

Render the Possibilities

SIGGRAPH 2016

THE 43RD INTERNATIONAL
CONFERENCE AND EXHIBITION ON

& Computer Graphics
Interactive Techniques

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Digital Painting Classroom Learning Oil Painting Using a Tablet

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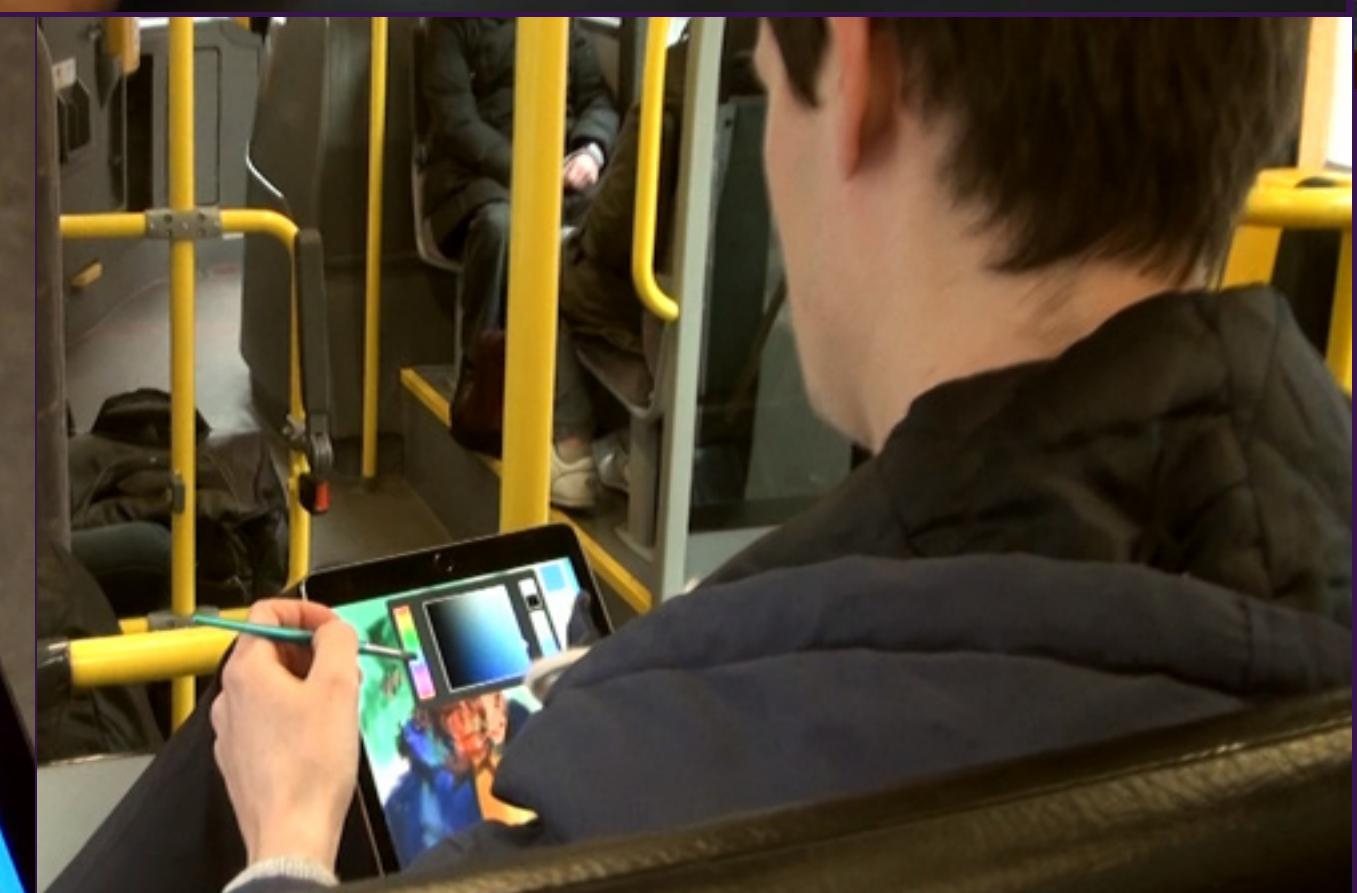
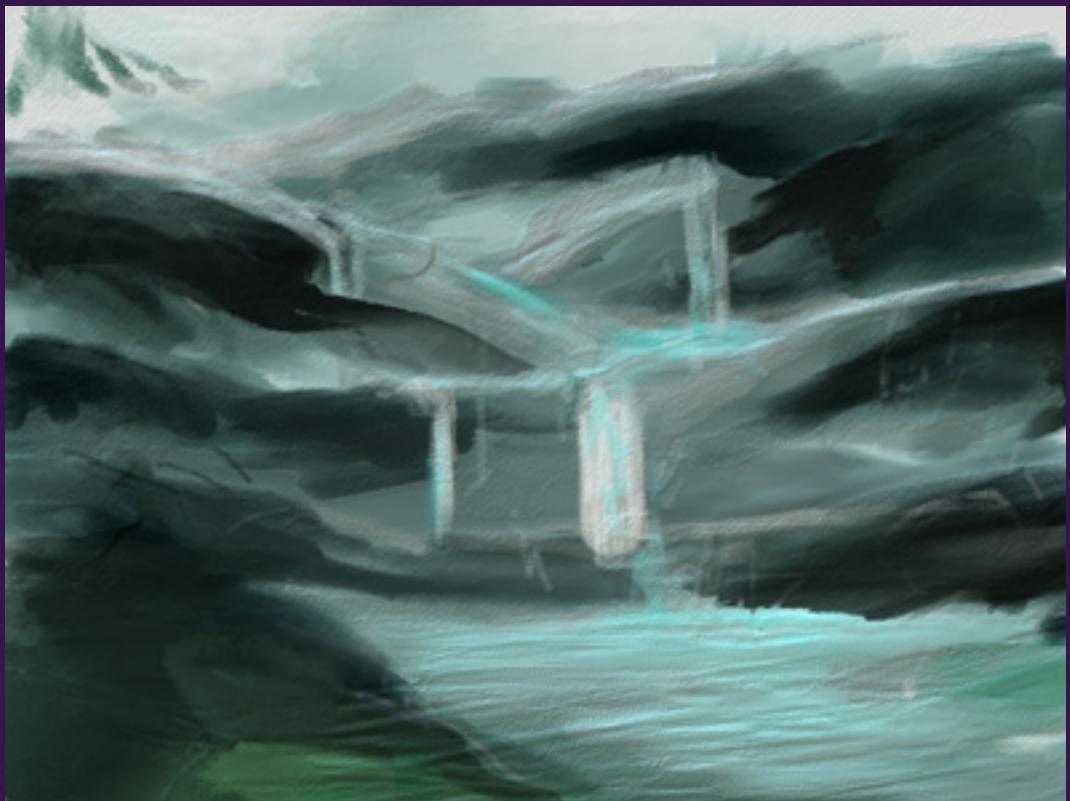
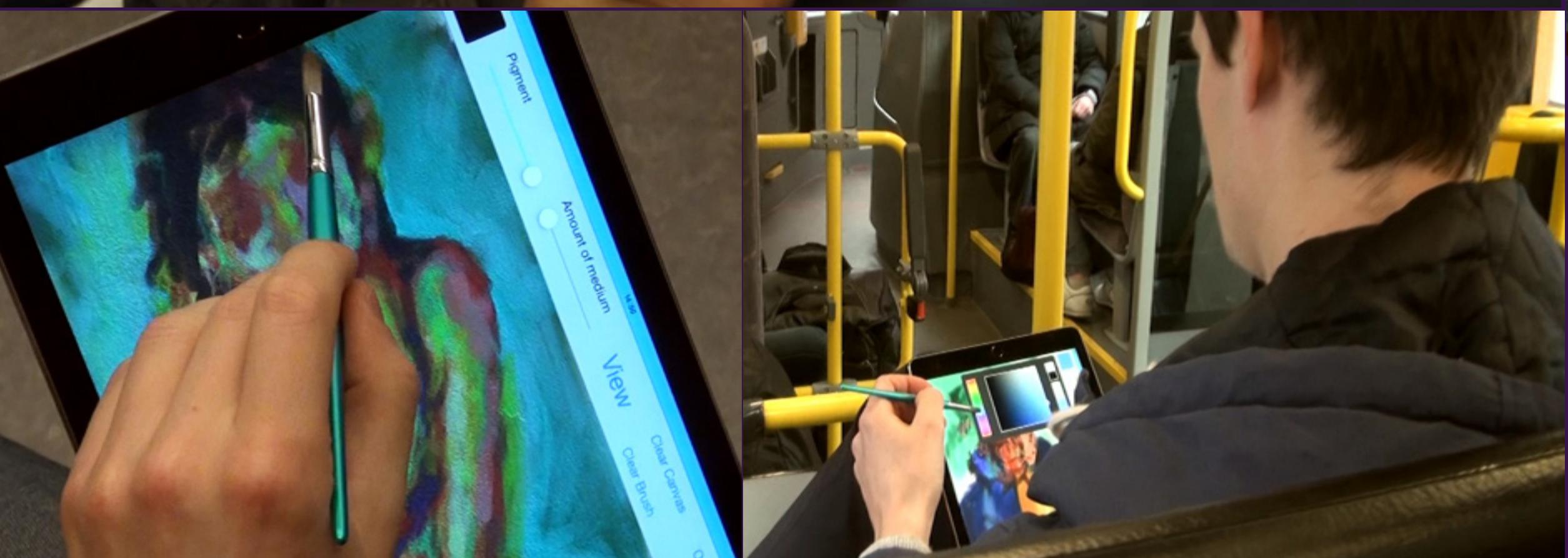
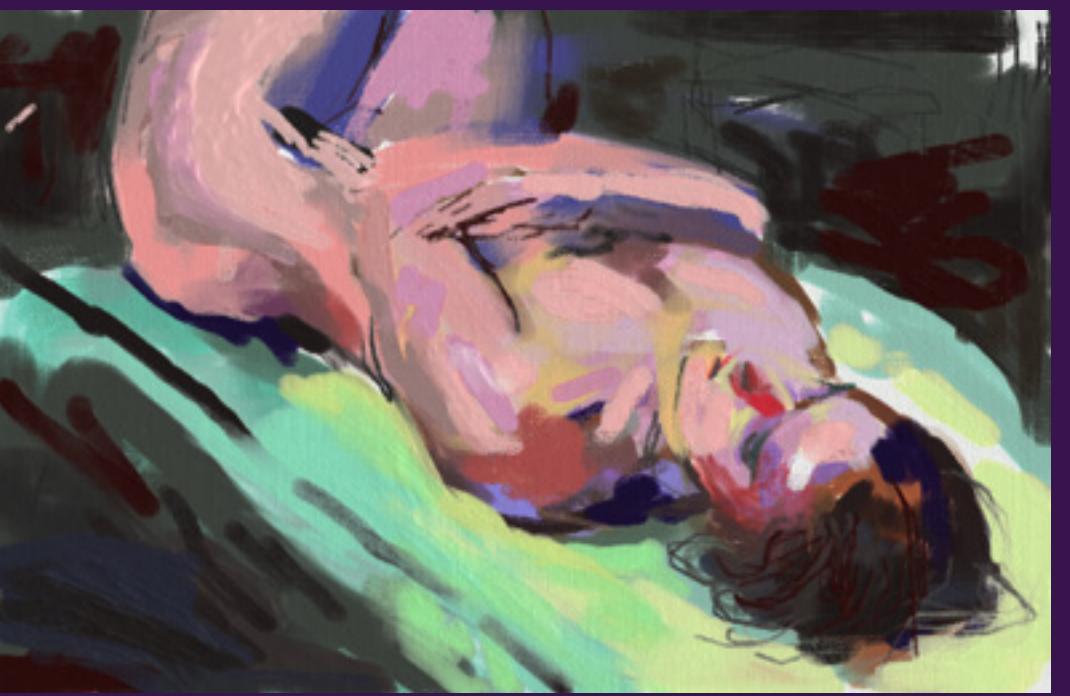


