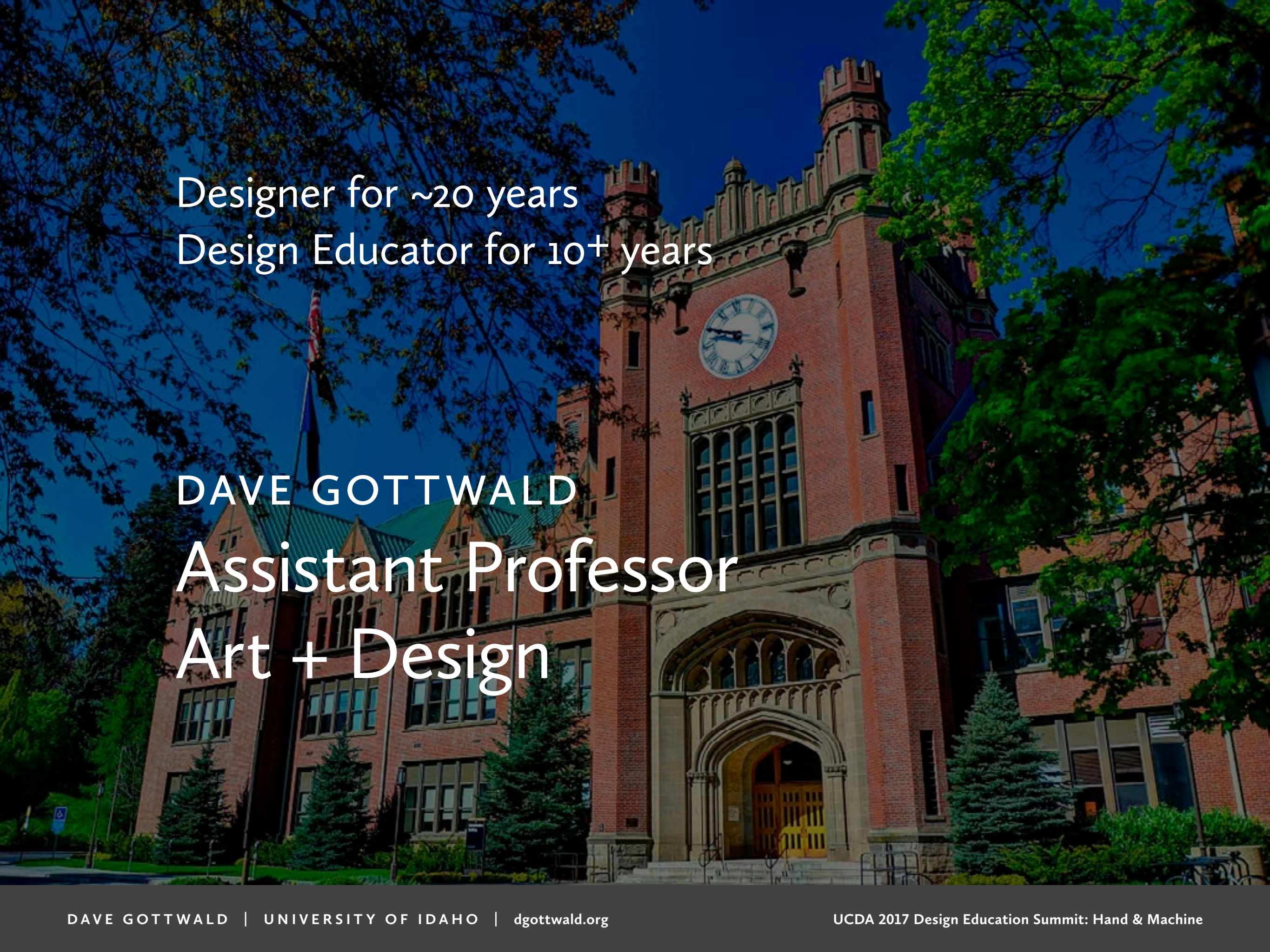


A photograph of a large, multi-story brick building with Gothic architectural features. The building has a prominent central tower with a clock face and a crenellated top. The entrance is a large, arched doorway with intricate stonework. The building is surrounded by green trees and a clear blue sky. The text "University of Idaho" is overlaid in a large, white, sans-serif font, and "College of Art and Architecture" is overlaid in a smaller, white, serif font below it.

# University of Idaho

College of Art and Architecture





Designer for ~20 years  
Design Educator for 10+ years

DAVE GOTTWALD  
Assistant Professor  
Art + Design





*Interaction Design for Mobile Devices (UI / UX)*  
*Experiential Design for the Built Environment*

DAVE GOTTWALD  
Assistant Professor  
Art + Design



# Operational Metaphors & Input Biases of Design Software

OLD PROMISES, NEW CHALLENGES

(fancy-sounding abstract title)

UCDA 2017

# Hand & Machine

OPERATIONAL METAPHORS

Where Mind Meets Software

INPUT BIASES (POINTING / DRAWING)

Where Hand Meets Machine



A student with dark hair is seen from behind, sitting at a desk and working on a laptop. The laptop screen displays a design software interface with various panels and a central workspace. The desk is cluttered with various items, including a mouse, a pen, and some papers. The overall scene is dimly lit, with the laptop screen providing the primary light source.

How students should  
best think about the  
design software they use.

What input hardware students  
should use to best interface  
with that software.



UNIVERSITY OF IDAHO

# Art + Design

Students lie on a gradient  
between two poles.

# *Analog Artisans*









# Analog Artisans

## THE TRADITIONAL FINE ART STUDENT



- *Likely had Art Ed in primary school and onward (drawing, painting, sculpting, etc.)*
- *Learned to create works directly by hand*
- *Computer literate, but **don't view the computer as a default content creation device***



# *Digital De Factos*









# *Digital De Factos*

## THE COMPUTING STUDENT

---

- *Less likely to have had Art Ed in school*
- *Often have a long history of PC or platform gaming*
- ***Consider the computer to be a natural, default creative content device***



Consider your students along  
this gradient.

*Analog  
Artisans*

*Digital  
De Factos*



Where do they lie? Where does  
most of your program lie?



OPERATIONAL METAPHORS

Where Mind Meets Software

INPUT BIASES (POINTING / DRAWING)

Where Hand Meets Machine



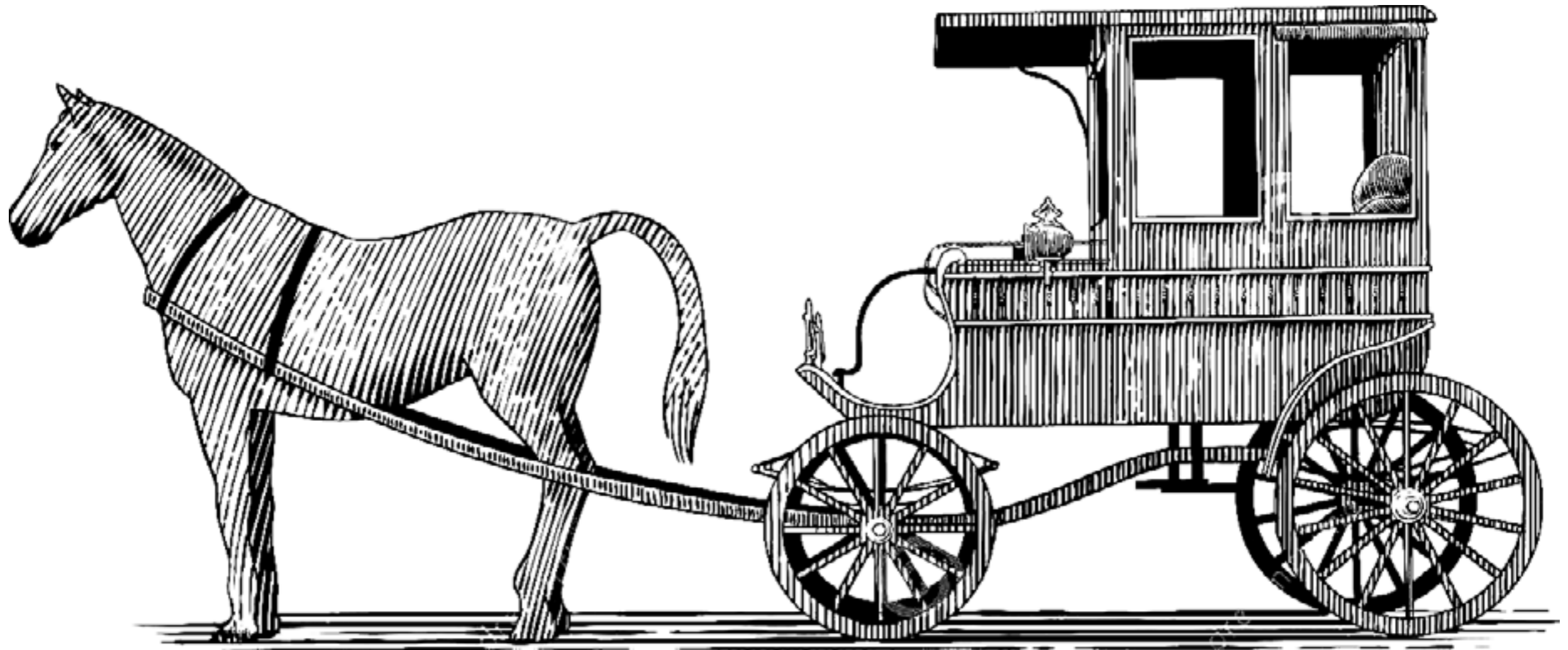
# What do I mean by *Operational Metaphors?*



