AP 2-D Art and Design Portfolio

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Written Evidence

Sustained Investigation

Identify the inquiry that guided your sustained investigation.	Response: How do we package reality to make sense of it—and what is lost in the process? Science uses equations and models, while the eye and brain filter signals to create a stable image. I aim to unpack these frameworks, revealing their distortions or oversimplifications. I explore concepts like the wave-particle duality of light, mass-energy equivalence, and illusions like Troxler fading and the Moiré effect and repackage them—through organic processes like screen printing and darkroom work; highlighting how our understanding is always imperfect, refined through trial, error, and reinterpretation.
Describe ways your sustained investigation developed through practice, experimentation, and revision.	Response: Initially, my sustained investigation explored the physical properties of light through wave-particle duality, ray diagrams, and interference. However, through iterative material exploration—particularly layering, phototransfer, and distortion—I experienced a conceptual shift. I began to question how both scientific models and perceptual systems compress information into abstractions. This insight led me to expand my investigation from purely physical optics to optical illusions, focusing on how context, expectation, and visual systems construct and manipulate perception.

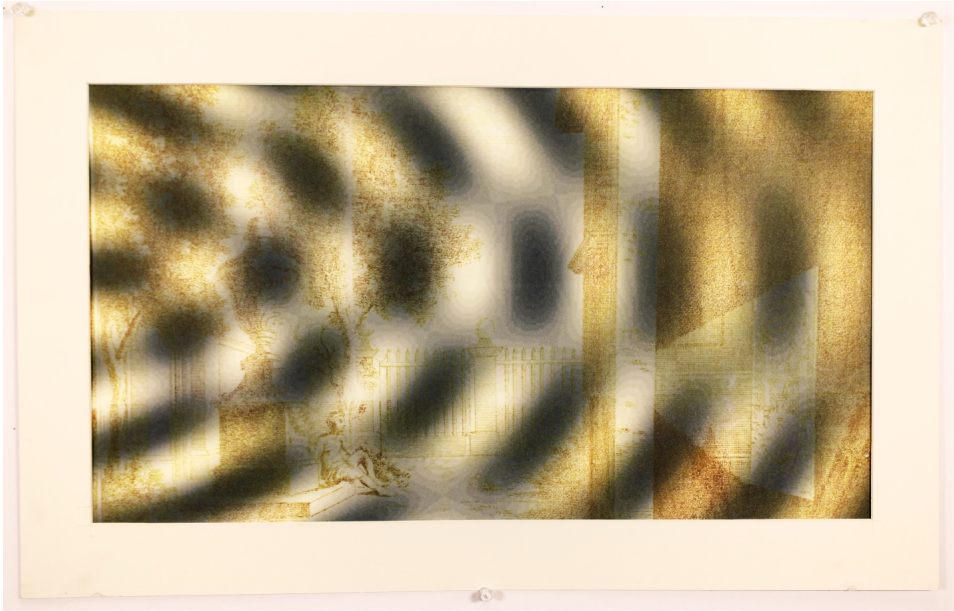


Image 1

Sustained Investigation

Height: 8

Width: 15

Materials:

Stonehenge cotton deckled paper to reflect organic interaction between light and understanding it.

Process(es):

Acetone phototransfer of historical camera obscura diagram; inkjet of double slit interference

Use of Digital Tool(s): Yes

Digital Tool(s) used: Photoshop

Citation(s):

Young, T. (1802). The Bakerian Lecture II: On the theory of light and colours.

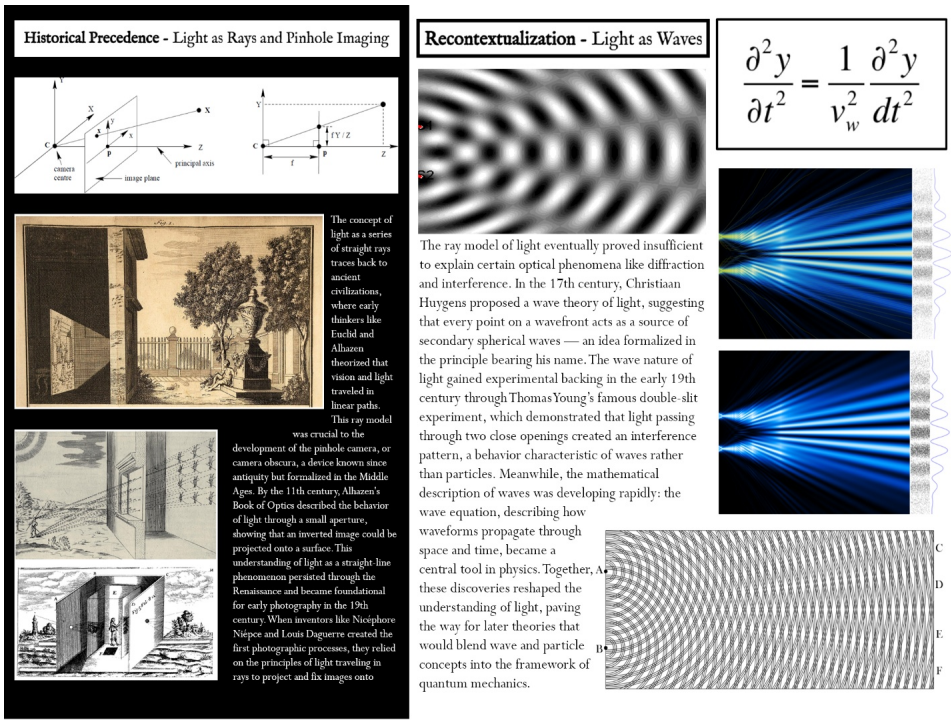


Image 2

Sustained Investigation

Height: N/A

Width: N/A

Materials:

Documentation/Brainstorming for IMG 1; exploring metaphysical and historical properties of light.