Can a **digital tool** help
novice users learn the
fundamentals of **oil painting**?

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Why?

Motivation: Why digital?



Design goal

A **believable** digital tool that experienced
artists want to use
away from their art studios to experiment

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NOT a replacement for real oil paint

Oil Paint

Very complex

- Pigments
- Dilution
- Brushes
- Sponges and Cloth
- Palette knife
- ...

Main Features

- Dynamic paint behavior
- Multi-layer pigment structure
- Gravity set by tablet orientation
- Environment integration
- Adaptive lighting

Dynamic simulation

Pigment



Thinner

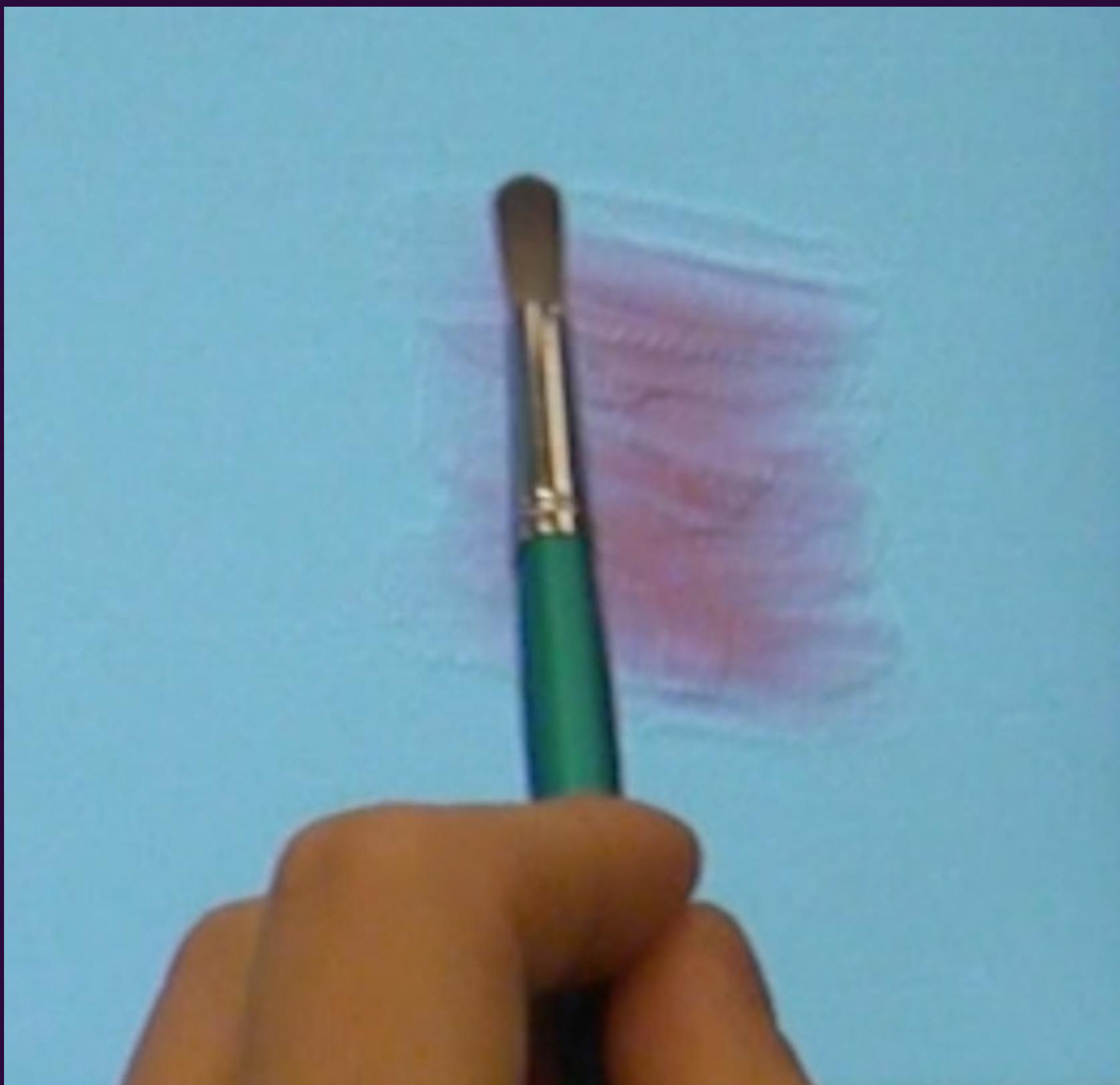


Dynamic simulation

Pigment



Thinner



Dynamic simulation

Pigment



Thinner

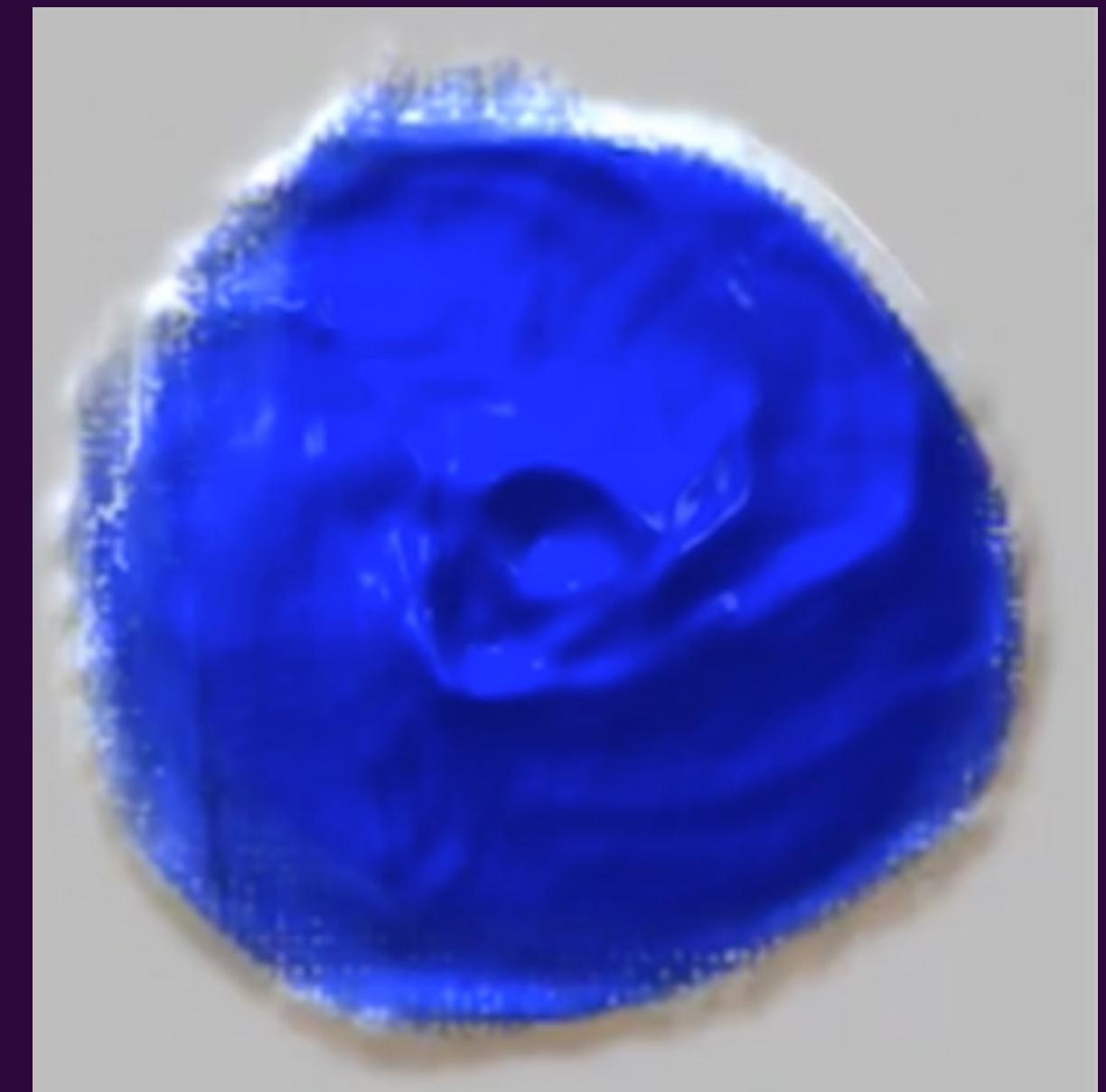


Dynamic simulation

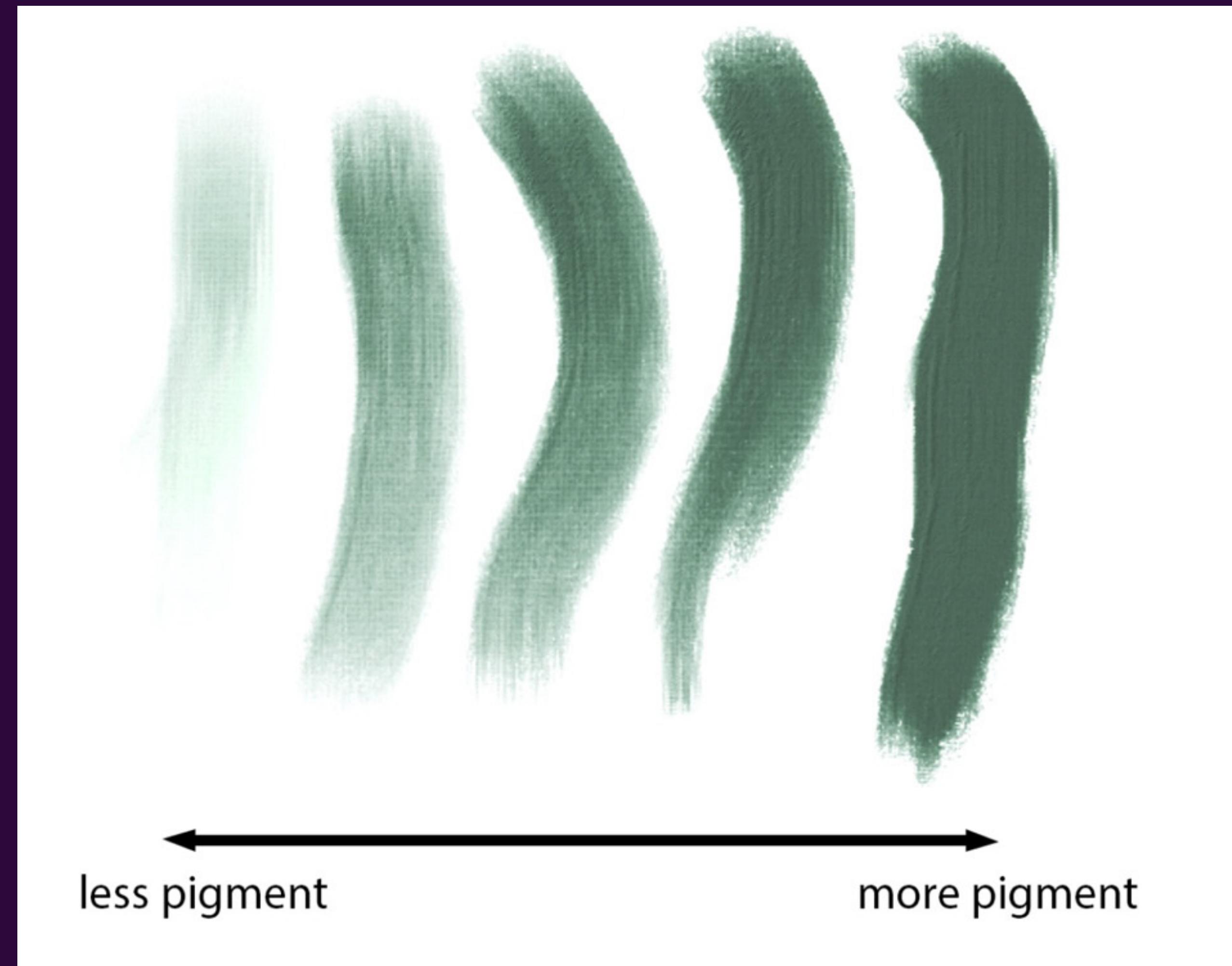
Pigment



Thinner



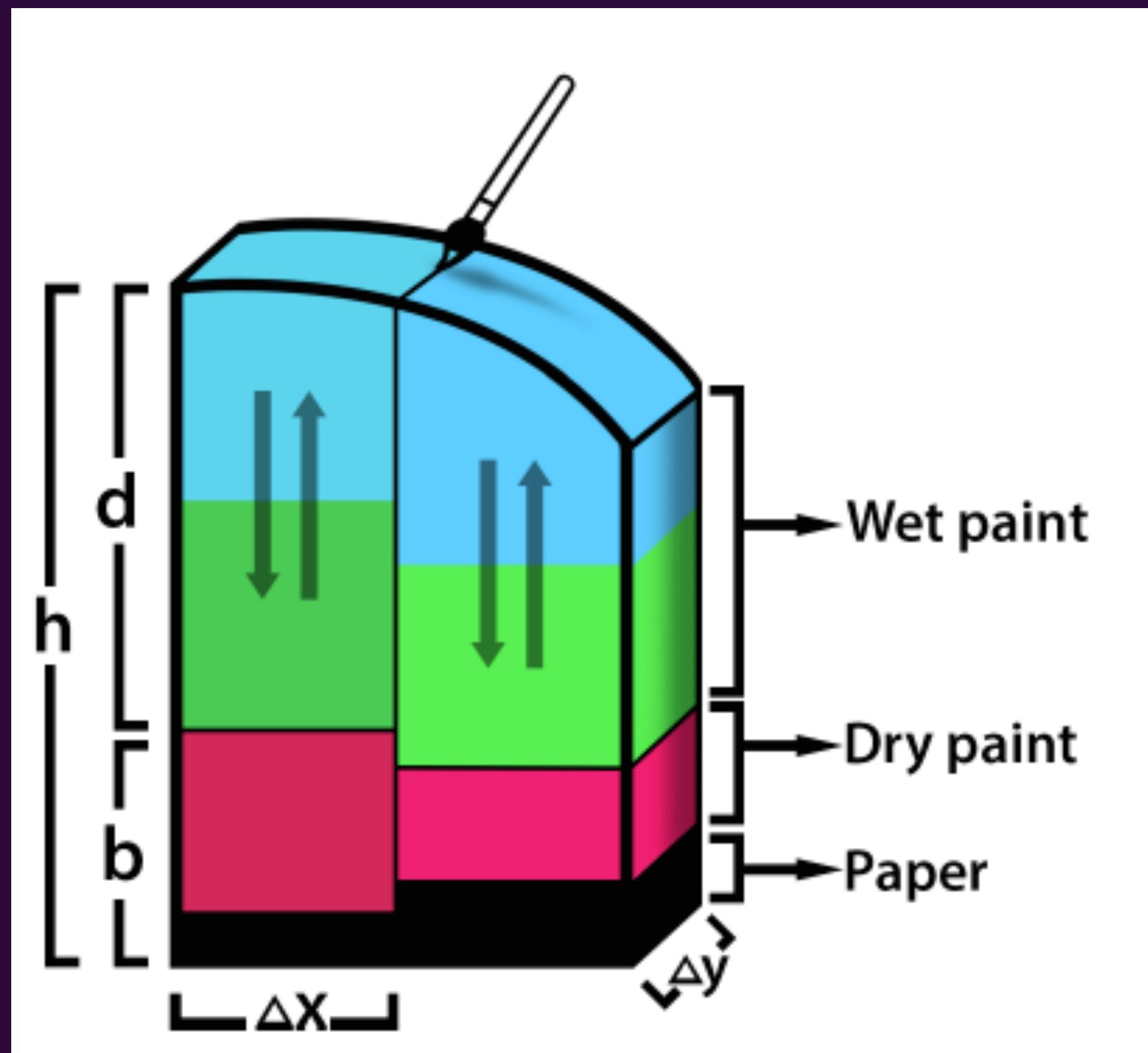
Dynamic simulation



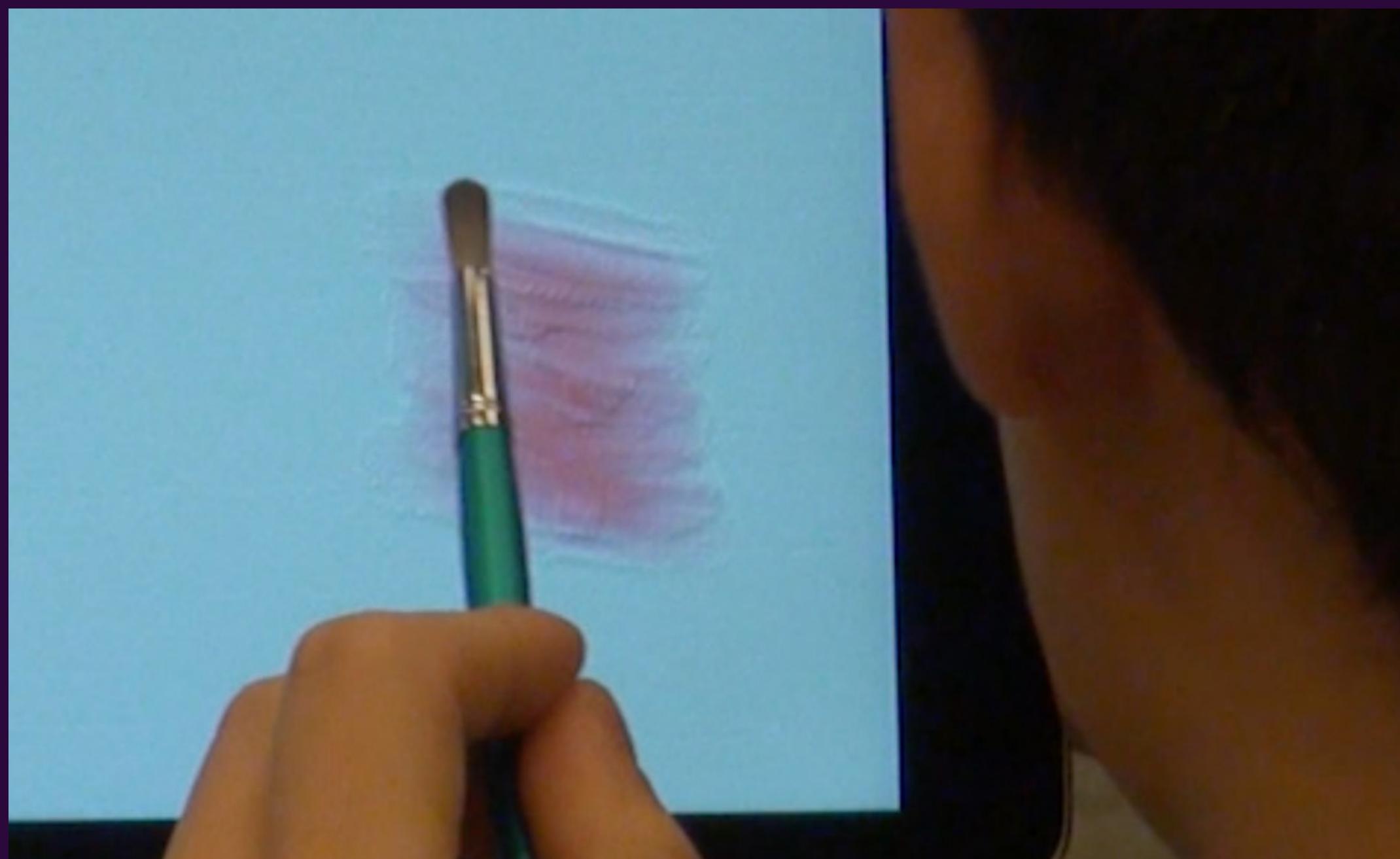
Multi-layer pigments



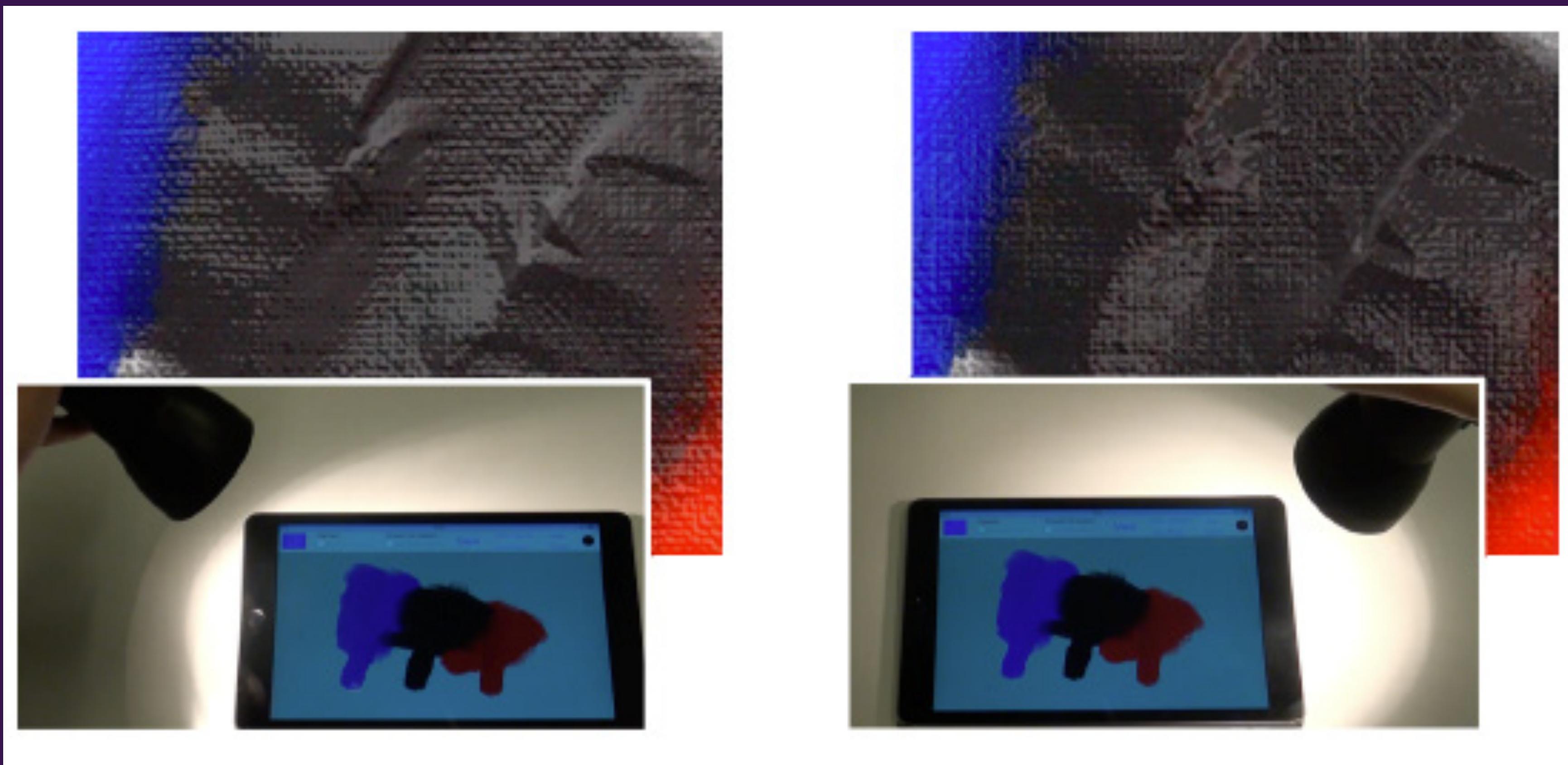
