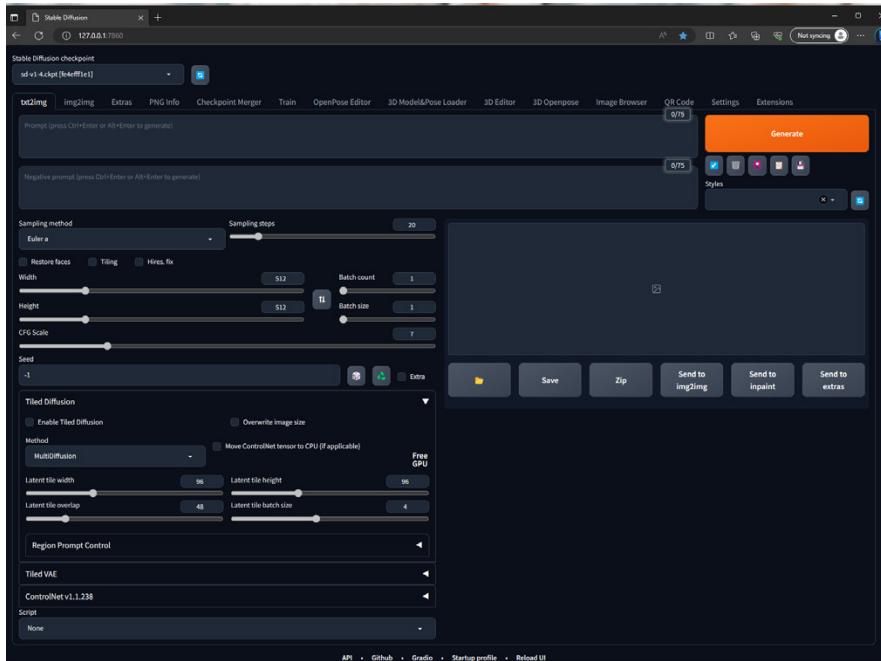
10 See Appendix A for more examples of AI platform users seeking help in improving prompts and parameter settings to more fully realize their visions.

3. SHOOT

Jiji represents a relatively simple workflow. US copyright law is agnostic regarding workflow complexity. However, synthography does allow for elaborate workflows of substantial complexity and detail.

Screen shots from the Automatic1111 web software (a popular Stable Diffusion interface) give some clue as to the potential for process complexi-

ty. All of this represents the equivalent of a photographer's lenses, f-stops, film stocks, shutter speeds, and so forth. Or to compare synthography to painting, these interface components would be the equivalent of a painter's brush choices, mediums, masking devices, canvas stocks, and so forth. These are the mechanisms that help the artist direct the output of the AI.



Script

```
img2img alternative test
o CFG Scale should be 2 or lower.
 Override `Sampling method` to Euler?(this method is built for it)
 Override `prompt` to the same value as `original prompt`?(and `negative prompt`)
```

Original prompt

Original negative prompt

Override `Sampling Steps` to the same value as `Decode steps`?

Decode steps

Override `Denoising strength` to 1?

Decode CFG scale

Randomness

Sigma adjustment for finding noise for image

API · Github · Gradio · Start

version: v1.5.1 · python: 3.10.11 · torch: 2.0.1+cu118 · xformers

Script

```
X/Y/Z plot
```

X type

Seed

Y type

Nothing

Z type

Nothing

Draw legend

Keep -1 for seeds

Grid margins (px)

Swap X/Y axes Swap Y/Z axes Swap X/Z axes

Include Sub Images

Include Sub Grids

API · Github · Gradio · Start

version: v1.5.1 · python: 3.10.11 · torch: 2.0.1+cu118 · xformers

Script

```
Outpainting mk2
```

Recommended settings: Sampling Steps: 80-100, Sampler: Euler a, Denoising strength: 0.8

Pixels to expand

Mask blur

Outpainting direction

left right up down

Fall-off exponent (lower=higher detail)