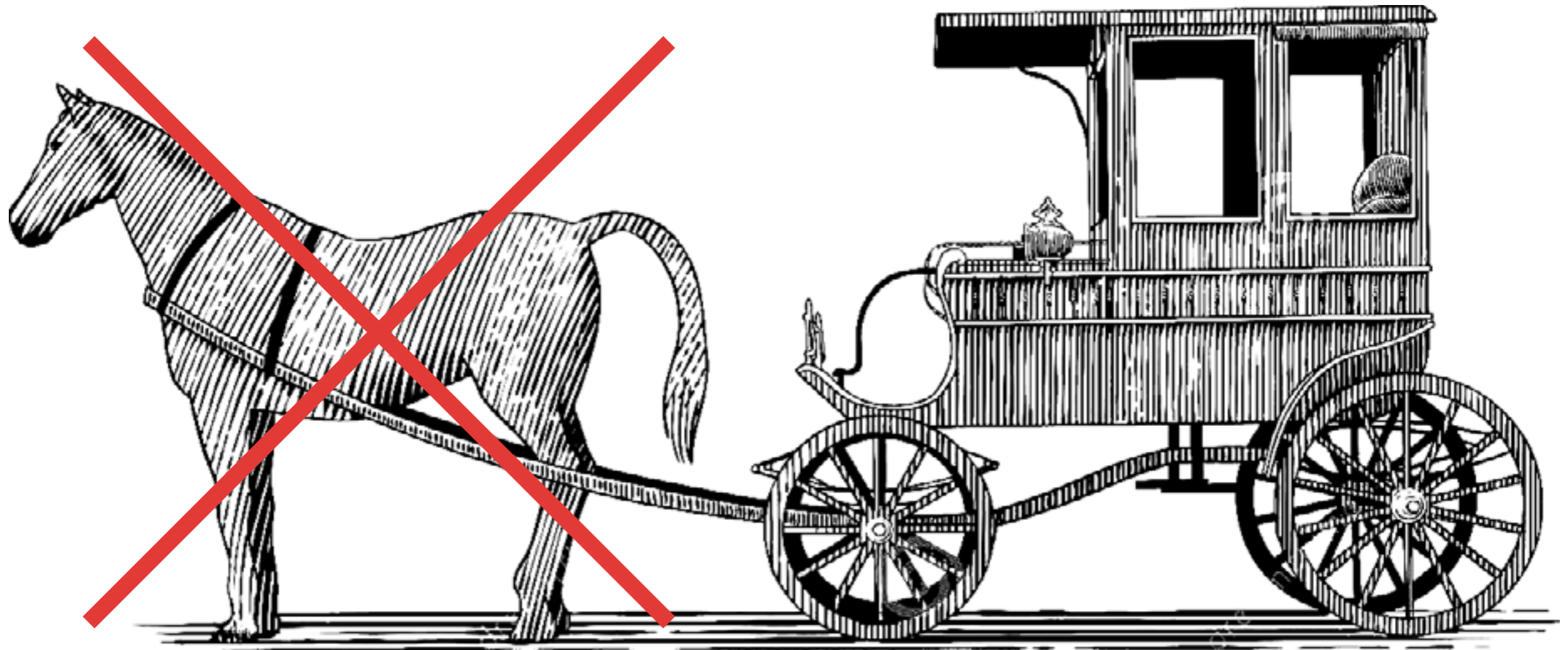
We use metaphors to understand new things *in the terms of the older thing* that came before.

## Horseless Carriage

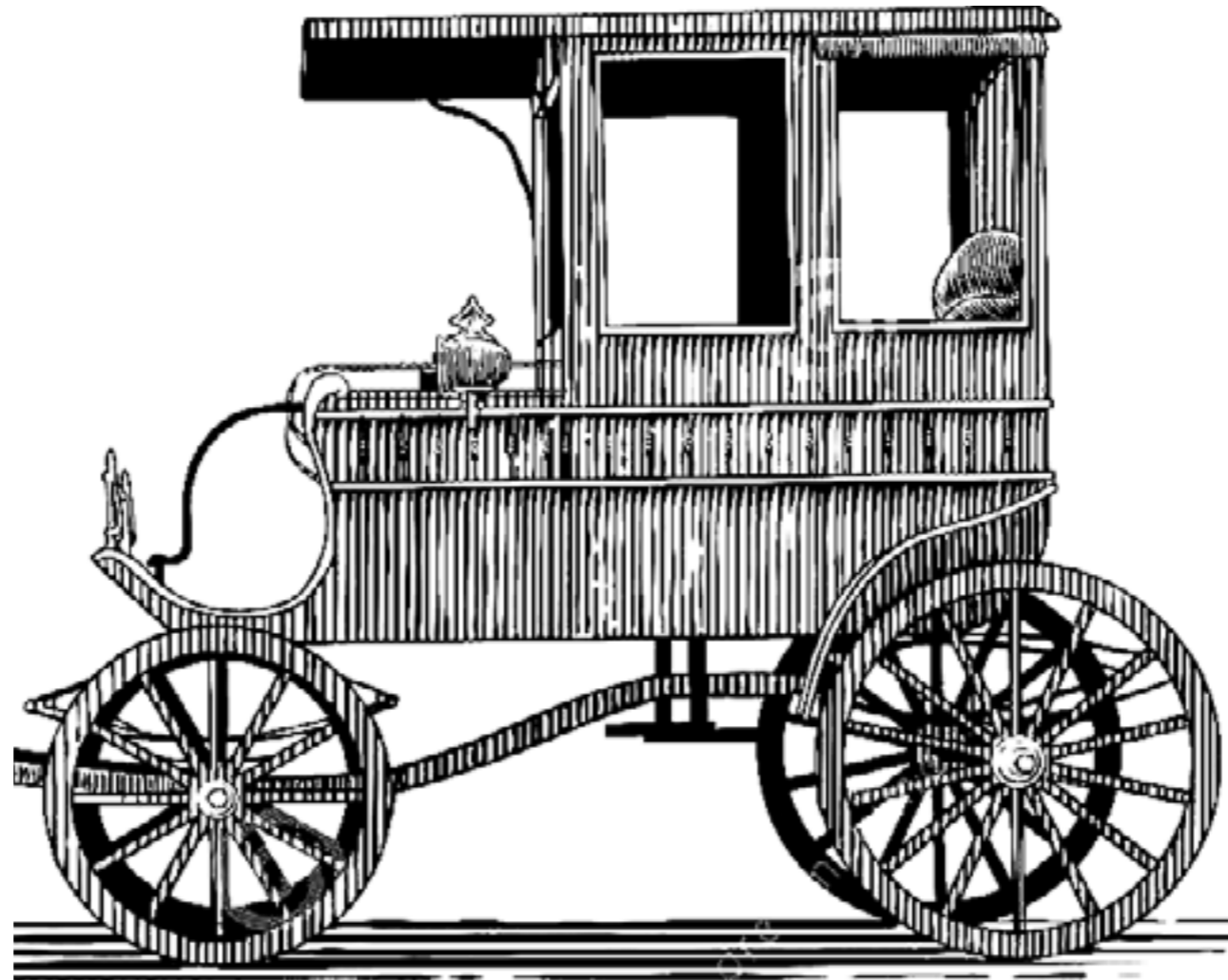














# Horseless Carriage





# Horseless Carriage

But these metaphors can  
lose their relevance.