Multi-layer pigments



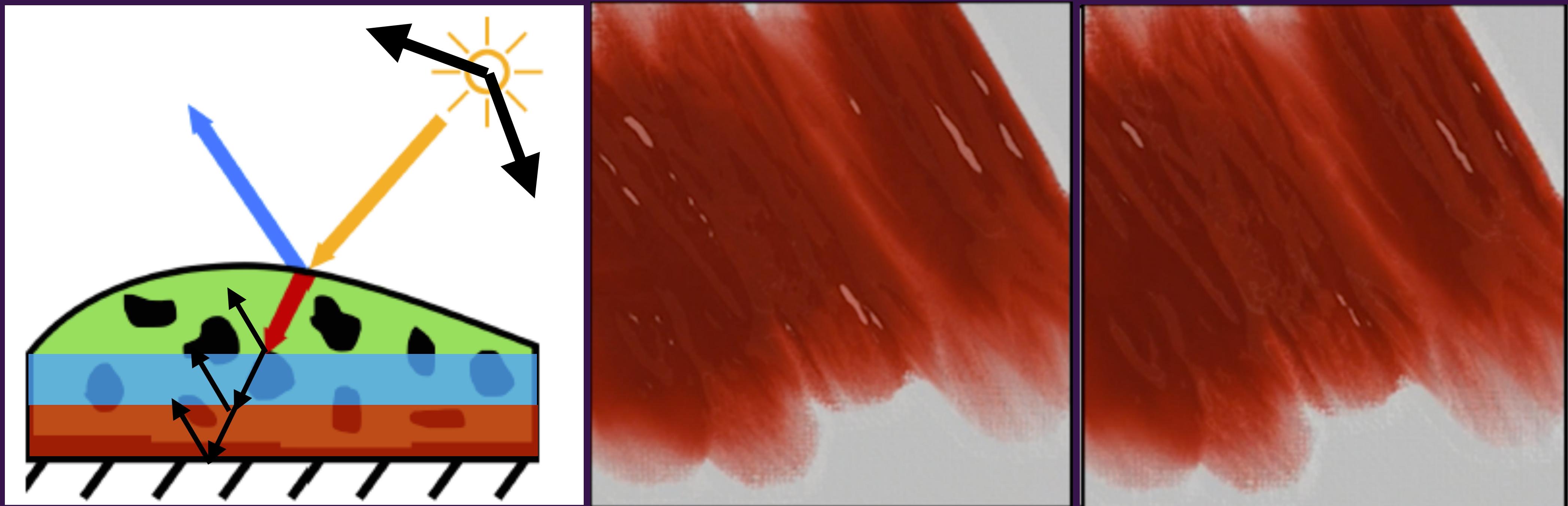
Varying gravity direction



Environment integration



Adaptive Lighting



Supported Paint Styles

- Wet on wet
- Wet on dry
- Impasto
- Scumbling
- Dry brush

User Study

Importance of individual features
in the digital implementation

User Study

13 participants where asked to rate:

1. The importance of individual features in the digital implementation
2. Usability
3. Digital painting experience

User Study

Feature evaluation



System Usability Scale

$84 \pm 7 / 100$