Process(es):

Researched/read: Bakerian Lecture II via Royal Society Publishing, Wave equation and discovery.

Use of Digital Tool(s): Yes

Digital Tool(s) used: Photoshop

Citation(s):

Young, T. (1802). The Bakerian Lecture II: On the theory of light and colours.

Image 3

Sustained Investigation

Height: 12

Width: 15

Materials:

Transparencies, double-sided tape, displayed with window to sunlight for additional temporal layer.

Process(es):

Inkjet on transparency to display moire effect and allow layered shifts in perception/interference.

Use of Digital Tool(s): Yes

Digital Tool(s) used:

Python Matplotlib code for moire effect.

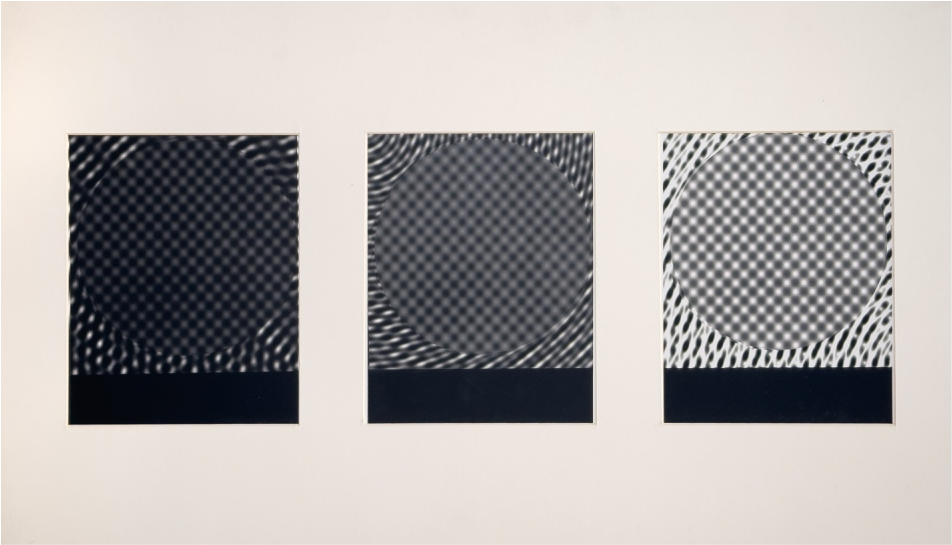


Image 4

Sustained Investigation

Height: 16

Width: 30

Materials:

Ilford photosensitive paper, transparencies; to reflect multilayered ideas and show optical effects.

Process(es):

Multiple exposure negative contact darkroom print to repackage illusory concepts into cohesive form.

Use of Digital Tool(s): Yes

Digital Tool(s) used:

Python Matplotlib code (mathematical functions)

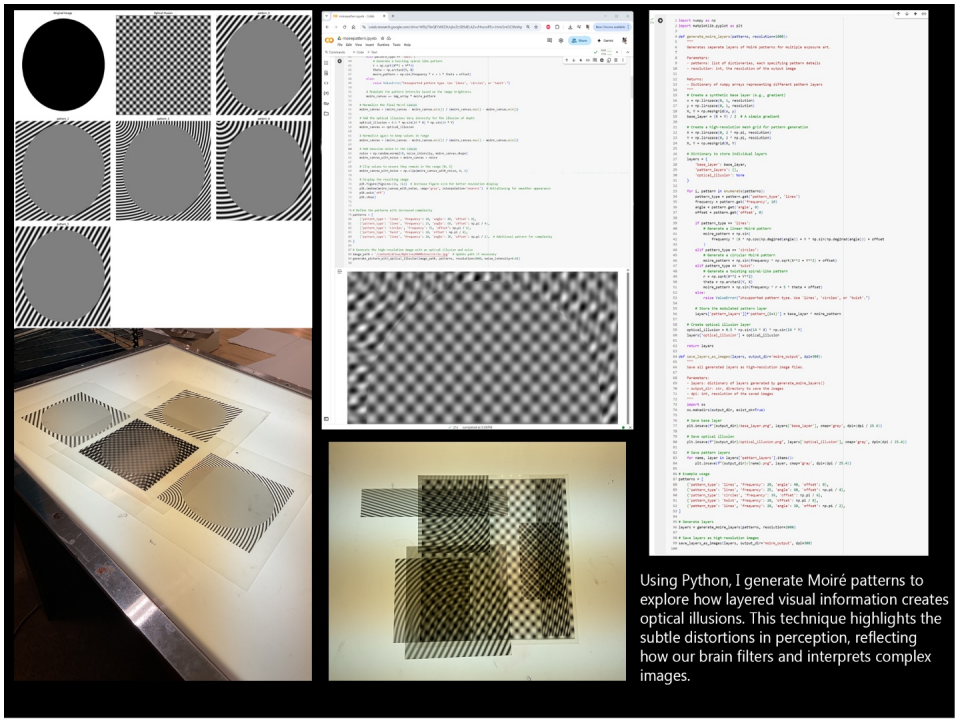


Image 5

Sustained Investigation

Height: N/A

Width: 2100

Materials:

Documentation for transparency involved projects; process for repackage complexity of illusions.

Process(es):

Mathematical modeling of optical illusions, coded with Matplotlib gaussian sine and cosine waves.