**It can get a bit out of hand.**

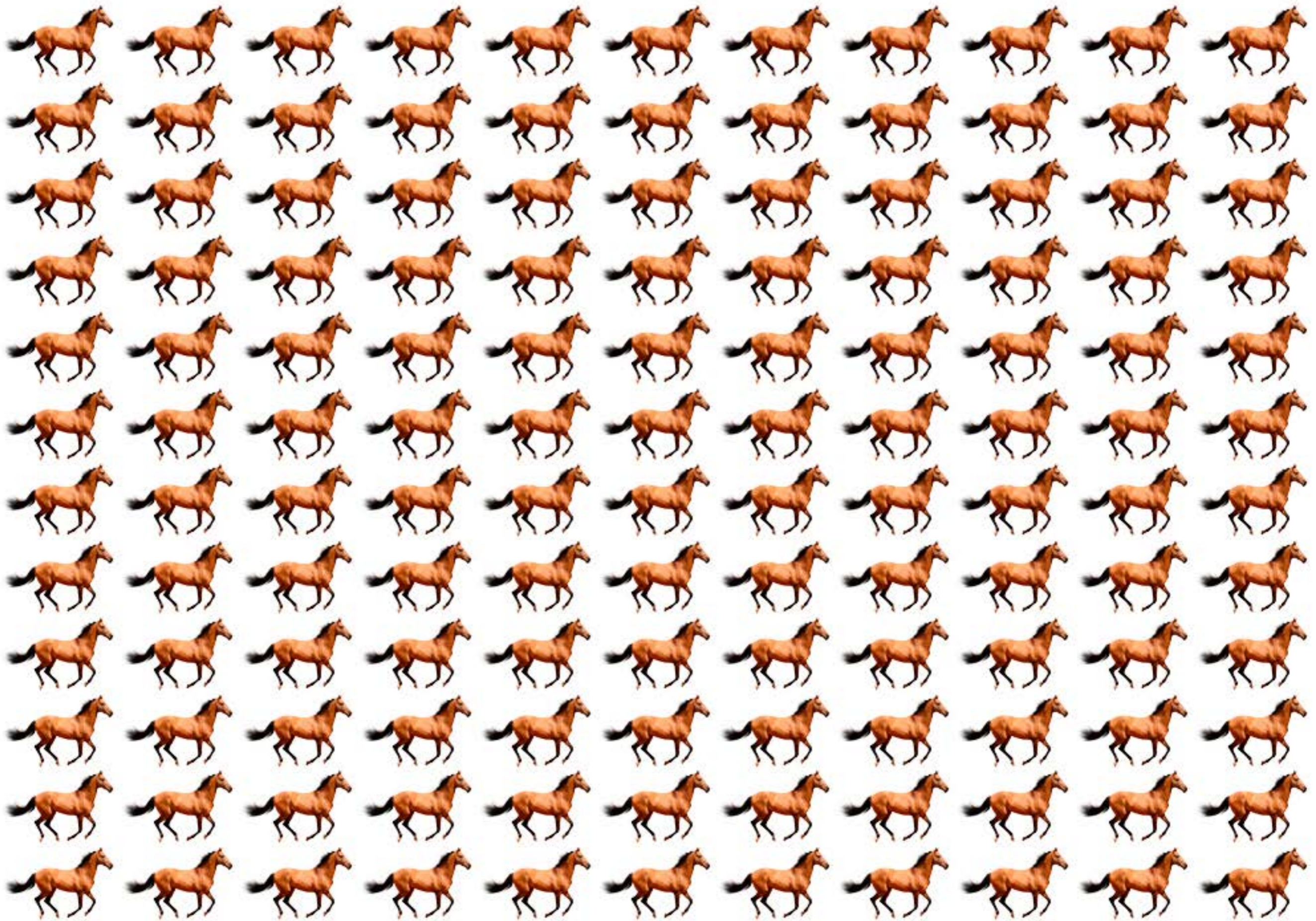
An easy example is *scale*.



A photograph of the Space Shuttle Atlantis being launched from the launch pad. The shuttle is oriented vertically, with its external tank and boosters visible. The orbiter is attached to the top. The launch pad structure is complex, with many levels of scaffolding and walkways. A large plume of white smoke and steam is visible at the bottom of the launch pad. The sky is a clear blue. The text "37 Million Horsepower!!!!" is overlaid in white on the left side of the image. The name "Atlantis" and the United States flag are visible on the orbiter. The number "2" and "SIDE 1" are visible on the launch pad structure.