Color variation

API · Github · Gradio · Start

version: v1.5.1 · python: 3.10.11 · torch: 2.0.1+cu118 · xformers

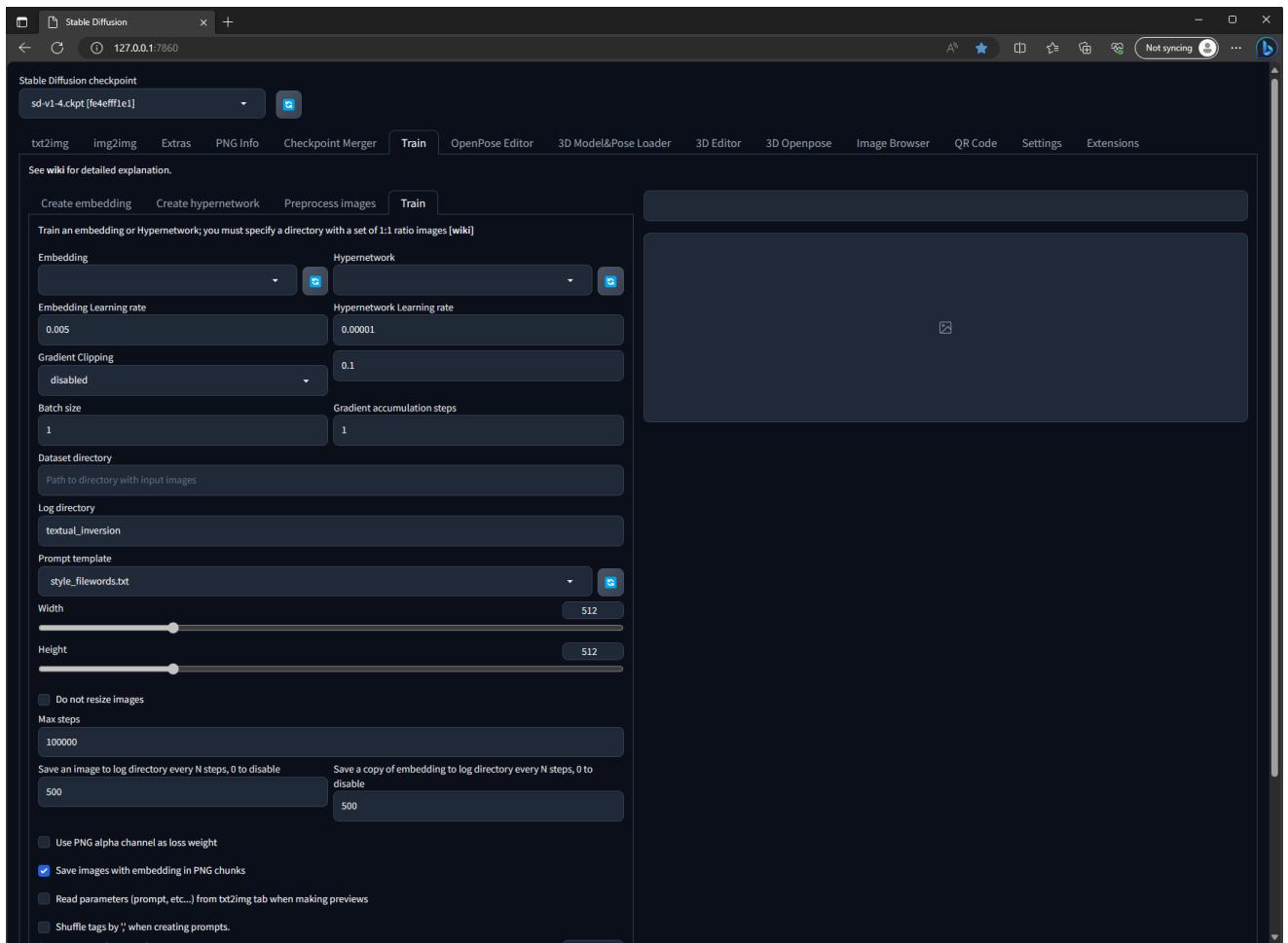
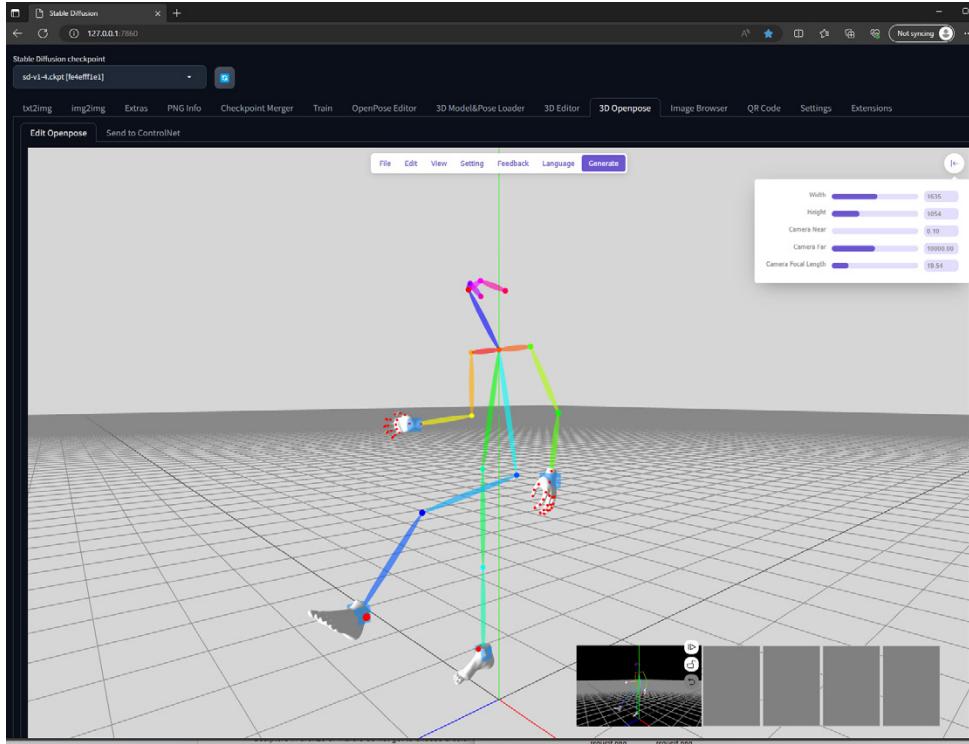