Use of Digital Tool(s): Yes

Digital Tool(s) used: Photoshop

Image 6

Sustained Investigation

Height: 13

Width: 13

Depth: 2

Materials:
Working analog clock, transparency paper;

Process(es):
Manipulation of mechanical components of clock to visually represent complexity of time.

Use of Digital Tool(s): Yes

Digital Tool(s) used:
Python Matplotlib code (mathematical functions)

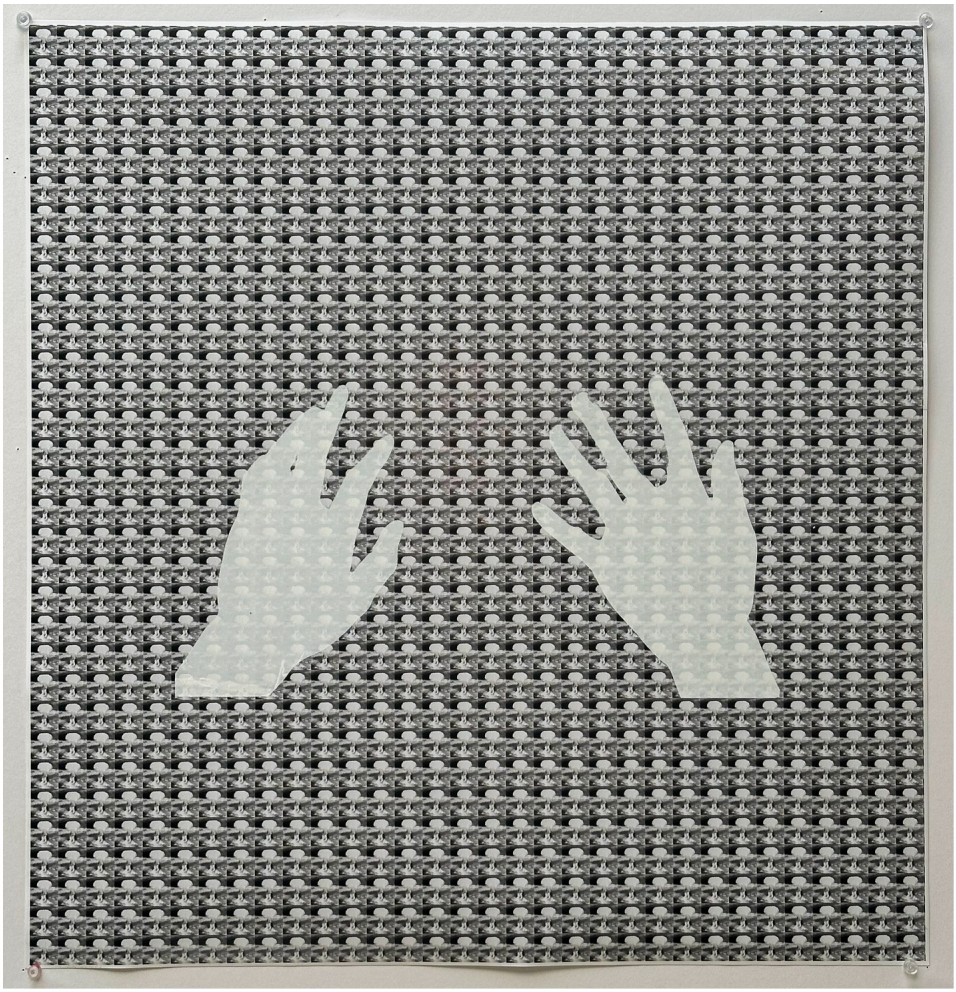


Image 7

Sustained Investigation

Height: 30

Width: 30

Materials:

Speedball ink, premium luster photo paper

Process(es):

Darkroom Rayograph, digital scanning, screen printing, inkjet print; involvement of many techniques.

Use of Digital Tool(s): Yes

Digital Tool(s) used:

Photoshop for tiling of atomic bomb.