**37 Million  
Horsepower!!!!**

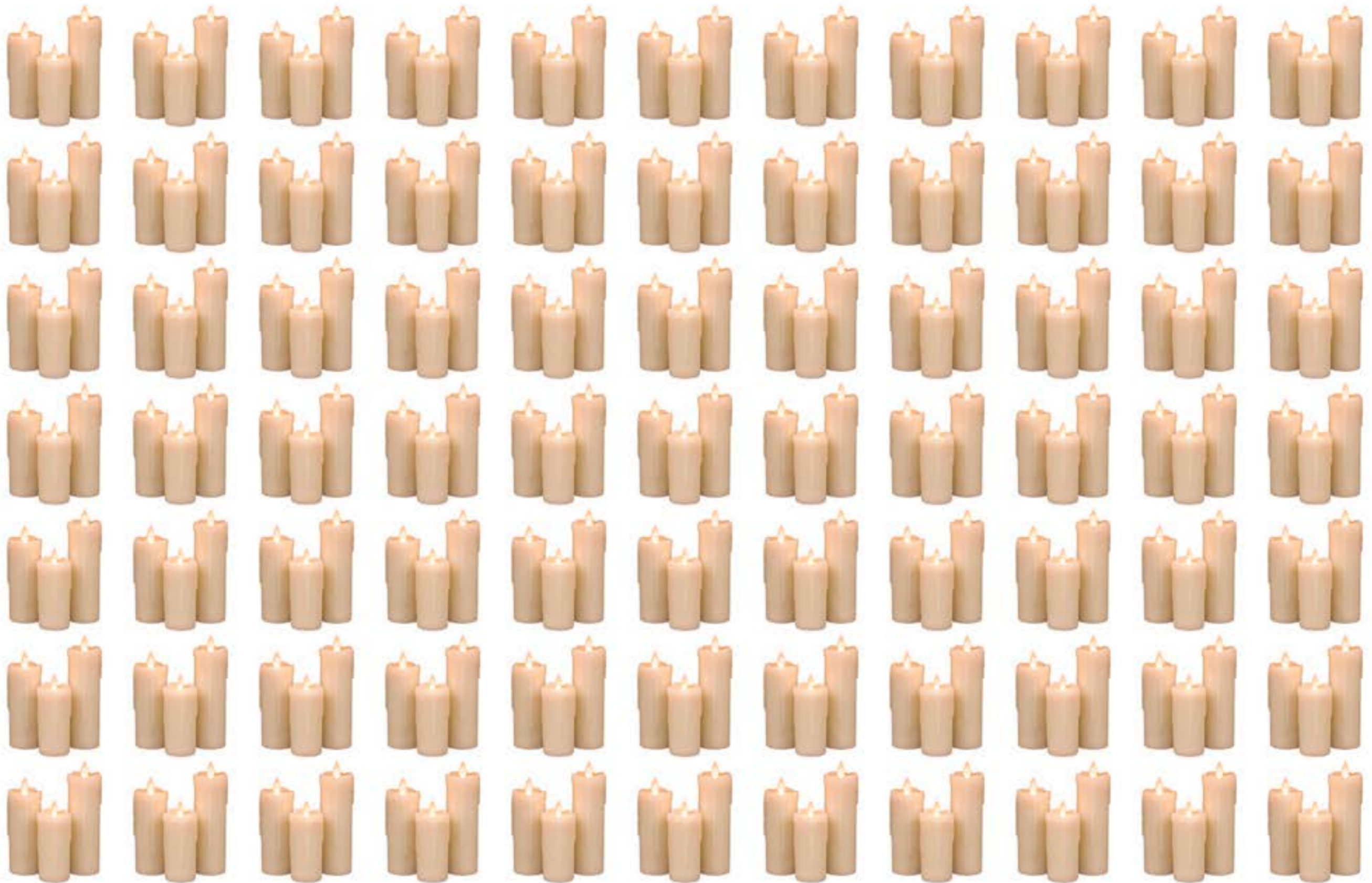






# 40 Million Candlepower!!!!





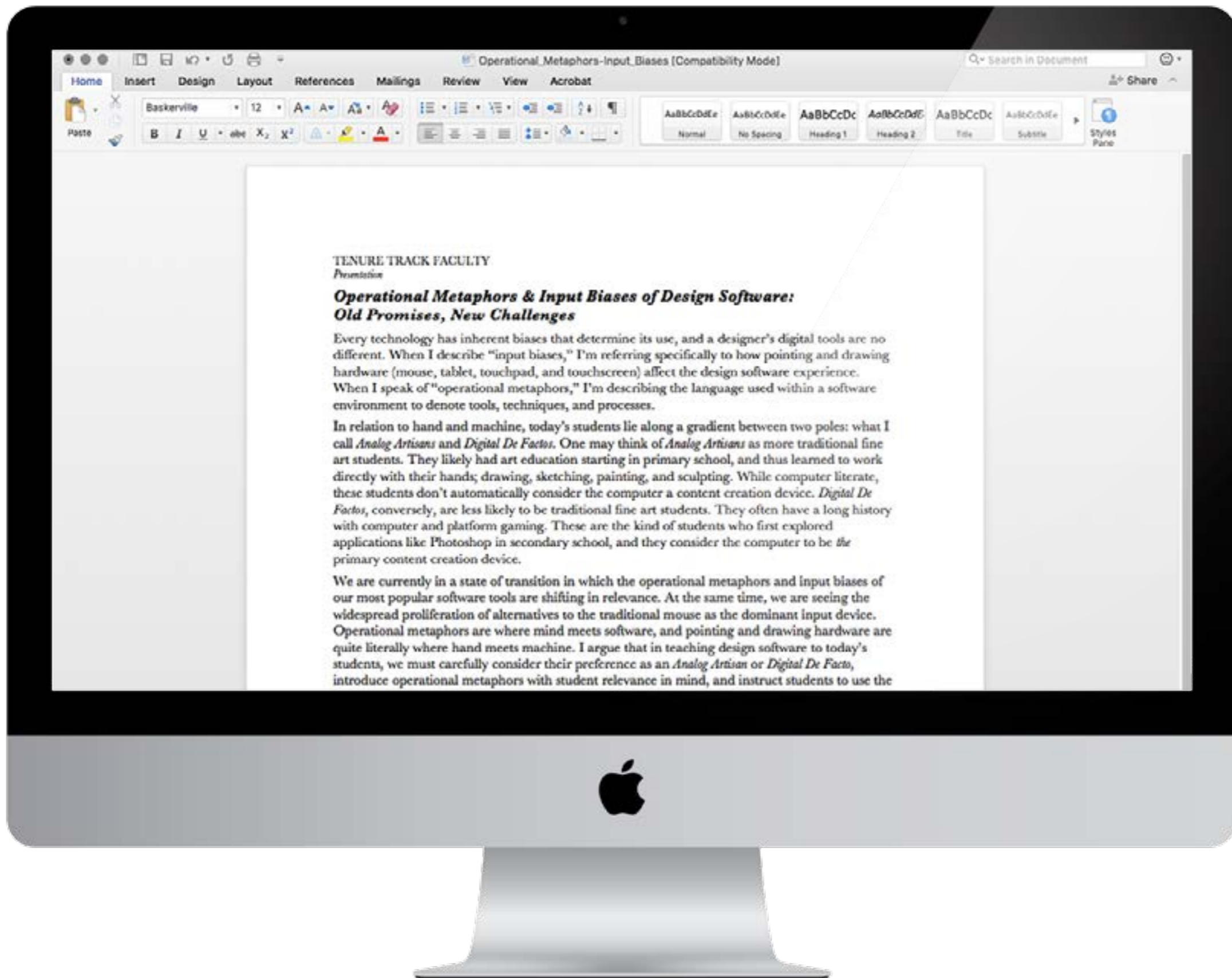


Watch out for when  
metaphors shift in relevance.

# Operational Metaphor

“The software works like this other, older thing.”





# Operational Metaphor

Microsoft Word

WORD PROCESSOR





TENURE TRACK FACULTY

*Presentation*

## ***Operational Metaphors & Input Biases of Design Software: Old Promises, New Challenges***

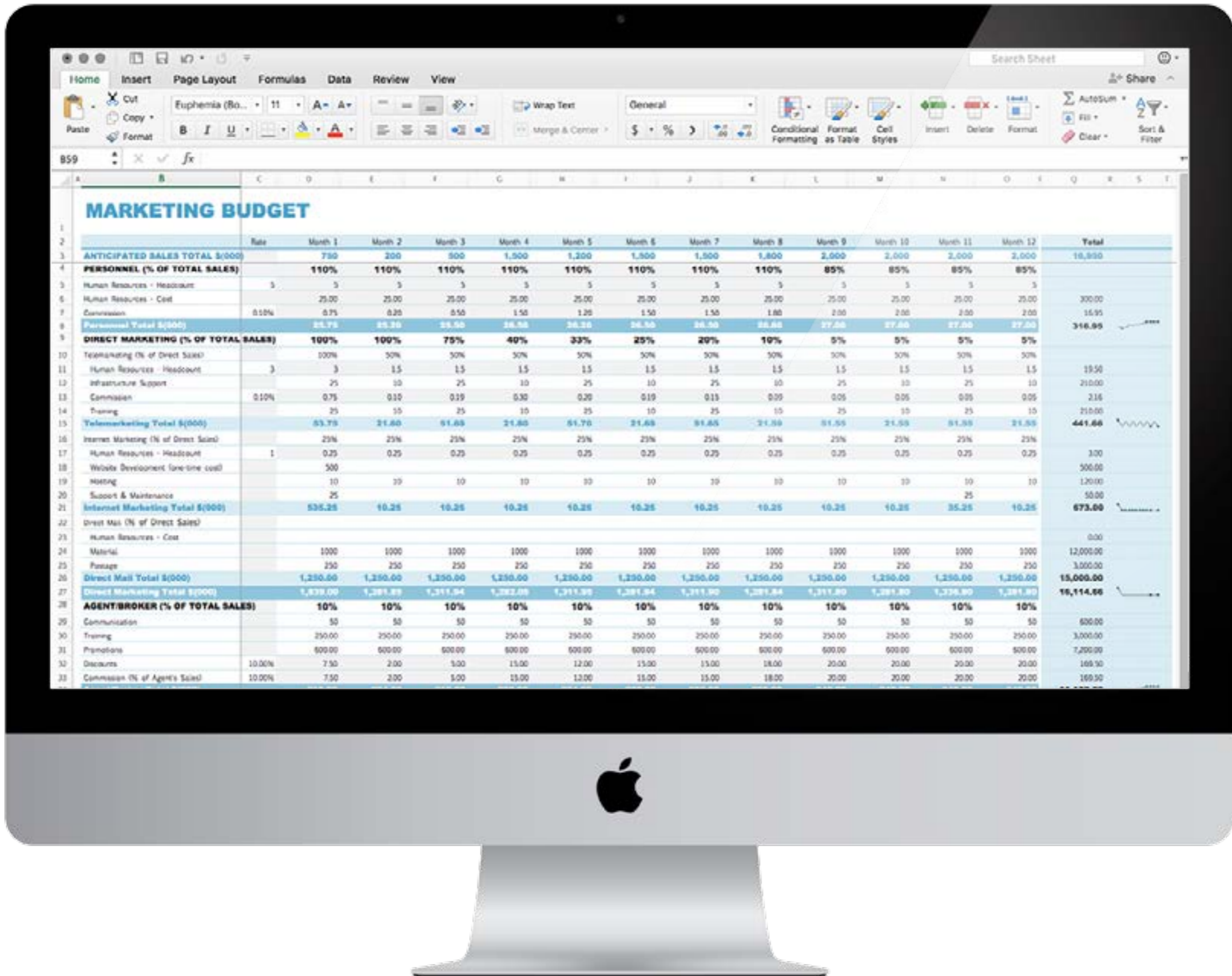
Every technology has inherent biases that determine its use, and a designer's digital tools are no different. When I describe "input biases," I'm referring specifically to how pointing and drawing hardware (mouse, tablet, touchpad, and touchscreen) affect the design software experience. When I speak of "operational metaphors," I'm describing the language used within a software environment to denote tools, techniques, and processes.