Fig. 29: Automatic1111 screen shots

These are 8 of perhaps a dozen or so screens available to most users of the platform. Some AI platforms are considerably simpler. Other, more advanced platforms are significantly more complex and customizable. As with all art forms, more complex tools often confer greater flexibility and expressiveness. But they are not what determine authorship. A musician may use a fully equipped digital studio, or they may use a child's toy piano. An original musical recording using either tool would enjoy equal copyright protection.

Although a detailed, technical breakdown of the image creation process is beyond the scope of these comments, a schematic of another work by the author (*Danilo in the Garden*, 2023) will illustrate some of the techniques and processes used to develop a work (see Fig. 30).

Aside from minor editorial adjustments in image editing software (e.g., correction of seams, skin texture added), all work on *Danilo in the Garden* was done within Stable Diffusion. Thus the final product is unambiguously a synthograph created in Stable Diffusion with final output from the AI platform.

In its public guidance on how to register for copyright works containing AI components, the Copyright Office has stated:

In determining whether disclosure is necessary, you can discern the line between appreciable and *de minimis* by answering this question: Would the AI generated material standing on its own be sufficient to satisfy the *Feist* copyrightability standard if it had been created by a human author? If so, then a brief statement disclosing that material should be included in the application for registration.¹¹

The Office's March, 2023, public guidance also stipulated that the Office would ask:

whether the "work" is basically one of human authorship, with the computer [or other device]

merely being an assisting instrument, or whether the traditional elements of authorship in the work (literary, artistic, or musical expression or elements of selection, arrangement, etc.) were actually conceived and executed not by man but by a machine.¹²

In the case of *Danilo in the Garden* these two criteria are at odds. The work consists entirely of AI generated material from edge to edge. However, it is also simultaneously the result of a series of highly specific, nearly obsessive artistic choices on the part of the author. Nearly every element from the type of yellow flower appearing in the foreground to the shape of the jacket lapels to the tightness of the subject's curls is the direct result of the artist's specific, tightly controlled choices or vision. Nevertheless, per current registration guidance, the entire work would have to be disclaimed in the "Limitation of Claim" section of a copyright application. This is an absurd outcome. Images that are the result of far less artistic control and intervention routinely enjoy copyright protection (see Fig. 3).

There is no meaningful way to delineate "AI generated material standing on its own" in *Danilo in the Garden*. No part of the AI generated material exists separate from the artistic choices of a human operator, even though AI generated material plainly predominates. **The entirety of *Danilo in the Garden* was made by a human artist via directed use of AI as a digital tool.**

Although *Danilo in the Garden* represents a case of heavier authorial control, it is nevertheless typical for artists using AI to understand their own activities as fulfilling an artistic vision somewhere on a spectrum from casual preferences to highly detailed, exacting specifications. As we have seen, a creator's vision need not be especially well thought out. A minimal amount of effort resulting in a minimal fulfillment of the artist's broadest, most loosely defined desire suffices. To my knowledge, it is not typical for the Copyright Office to reject applica-

¹¹ *Application Process for Registration of Works with Artificial Intelligence-Generated Content*, Transcript from Online Webinar on June 28, 2023, <https://www.copyright.gov/events/ai-application-process/Registration-of-Works-with-AI-Transcript.pdf>

¹² *Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence*, March 16, 2023, <https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence>



Preliminary aesthetic explorations

Refine prompts to refine aesthetics



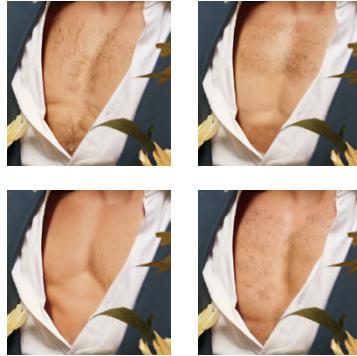
Development of aesthetic

Refine prompts to refine aesthetics



Further style and composition refinement

Final prompts specify lighting ("at dusk"), background ("overlooking city"), color scheme ("pink, yellow, white"), focal distance and other aspects



Iterative trials to work out chest details and anatomy

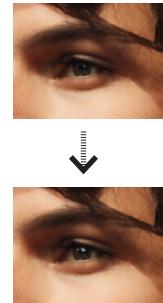


Design of character's physical characteristics



53 character thumbnails synthesized and trained to create reusable character module

via image translation and parameter setting, with further changes to prompt (e.g., adding "smoke" and "soap bubbles"; removing "city"; adding qualifiers such as "fake", "unnatural", with adjusted keyword weighting.) Approximately 30-40 iterative trials to progressively refine aesthetics explore options



Addition of eye catchlights and blood vessels



Flower refinements



Left front flower iteration and replacement

via "textual inversion" embeddings



Creation of final substrate "sketch"



Rough collar and lapel sketch



Iterative trials to work out collar, lapels, and buttons

Fig. 30

tions of copyright because the artist was not picky enough in setting the scope of their artistic vision.