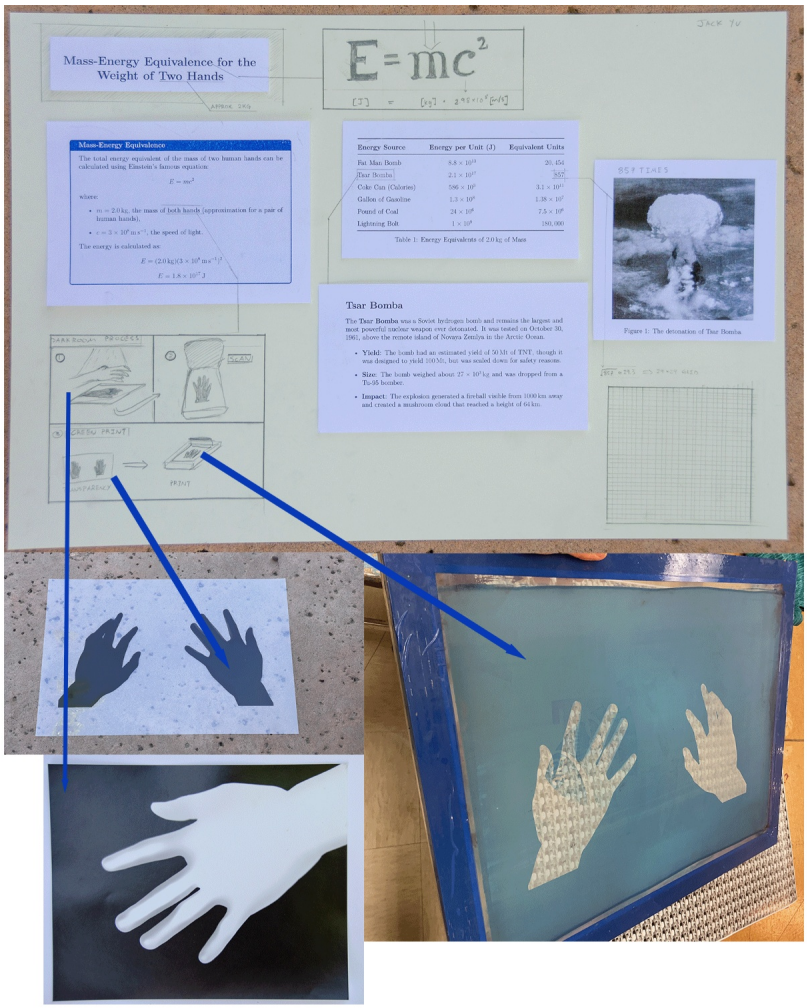


Image 8

Sustained Investigation

Height: N/A

Width: N/A

Materials:

Documentation/brainstorming for IMG 9; reiterative calculations to express varying equivalencies.

Process(es):

Mathematical calculation of atomic bomb energy equivalent to mass of hands using E = mc^2.

Use of Digital Tool(s): Yes

Digital Tool(s) used: Photoshop

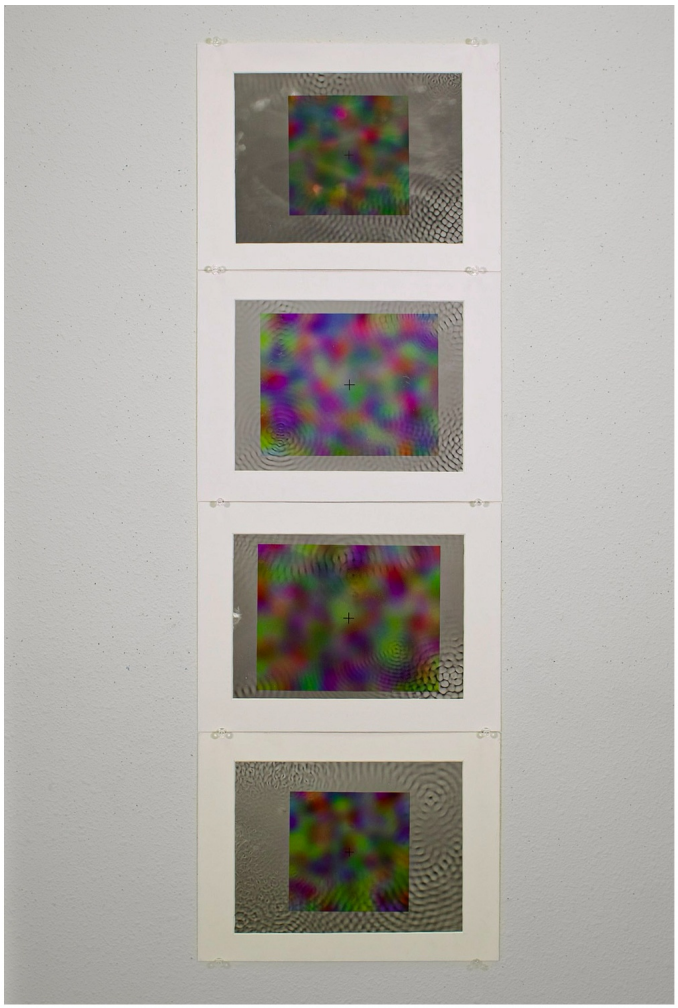


Image 9

Sustained Investigation

Height: 40

Width: 13

Materials:

Ilford photosensitive paper, archival mat board to reiterate the theme of organic involvement.

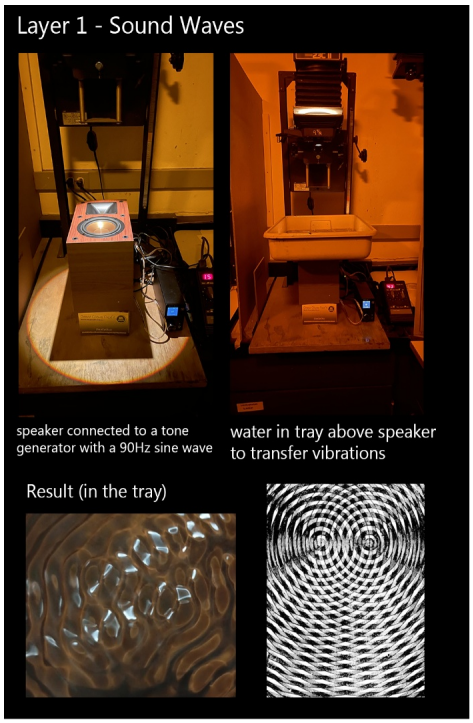
Process(es):

Experimental darkroom tone generation exposure for water ripples using overhead flash, inkjet print.

Use of Digital Tool(s): Yes

Digital Tool(s) used:

Python Matplotlib code (mathematical functions) for Troxler effect (blurred color rectangle).