In relation to hand and machine, today's students lie along a gradient between two poles: what I call *Analog Artisans* and *Digital De Factos*. One may think of *Analog Artisans* as more traditional fine art students. They likely had art education starting in primary school, and thus learned to work directly with their hands; drawing, sketching, painting, and sculpting. While computer literate, these students don't automatically consider the computer a content creation device. *Digital De Factos*, conversely, are less likely to be traditional fine art students. They often have a long history with computer and platform gaming. These are the kind of students who first explored applications like Photoshop in secondary school, and they consider the computer to be *the* primary content creation device.

We are currently in a state of transition in which the operational metaphors and input biases of our most popular software tools are shifting in relevance. At the same time, we are seeing the widespread proliferation of alternatives to the traditional mouse as the dominant input device. Operational metaphors are where mind meets software, and pointing and drawing hardware are quite literally where hand meets machine. I argue that in teaching design software to today's students, we must carefully consider their preference as an *Analog Artisan* or *Digital De Facto*, introduce operational metaphors with student relevance in mind, and instruct students to use the input devices best suited to particular software tasks.







# Operational Metaphor

Microsoft Excel

SPREADSHEET



Microsoft Excel interface showing the ribbon (Home, Insert, Page Layout, Formulas, Data, Review, View) and various toolbars (Clipboard, Font, Paragraph, Styles, Cells, Editing, Calculation, AutoSum, Fill, Sort & Filter). The active cell is B59.

# MARKETING BUDGET

	Rate	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Total
<b>ANTICIPATED SALES TOTAL \$(000)</b>		750	200	500	1,500	1,200	1,500	1,500	1,800	2,000	2,000	2,000	2,000	16,950
<b>PERSONNEL (% OF TOTAL SALES)</b>		110%	110%	110%	110%	110%	110%	110%	110%	85%	85%	85%	85%	
Human Resources - Headcount	5	5	5	5	5	5	5	5	5	5	5	5	5	
Human Resources - Cost		25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	300.00
Commission	0.10%	0.75	0.20	0.50	1.50	1.20	1.50	1.50	1.80	2.00	2.00	2.00	2.00	16.95
<b>Personnel Total \$(000)</b>		25.75	25.20	25.50	26.50	26.20	26.50	26.50	26.80	27.00	27.00	27.00	27.00	316.95
<b>DIRECT MARKETING (% OF TOTAL SALES)</b>		100%	100%	75%	40%	33%	25%	20%	10%	5%	5%	5%	5%	
Telemarketing (% of Direct Sales)		100%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	
Human Resources - Headcount	3	3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	19.50
Infrastructure Support		25	10	25	10	25	10	25	10	25	10	25	10	210.00
Commission	0.10%	0.75	0.10	0.19	0.30	0.20	0.19	0.15	0.09	0.05	0.05	0.05	0.05	2.16
Training		25	10	25	10	25	10	25	10	25	10	25	10	210.00
<b>Telemarketing Total \$(000)</b>		53.75	21.60	51.69	21.80	51.70	21.69	51.65	21.59	51.55	21.55	51.55	21.55	441.66
Internet Marketing (% of Direct Sales)		25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	
Human Resources - Headcount	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	3.00
Website Development (one-time cost)		500												500.00
Hosting		10	10	10	10	10	10	10	10	10	10	10	10	120.00
Support & Maintenance		25										25		50.00
<b>Internet Marketing Total \$(000)</b>		535.25	10.25	10.25	10.25	10.25	10.25	10.25	10.25	10.25	10.25	35.25	10.25	673.00
Direct Mail (% of Direct Sales)														
Human Resources - Cost														0.00
Material		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	12,000.00
Postage		250	250	250	250	250	250	250	250	250	250	250	250	3,000.00
<b>Direct Mail Total \$(000)</b>		1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	15,000.00
<b>Direct Marketing Total \$(000)</b>		1,839.00	1,281.85	1,311.94	1,282.05	1,311.95	1,281.94	1,311.90	1,281.84	1,311.80	1,281.80	1,336.80	1,281.80	16,114.66
<b>AGENT/BROKER (% OF TOTAL SALES)</b>		10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	
Communication		50	50	50	50	50	50	50	50	50	50	50	50	600.00
Training		250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	3,000.00
Promotions		600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	7,200.00
Discounts	10.00%	7.50	2.00	5.00	15.00	12.00	15.00	15.00	18.00	20.00	20.00	20.00	20.00	169.50
Commission (% of Agent's Sales)	10.00%	7.50	2.00	5.00	15.00	12.00	15.00	15.00	18.00	20.00	20.00	20.00	20.00	169.50
<b>Agent/Broker Total \$(000)</b>		915.00	904.00	910.00	930.00	924.00	930.00	930.00	936.00	940.00	940.00	940.00	940.00	11,139.00
<b>DISTRIBUTORS (% OF TOTAL SALES)</b>		0%	0%	0%	0%	0%	15%	20%	40%	40%	40%	40%	40%	
Communication		50	50	50	50	50	50	50	50	50	50	50	50	600.00
Training		250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	3,000.00
Promotions		600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	7,200.00
Commission/Discounts (% of Distributors' Sales)	15.00%	0	0	0	0	0	33.75	45	108	120	120	120	120	666.75
<b>Distributor Total \$(000)</b>		900.00	900.00	900.00	900.00	900.00	933.75	945.00	1,008.00	1,020.00	1,020.00	1,020.00	1,020.00	11,466.75
<b>RETAILER (% OF TOTAL SALES)</b>		0%	0%	25%	60%	67%	60%	60%	50%	30%	30%	30%	30%	
Communication		50	50	50	50	50	50	50	50	50	50	50	50	600.00
Training		250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	3,000.00
Promotions		600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	7,200.00



DATE 1955	PAR- TICU- LARS	L. K'S INITIALS	DR.	CR.	DR. OR CR.	BALANCE	DATE 1955	PAR- TICU- LARS	L. K'S INITIALS	DR.	CR.	DR. OR CR.	BALANCE
Feb 23	Found			41.52		41.52	June 30	Found			20.97		20.97
March 17	D			74.85		116.37	July 4			10.00			
19			5.00				12 D				101.92		
			132.25							51.00			
23	of July		56				18			50.00			
23			10.00				27 July			72			
24			17.75				Aug 29			2.95			
			10.85				Nov 29	D			250.00		
April 1			6.00				Dec 5	D			100.00		
			10.00							250.00			
12			17.00				8			10.00			
18	D			150.00			12			17.00			
19			128.80							45.00			
25			10.00				14 D				496.98		
28	July		1.00							217.80			
30	Old Inv.		106				Bal of Note			167.71			
	D			32.00			21			50.00			
June 7			10.00				21			20.00			
13			20.00				27			23.67			
24	D			104.69			Jan 5/56			28.00			
	416 m Note		120.82			20.97	10 D				946.69		965.99



# ART 216 Digital Tools

Introduction to the fundamentals of both bitmap and vector editing, and designing in 2D.