High perceived usability

Highlights:

- Easy to get started
- Well integrated features

User Study

	Score	Median
1. I found the experience enjoyable	4.6 ± 0.5	5
2. Testing ideas is helpful	4.1 ± 0.6	4
3. I would use this system for testing ideas	4.2 ± 1.0	4
4. This system would allow me to paint more efficiently	3.8 ± 0.6	4
5. I found the digital oil painting experience believable	4.2 ± 0.5	4
6. I would use this to make complete virtual paintings	3.2 ± 1.5	3

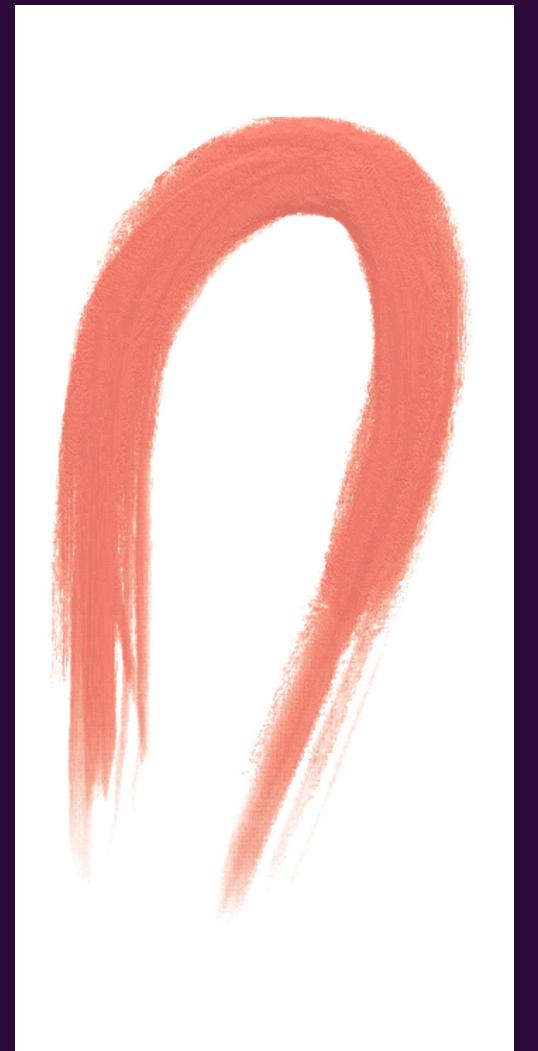
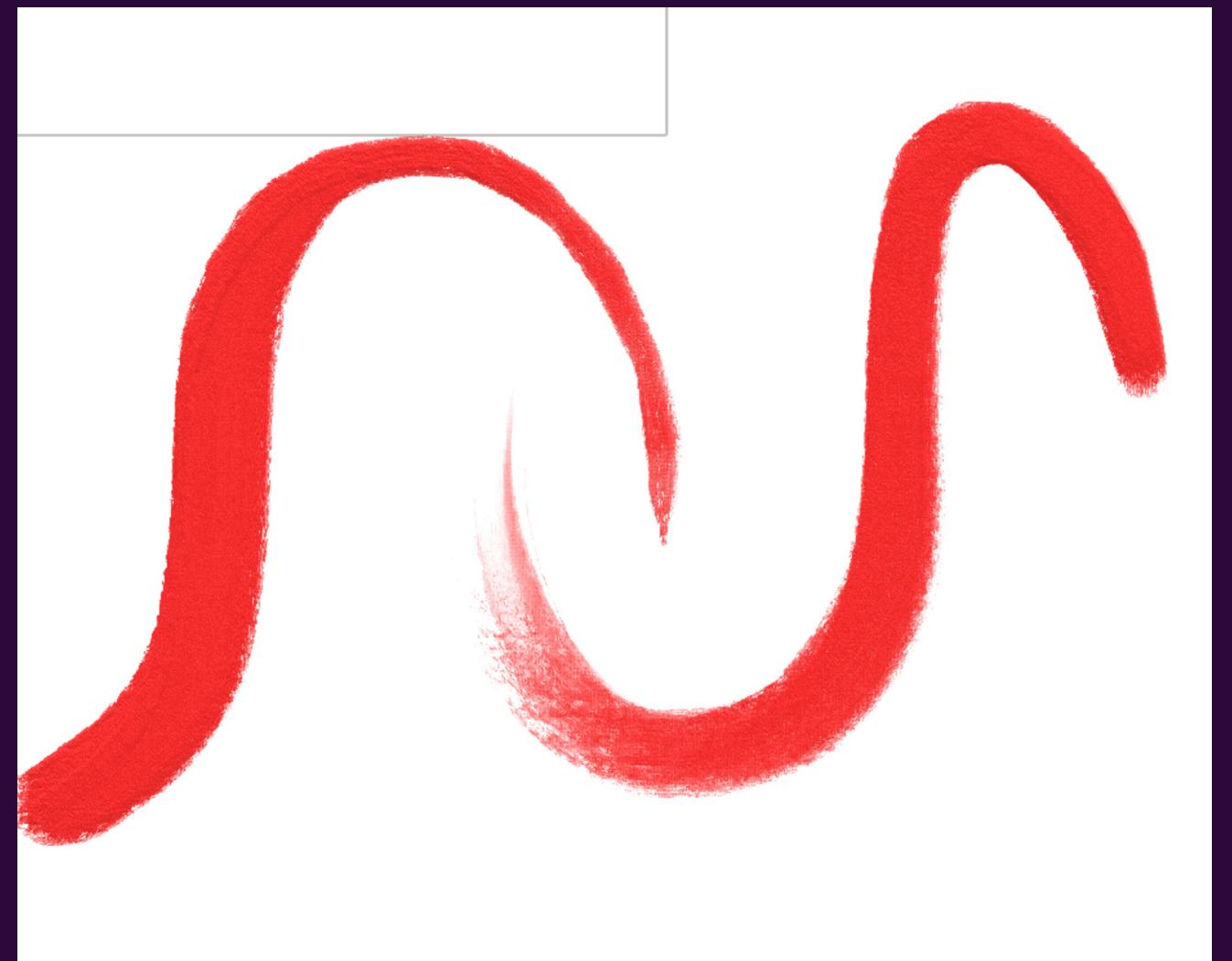
User Study