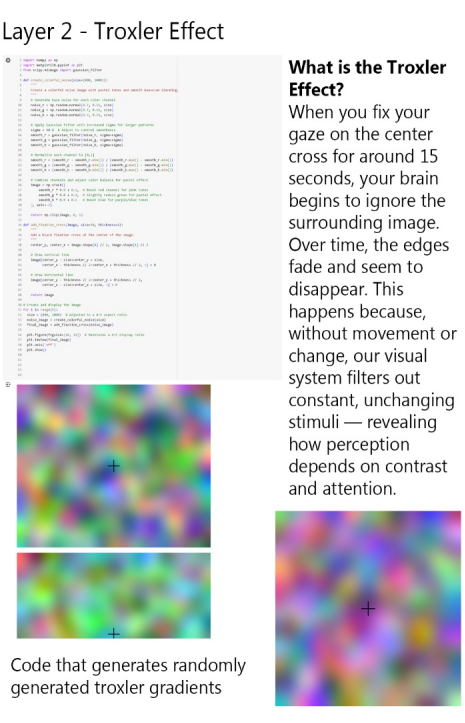


Image 10

Sustained Investigation

Height: 3

Width: 3

Materials:

Documentation for IMG 9: multilayered process surrounding wave effects and optical perception.

Process(es):

Hardware setup in darkroom, experimentation on resonance frequency of plastic tub.

Use of Digital Tool(s): Yes

Digital Tool(s) used: Photoshop

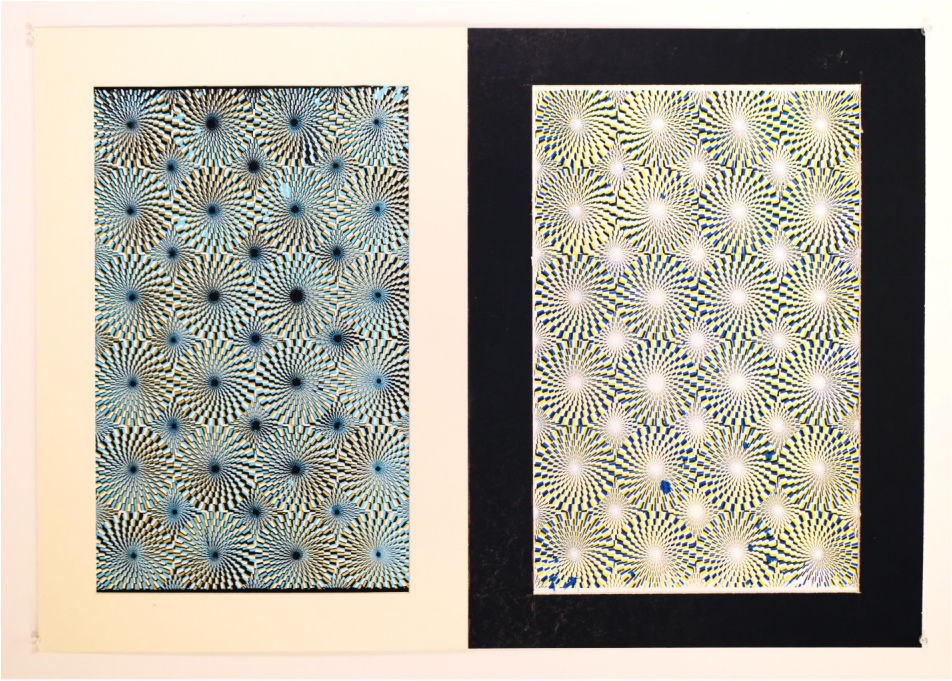


Image 11

Sustained Investigation

Height: 12

Width: 30

Materials:

Speedball ink, handmade custom-cut archival mat board,

Process(es):

3-layer screen print of optical effect to emphasize human interaction of visual cortex in illusions.

Use of Digital Tool(s): Yes

Digital Tool(s) used:

Python Matplotlib code (mathematical functions) for ring illusion.

Citation(s):

Illusion pattern inspired by "Rotating Snakes" by Akiyoshi Kitaoka

1. Coded shapes on Python
2. Printed transparencies
3. Burned screens
4. Made 2 contrasting prints on black and white
5. Framed with archival mat board and made it a diptych

Image 12

Sustained Investigation

Height: N/A

Width: N/A

Materials:

Documentation for IMG 11; investigated suitable colors to achieve best contrast for the illusion.

Process(es):

Involved process of registering and aligning each screen when printing to achieve optical illusion.

Use of Digital Tool(s): Yes

Digital Tool(s) used:

Python Matplotlib code (mathematical functions) for ring illusion.

Citation(s):

Illusion pattern inspired by "Rotating Snakes" by Akiyoshi Kitaoka

Image 13

Sustained Investigation

Height: 7

Width: 7

Materials:

Ilford photosensitive paper, transparencies; reiterate and project illusion onto different medium.

Process(es):

Darkroom negative contact using transparencies of optical illusions using Beseler enlarger as light.

Use of Digital Tool(s): Yes

Digital Tool(s) used:

Python Matplotlib code (mathematical functions) for ring illusion.

Citation(s):