Photoshop



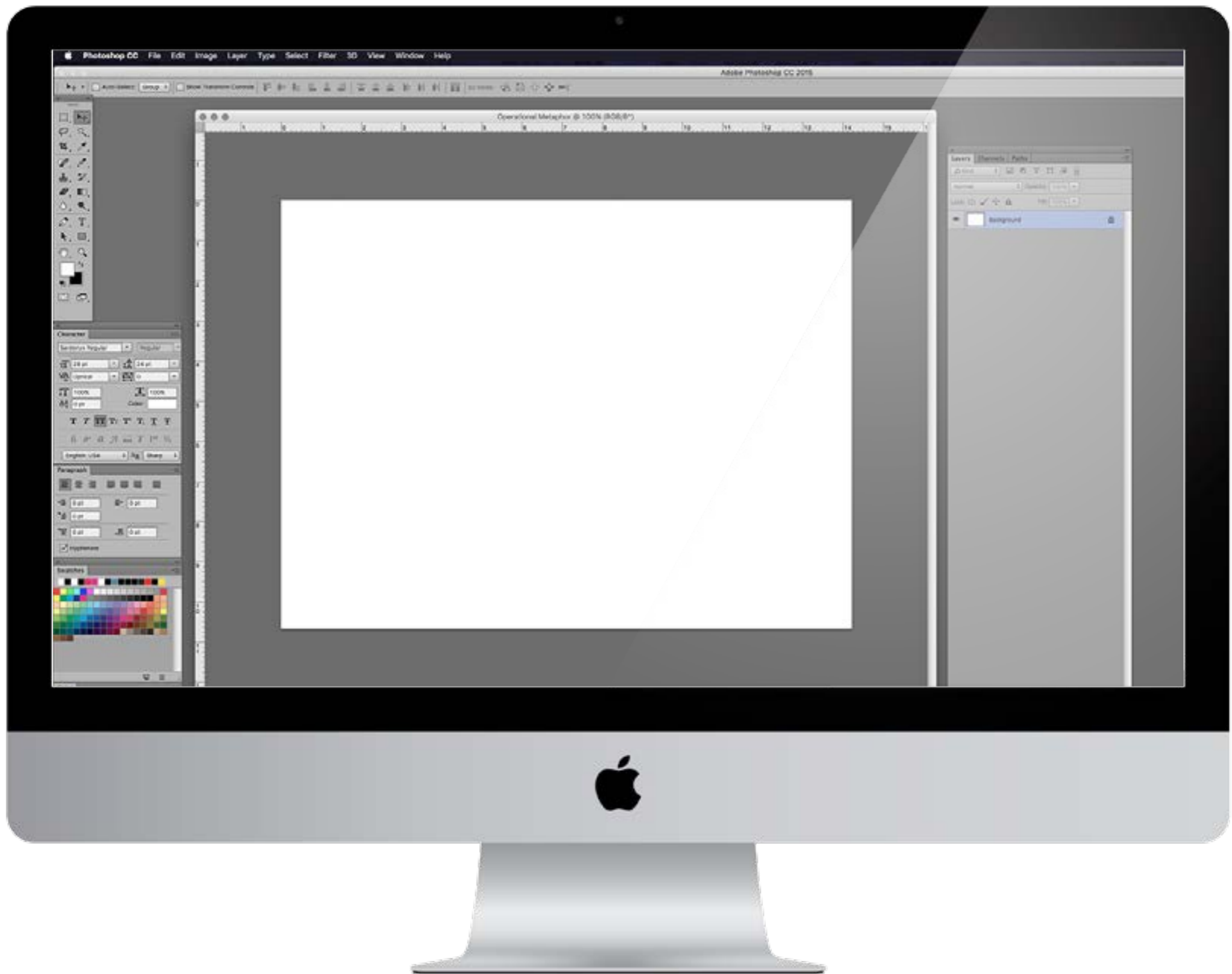
Illustrator



InDesign

# Adobe CC Suite



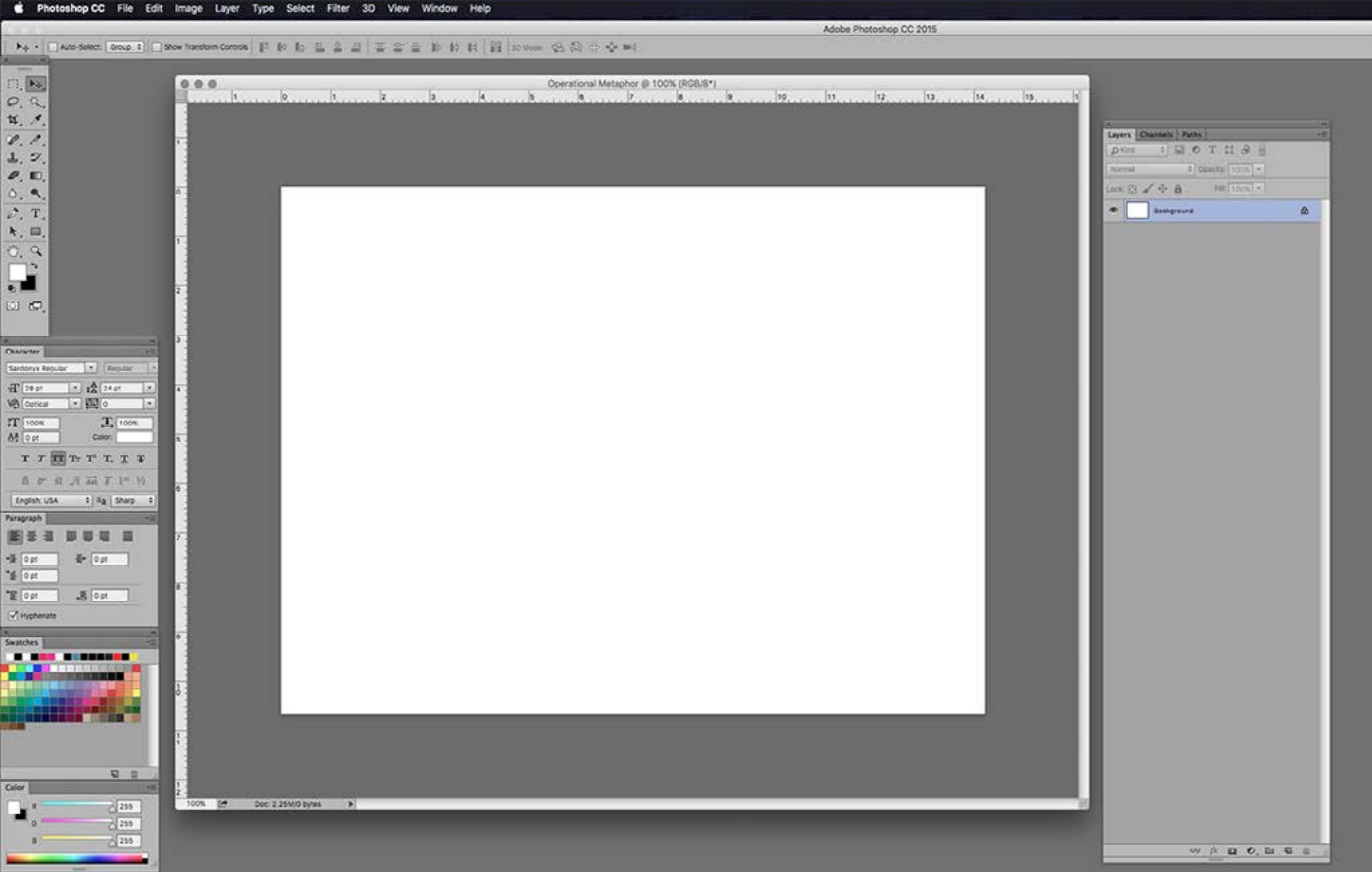




Photoshop

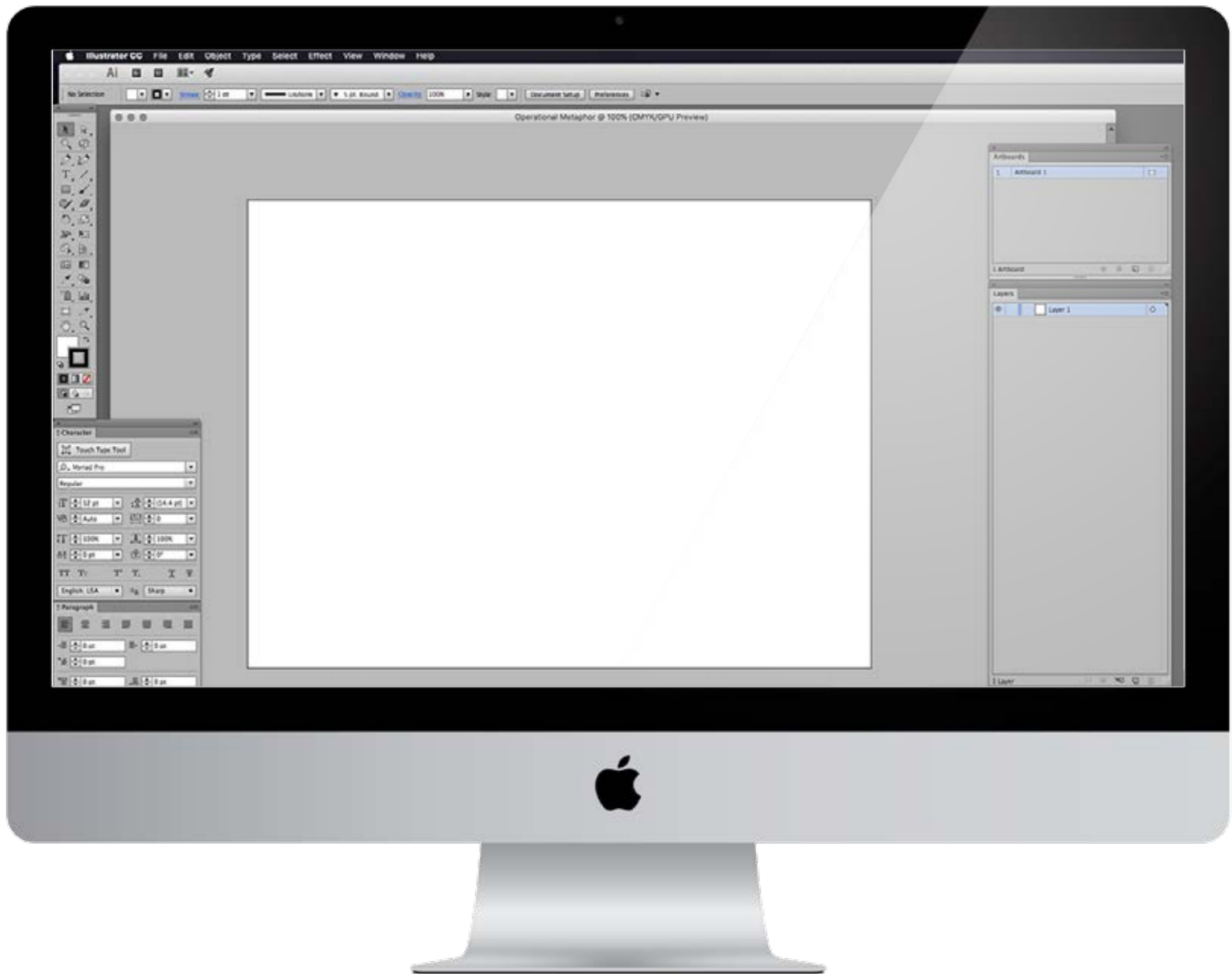