Perhaps the most specific indication of what factors would constitute authorship were articulated by Judge Berryl A. Howell in *Thaler v. Perlmutter*, quoting from *Burrow-Giles Lithographic Co. v. Sarony*:

A camera may generate only a “mechanical reproduction” of a scene, but does so only after the photographer develops a “mental conception” of the photograph, which is given its final form by that photographer’s decisions like “posing the [subject] in front of the camera, selecting and arranging the

costume, draperies, and other various accessories in said photograph, arranging the subject so as to present graceful outlines, arranging and disposing the light and shade, suggesting and evoking the desired expression, and from such disposition, arrangement, or representation” crafting the overall image.¹³

Acknowledging that this list is not meant to be exhaustive, several types of photography nevertheless fail Howell’s test of authorship, whereas many works of synthography pass it (see Table 1).

Table 1: Elements of Control

Control Element	Sports Photography	News Photography	Wildlife Photography	Synthography
Posing the subject	NO	NO	NO	YES
Selecting and arranging the costume, draperies, and accessories	NO	NO	NO	SOME
Arranging and disposing the light and shade	NO	NO	NO	YES
Suggesting and evoking expression	NO	NO	NO	YES
Copywritable?	YES	YES	YES	?

In the creation of *Danilo in the Garden*, synthography also offered many other areas of fine-point control not readily available in other art forms.

(See Table 2. See also Appendix B for examples of the extended choice architecture afforded by synthography.)

13 *Thaler v. Perlmutter* (D. D.C. 2023)

Table 2: Extended Choice Components

Aesthetic Choice/ Capability			
	Oil Painting	Fashion Photography	Synthography
Level of reality (stick figure to photographic)	SOME	NO	YES
Subject's bone structure, eye color, hair color	YES	NO	YES
Ability to edit subject's age, race, and gender	YES	NO	YES
Dynamic reconstitution of detail based on size	NO	NO	YES
Defiance of real-word physics or biology	YES	SOME	YES

CONCLUSION

Although it is tempting to imagine art made with AI tools as simply a new way to manufacture old forms of art such as paintings and photographs, that would be a mistake. This error is why many people judge synthography by the production methods, skill sets, and architectures of choice available to legacy artists.

Synthography is fascinating and exciting to the extent that entirely new types of art can be made, expressing entirely new ideas and visions. This cannot happen if we get hung up on the fact that a synthographer cannot control the exact folds of fabric in a drapery while a painter can. Or the fact that the methods for achieving the outcomes look very different from other art forms.

Photography famously failed as “art” in its early history because it did not do the same things as painting. Digital media art initially failed as “art” because it could not do the same things as painting or photography. Synthography forecloses some areas of artistic expression while opening up new modes of artistic expression unavailable through any other medium. Part of the purpose of copyright is to encourage just this sort of expression and inventiveness. Extending copyright protection to the artists who use the new generation of digital tools would help preserve that mission.

APPENDIX A

Additional prompt query screenshots

r/StableDiffusion · Posted by [redacted] 11 hours ago

How do you get good prompts?

Discussion

I have a question as to how do some people figure out what prompts to get where they get some amazing pictures. If possible please comment your strategies to get good prompts or how I could get some good images myself.

[redacted] · 10 hr. ago

Getting an amazing picture and getting an amazing picture of what you want are not the same of course. Firstly understand how the prompts work - sequence of priority etc. I've run a lot of subtle variants of pictures to (start to) get to understand the nuance of weighting of prompts. Choice is your enemy, be specific with what you want for a look or a subject. Find that look or subject in a gallery (civitai for eg) and read the prompts - take those and experiment and see which of those prompts work and which ones are padding. For an example for a particular look to a picture - note the cameras mentioned in various prompts, (eg Sony A7, Fuji XT3 etc) see what they do to your picture

[redacted] · 8 hr. ago

Other people have already shared some good insights. I am only here to say that it's not magic. You will end up putting in a lot more time and effort to understand the software and the process than you probably expect. If you want something awesome that is "yours" you need to be awesome first.