Illusion pattern inspired by "Rotating Snakes" by Akiyoshi Kitaoka

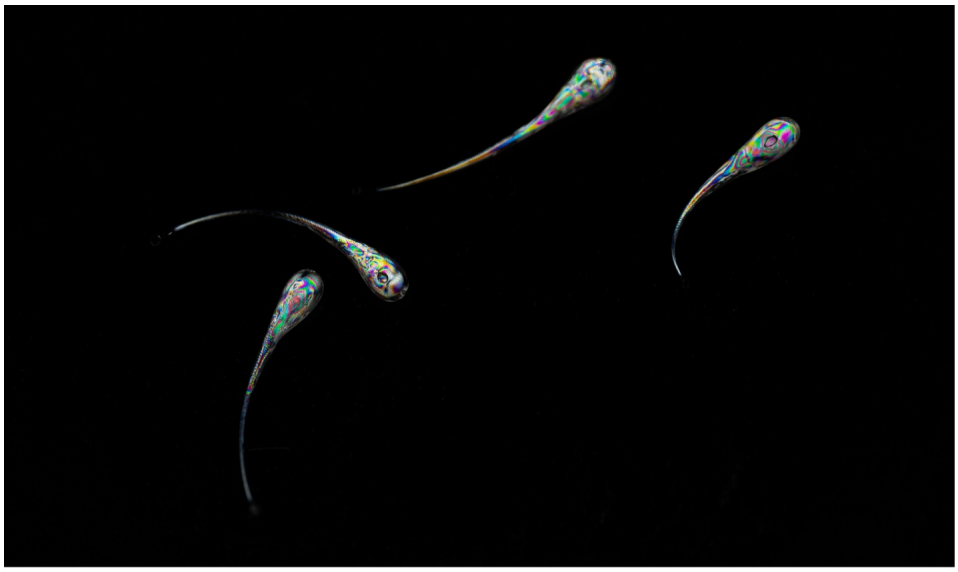


Image 14

Sustained Investigation

Height: 5345

Width: 9504

Materials:

Prince Rupert's drops, polarizing filters to express internal stresses during drop formation.

Process(es):

Photography with photoelasticity effect utilizing 2 polarized light sources show layered interaction

Use of Digital Tool(s): No

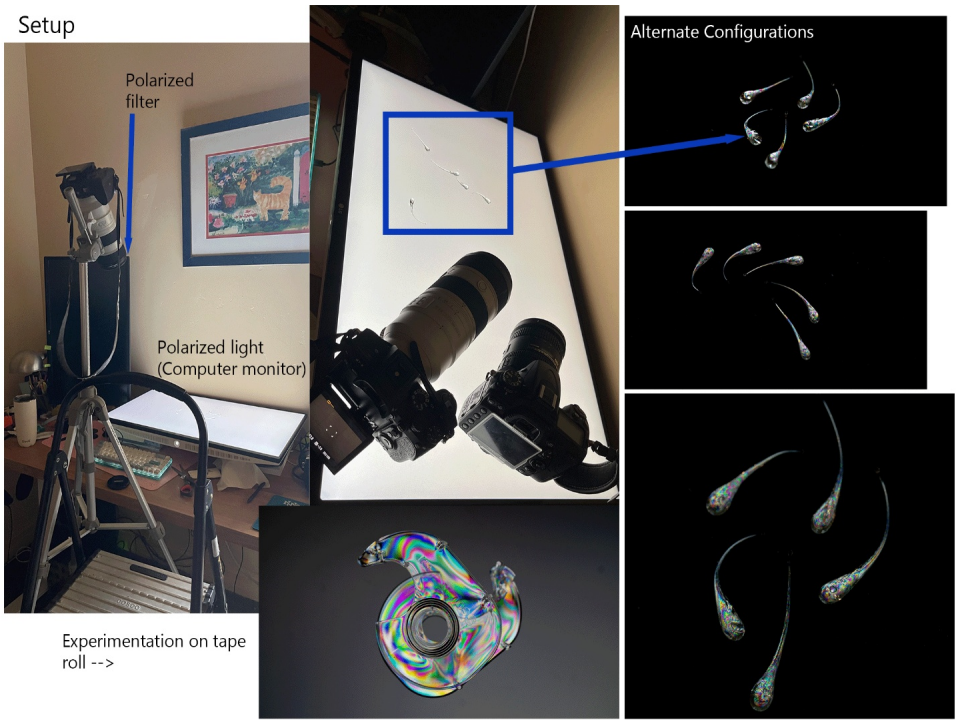


Image 15

Sustained Investigation

Height: N/A

Width: N/A

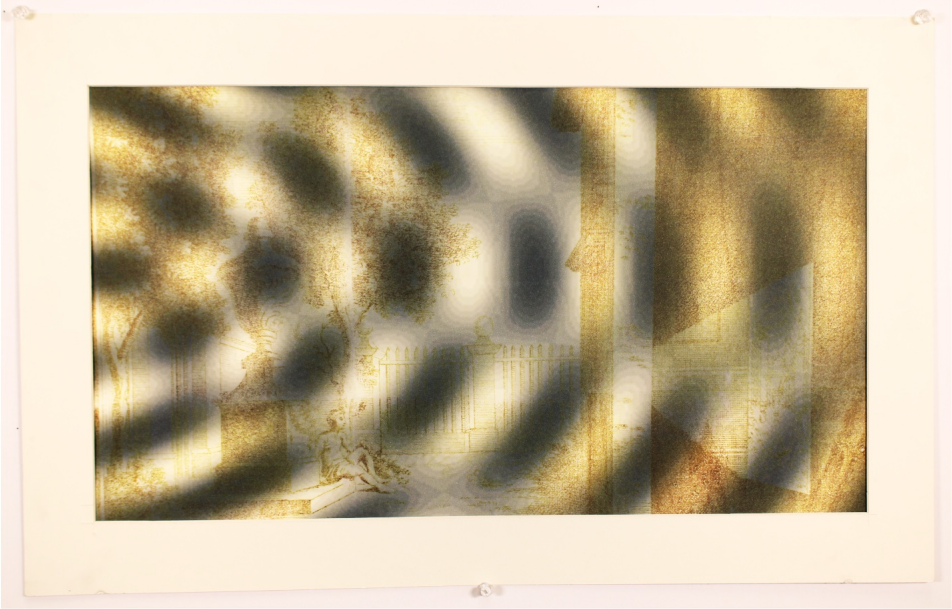
Materials:

Documentation for IMG 14; digital photography setup including tripod and polarization adjustment.