What we learned:

- No replacement for oil paint
- Believable and helpful for experimentation
- Complementary tool
- Ease of use
- On the go

Limitations

- Limited brush behaviour
- Missing tools such as cloth or sponges



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Learning oil painting

Application that guides users through
the beginner concepts in a playful way

Chapters:

1. Introduction to Oil Paint
2. Color Tint and Tone
3. Creating a Painting

Chapter 1: Paint

Oil paint basics and background information:

- Importance in history
- Pigments
- Color intensity
- Opacity
- Thinner fluids
- Dry and Wet

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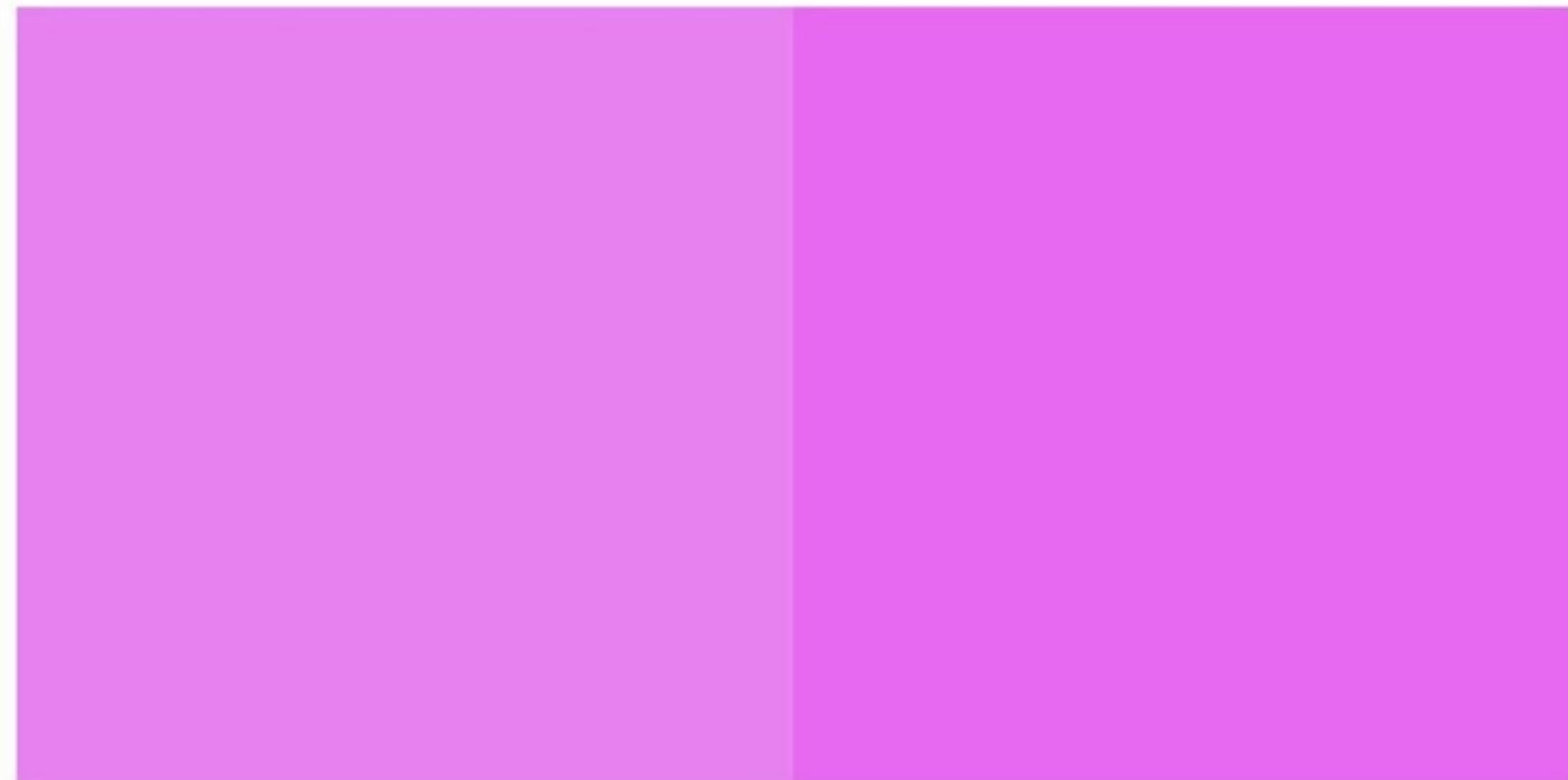
Experimentation

Chapter 2: Color Tint and Tone

Proposed exercises:

- Color wheel
- Color gradient
- Experimenting with subtractive colors

Tint or Tone?