I spent countless hours copying prompts and running them and modifying them and just basically screwing around before I ever tried something on my own. Realistically, it's like that with any new venture. Learning to play a piano requires a piano, but sit a non-musician in front of a baby grand, and it will all be noise. You have to start learning what notes are, then scales, then you play other people's compositions, and you study more. At some point, you will be ready to write your own music, but not before that.

Just don't give up and keep going. It's perfectly reasonable to just look at a lot of prompts first. In the meantime you will learn about textural inversion, LoRAs, controlnet, upscalers... there's a lot.

r/midjourney · Posted by [redacted] 16 hours ago

Struggling to Get Midjourney to Recognize 'Retail Coffee Bags'

Question

Midjourney seems to only recognize the large bags/sacks/bundles used for shipping green beans to roasters. I'm trying to get it to identify regular retail coffee bags—the ones we typically buy at supermarkets. Has anyone found a way to phrase this or any prompt engineering tricks that work? Appreciate any suggestions!

Fig. A

APPENDIX B

Choices and Controls Afforded to Practitioners of Synthography Not Readily Available to Other Artists, Some Examples

These elements cannot easily be controlled in other art forms, such as painting and photography. That

limitation does not make the practitioners of such legacy forms any less the authors of their works.

Fig. B1: Realism level



Fig. B2: Size-dependent detailing (i.e., increasing size of canvas creates new detail in the image)



Fig. B3: Edit of gender, race, etc.



Image Credits

Fig. 1: Ansel Adams, Cathedral Peak and Lake, Yosemite National Park, California, 1960, Vintage Silver Gelatin Photograph

Fig. 2/7: Gordon Parks “Department Store”, Mobile, Alabama, 1956

Fig. 3: Malina B., #selfietime #tiktok #instagram #mirror #mirrorselfie #newyorkcity #nyc #club

Fig. 4/8: Reddit user 1stumbler, image from *People with Their Dogs*, Midjourney

Fig. 5: Eric von Stein, toy design, Stable Diffusion

Fig. 6: Reddit user Simon_Sonnenblume, *Living in a Box*, Stable Diffusion

Fig. 9: Work by Kira Xonorika

Fig. 10: Josh Rose, *Outside a store, Girl walks at school, Tractor*, Midjourney, 2023

Fig. 11: Malik Afegbua, images from “The Elders Series,” Midjourney, 2023

Fig. 12: Tonio Inverness, *Danilo in the Garden* (2023), *Kenny Yeon in the Garden* (2022-2023), Untitled (2023), image from *Taj Story* (2023), Stable Diffusion

Fig. 13–Fig. 24: Author’s work

Fig. 25: Michel Compte, *Helena Christensen VII (Contact Sheet)*, 1993

Fig. 26–Fig. 28: Screenshots from popular online forums for AI users

Fig. 29: Screenshots of Automatic1111 software interface

Fig. 30: Tonio Inverness, *Danilo in the Garden* (developmental schematic diagram)

Table 1 images: Digital Photography Review user flbdig, 2019; AP Photo/Mstyslav Chernov, “A Ukrainian serviceman guards his position in Mariupol, Ukraine”, 2022; Thomson’s gazelle, africafreak.com; Malik Afegbua, from “The Elders Series,” Midjourney, 2023

Table 2 images: Joseph Kleitsch, *Portrait of a Man Seated in a Garden*, Oil on canvas, 1918; Cécile Borattoletti, *Adrien Sahores* by for Commons Sense Man magazine, n.d.; Tonio Inverness, *Danilo in the Garden*, 2023

Fig. A: Screenshots from popular online forums for AI users

Fig. B1: Author’s work

Fig. B2: Andrew, “3 methods to upscale images in Stable Diffusion (ControlNet tile upscale, SD upscale, AI upscale),” Stable Diffusion Art, <https://stable-diffusion-art.com/controlnet-upscale/>

Fig. B3: Author’s work