Process(es):

Experimental investigation: photoelasticity, Prince Rupert's drops' science and symbolic value.

Use of Digital Tool(s): No



Work 1

Selected Works

Height: 8

Width: 15

Idea(s):

Light wave-particle duality. Layer1=light as a ray/particle, Layer2=wave to indicate Enmeshment.

Materials:

Stonehenge cotton deckled paper to reflect organic interaction between light and understanding it.

Process(es):

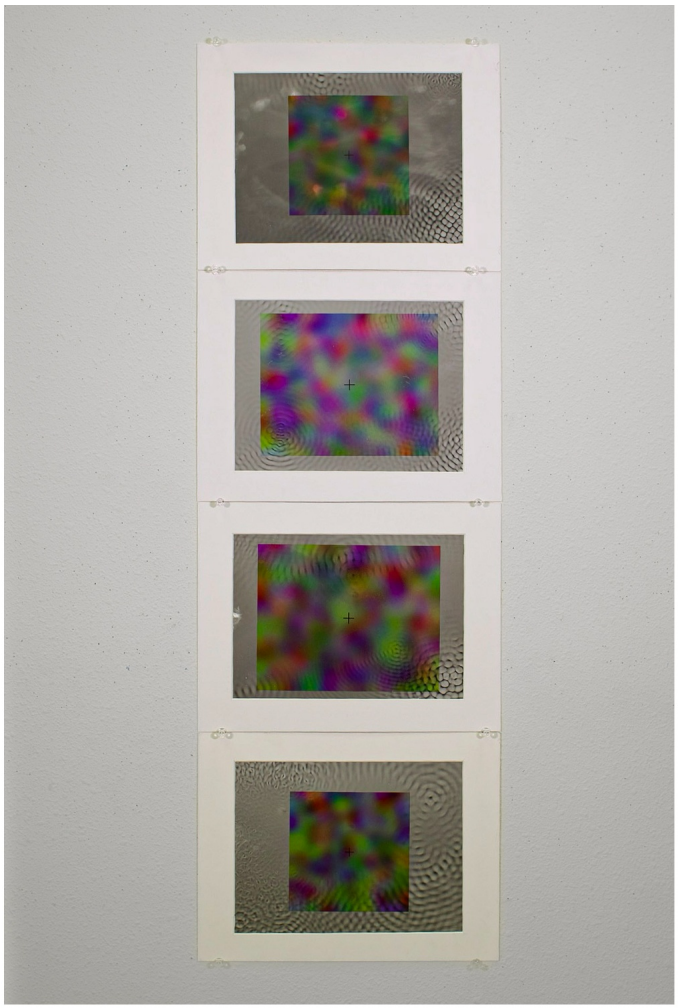
Acetone phototransfer of historical camera obscura diagram; inkjet of double slit interference

Use of Digital Tool(s): Yes

Digital Tool(s) used: Photoshop

Citation(s):

Young, T. (1802). The Bakerian Lecture II: On the theory of light and colours.



Work 2

Selected Works

Height: 40

Width: 13

Idea(s):

Stare at the center cross (15s)-the colors fade away-the Troxler effect-superimposed on water waves.

Materials:

Photosensitive paper + troxler (vision); water waves used to add additional senses (touch, sound).

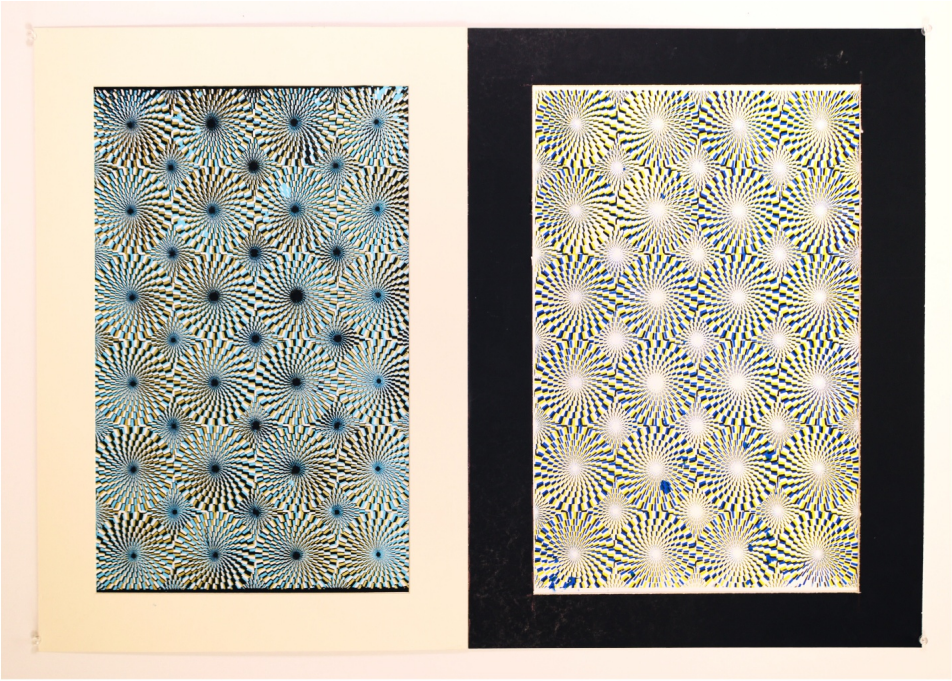
Process(es):

Experimental darkroom tone generation exposure for water ripples using overhead flash, inkjet print.