Tint

Tone

vo

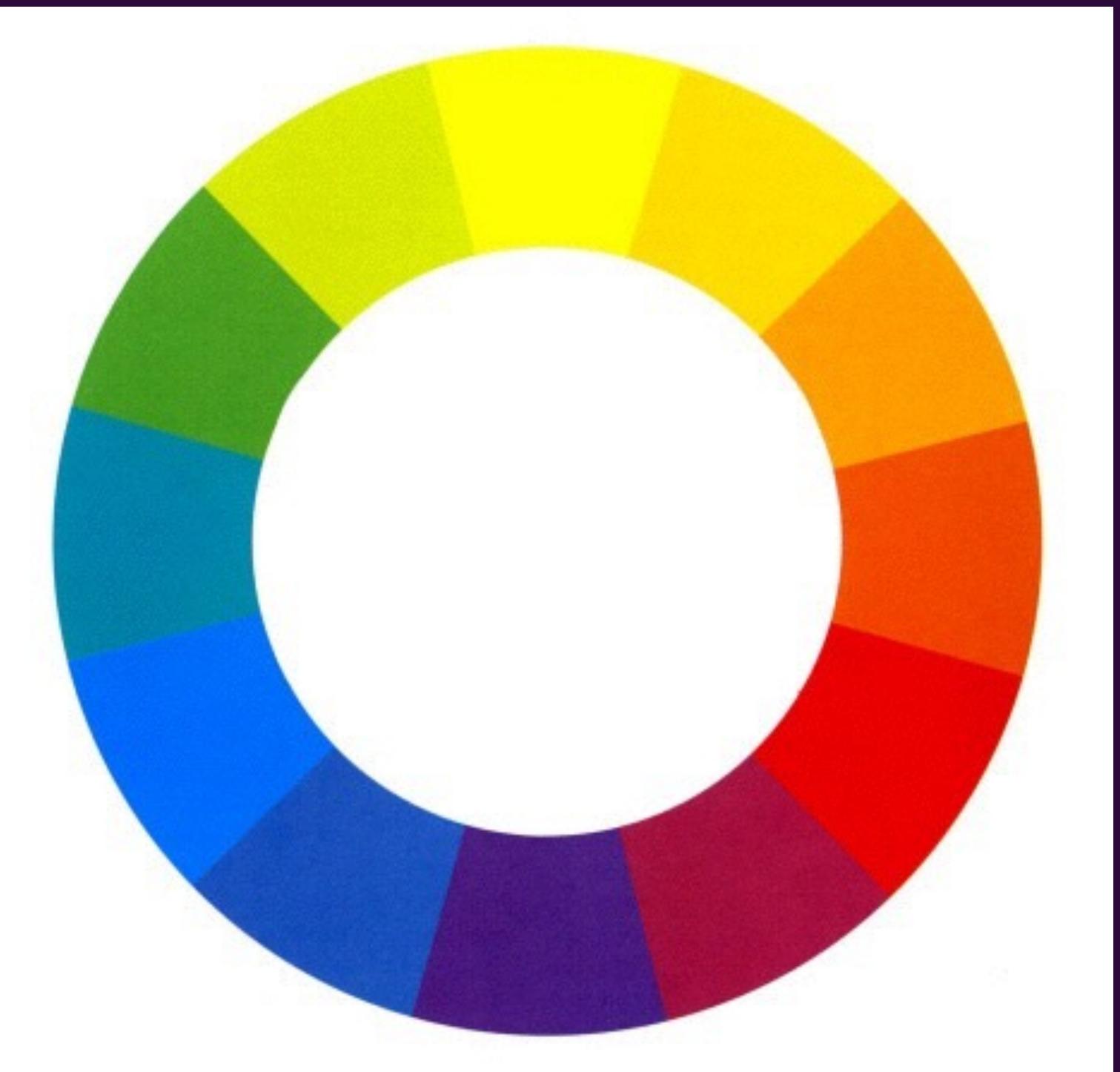
Color Wheel

Exercise:

Recreate a color wheel
given a limited set of pigments

Goal:

- Understanding subtractive colors
- Matching colors



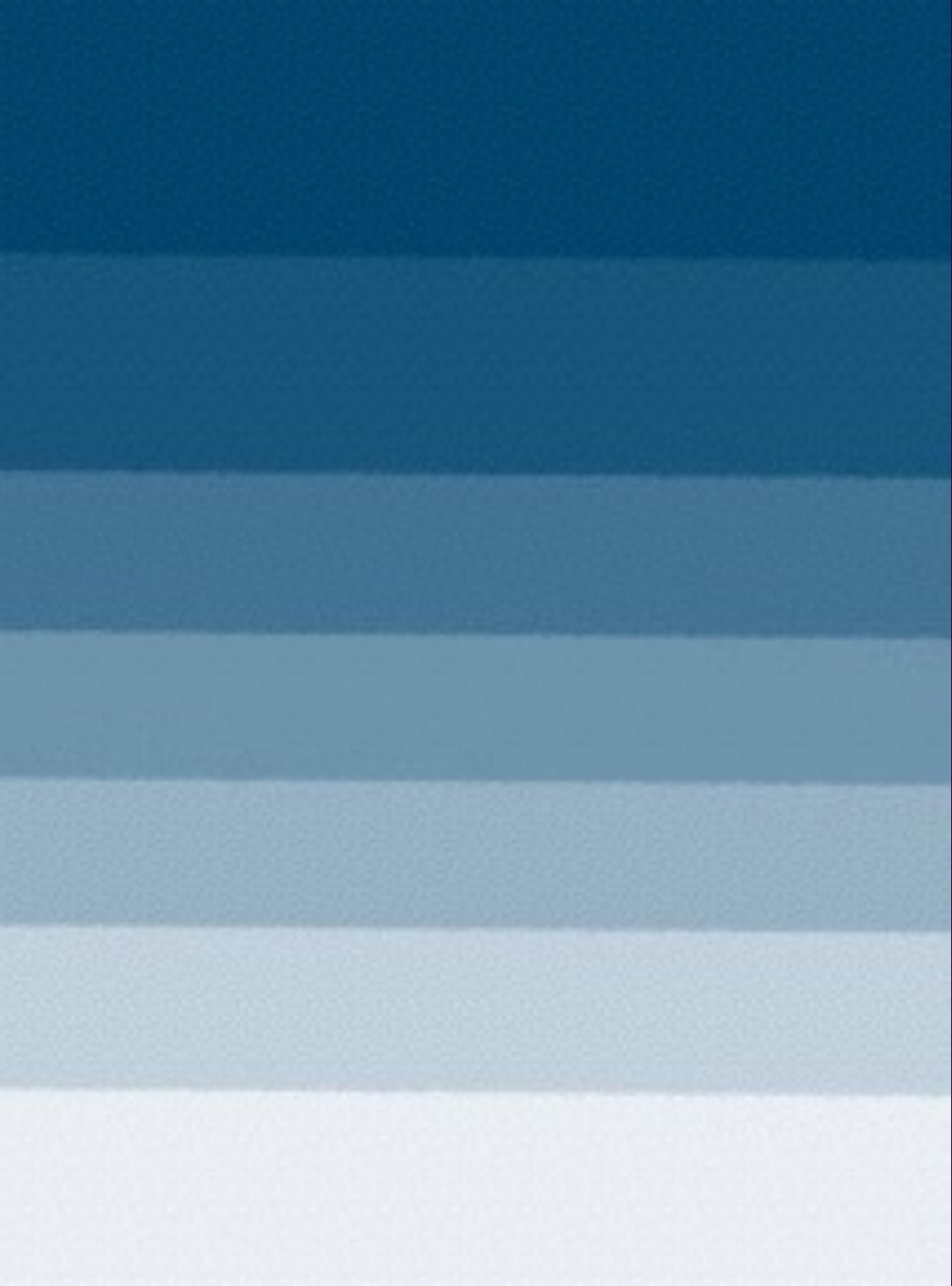
Color Gradient

Exercise:

Recreate a color gradient

Goal:

- Encourage experimentation with lightening and darkening colors
- Understanding color tone and seeing value in colors



Progress Evaluation

Evaluation:

- Instructor feedback
- Self-evaluation given reference



Chapter 3: Creating a Painting

How to make a painting:

- Background to foreground
- Thin layers to thick paint
- Composition
- Shadow
- ...

Chapter 3: Creating a Painting



Chapter 3: Creating a Painting

Proposed exercises:

- Imitating the masters
- Experimentation

Chapter 3: Creating a Painting



Chapter 3: Creating a Painting



Van Gogh would be proud...?

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Conclusions

- Is useful for learning basic techniques and understanding fundamental concepts
- More thorough user evaluations over a prolonged period of time are necessary in order to assess user progression

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- Is useful for learning basic techniques and understanding fundamental concepts
- More thorough user evaluations over a prolonged period of time are necessary in order to assess user progression
- Currently in progress

Conclusions

- Is useful for learning basic techniques and understanding fundamental concepts
- Will not replace a teacher
- Will not replace painting
- Lowers the barrier to painting

Conclusions

Experimentation

Encourage users to try out real oil paint

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valuable feedback

Questions?

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