Use of Digital Tool(s): Yes

Digital Tool(s) used:

Python Matplotlib code (mathematical functions) for Troxler effect (blurred color rectangle).



Work 3

Selected Works

Height: 12

Width: 30

Idea(s):

Reiteration of handmade process to birth unexpected optical illusion effect usually seen digitally.

Materials:

Speedball ink, handmade custom-cut archival mat board; to mix (in)tangibility of optical illusions.

Process(es):

3-layer screen print of optical effect to emphasize human interaction of visual cortex in illusions.

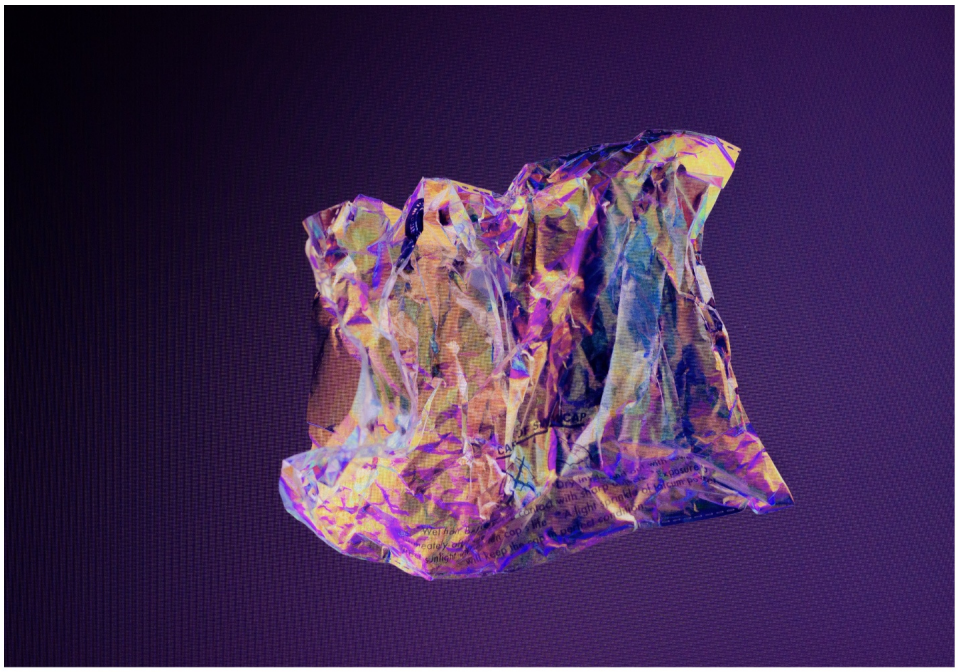
Use of Digital Tool(s): Yes

Digital Tool(s) used:

Python Matplotlib code (mathematical functions) for ring illusion.

Citation(s):

Illusion pattern inspired by "Rotating Snakes" by Akiyoshi Kitaoka



Work 4

Selected Works

Height: 3265

Width: 4928

Idea(s):

Photoelasticity iteration, moire effect via screen pixelation and alignment, abstract iconography.

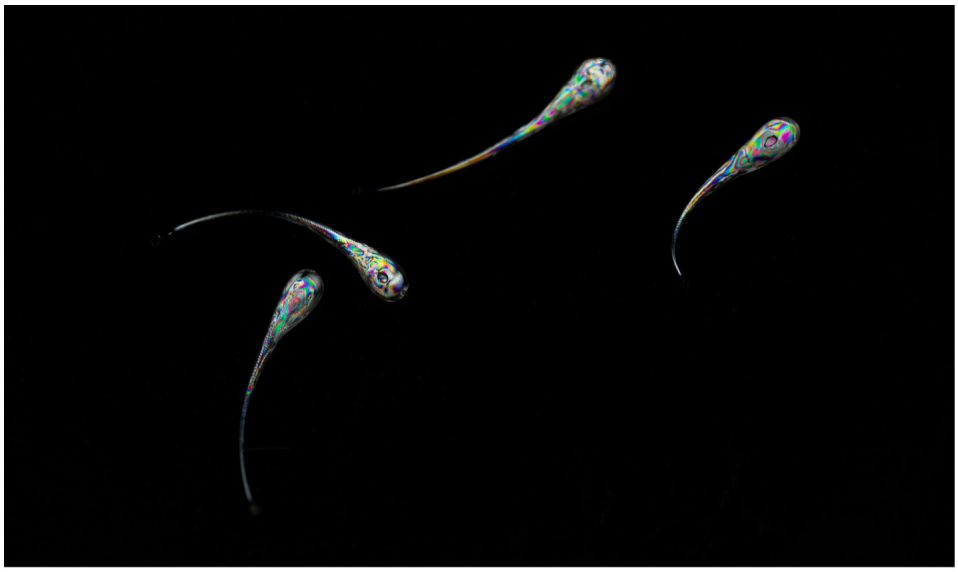
Materials:

Polystyrene bag, polarizing filters to show internal photoelastic stress in the form of colors.

Process(es):

Photography with photoelasticity effect; with skewed polarization angle for background gradient.

Use of Digital Tool(s): No



Work 5

Selected Works

Height: 5345

Width: 9504

Idea(s):

Internal structure's manifold implication despite being visually discreet; underlying complexities.

Materials:

Prince Rupert's drops, polarizing filters to express internal stresses during drop formation.

Process(es):

Photography with photoelasticity effect utilizing 2 polarized light sources show layered interaction

Use of Digital Tool(s): No