Canvas









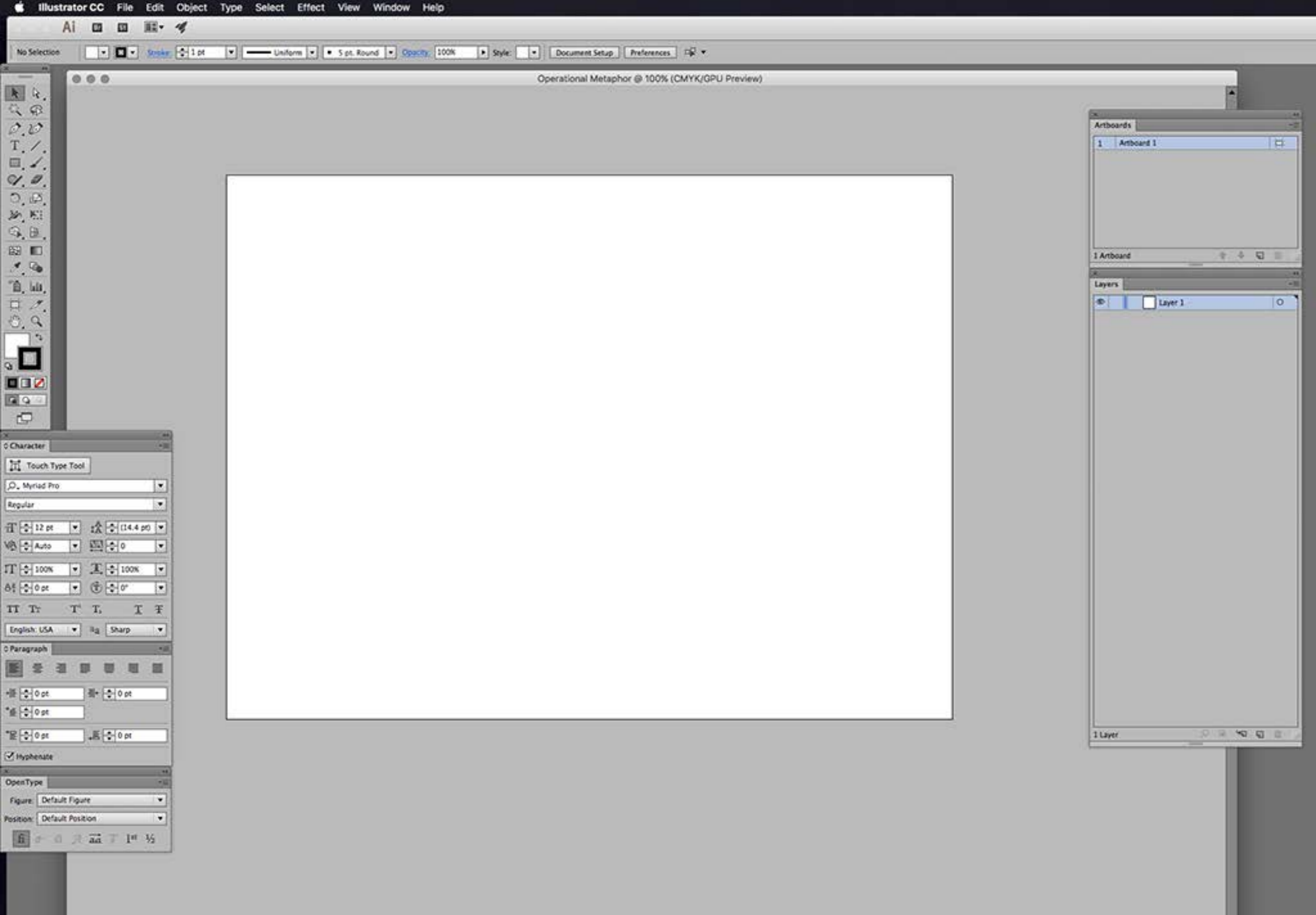




Illustrator

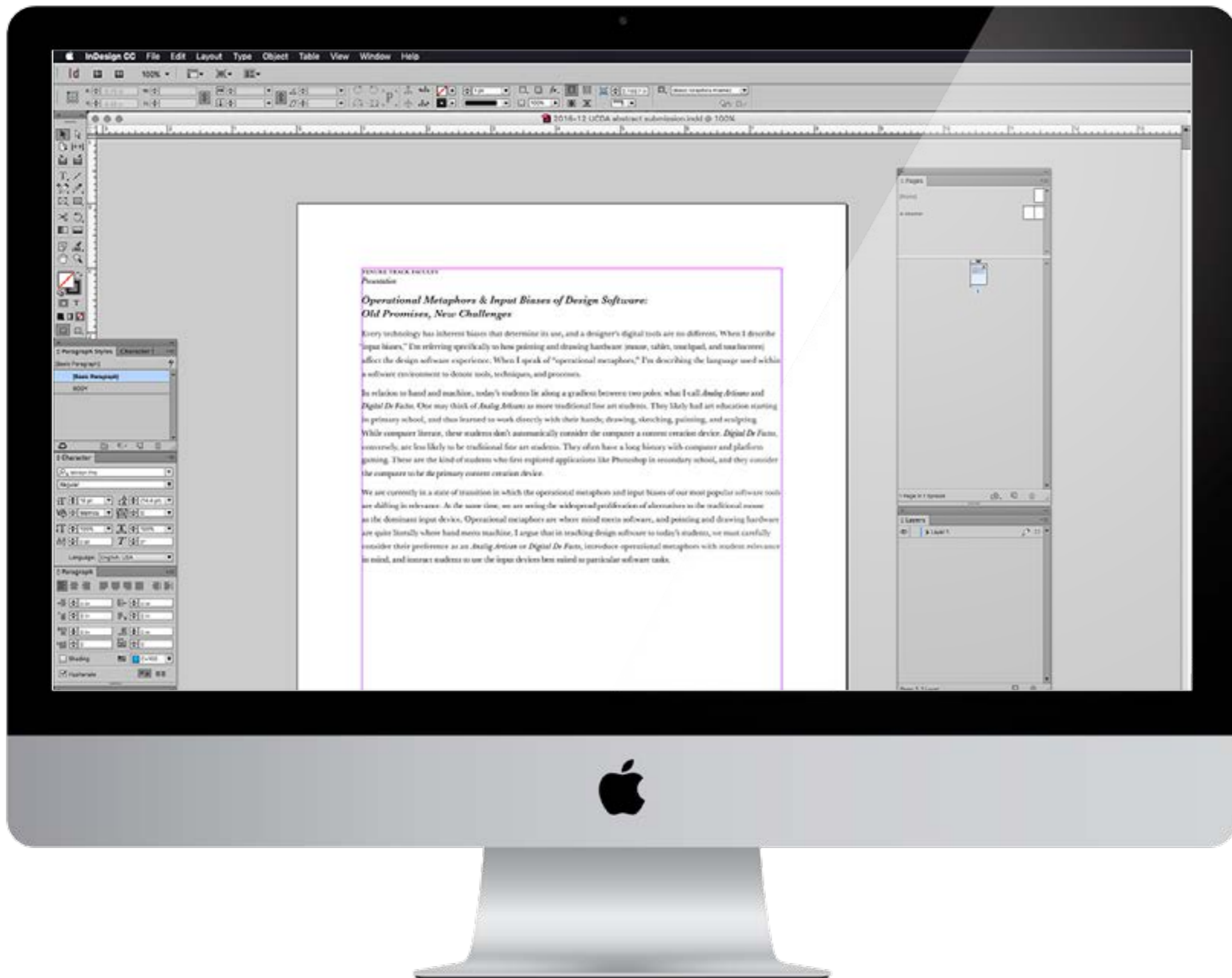
Artboard









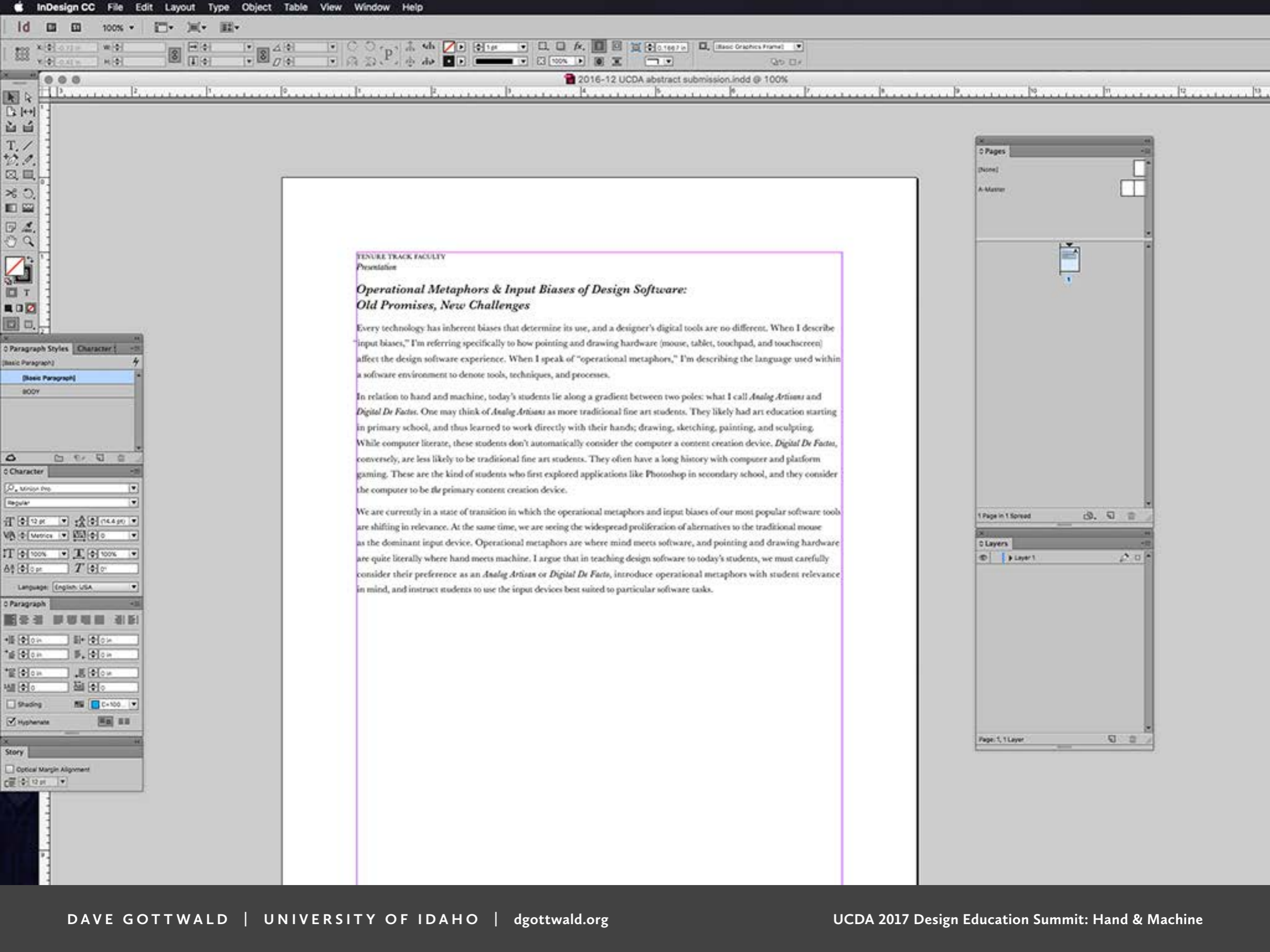




InDesign

Page









You'll go gift-happy  
with us. You'll save, too.

Living  
Bible.

SAVE 10  
49<sup>99</sup>

49<sup>99</sup>

159



These metaphors  
are *not perfect*.

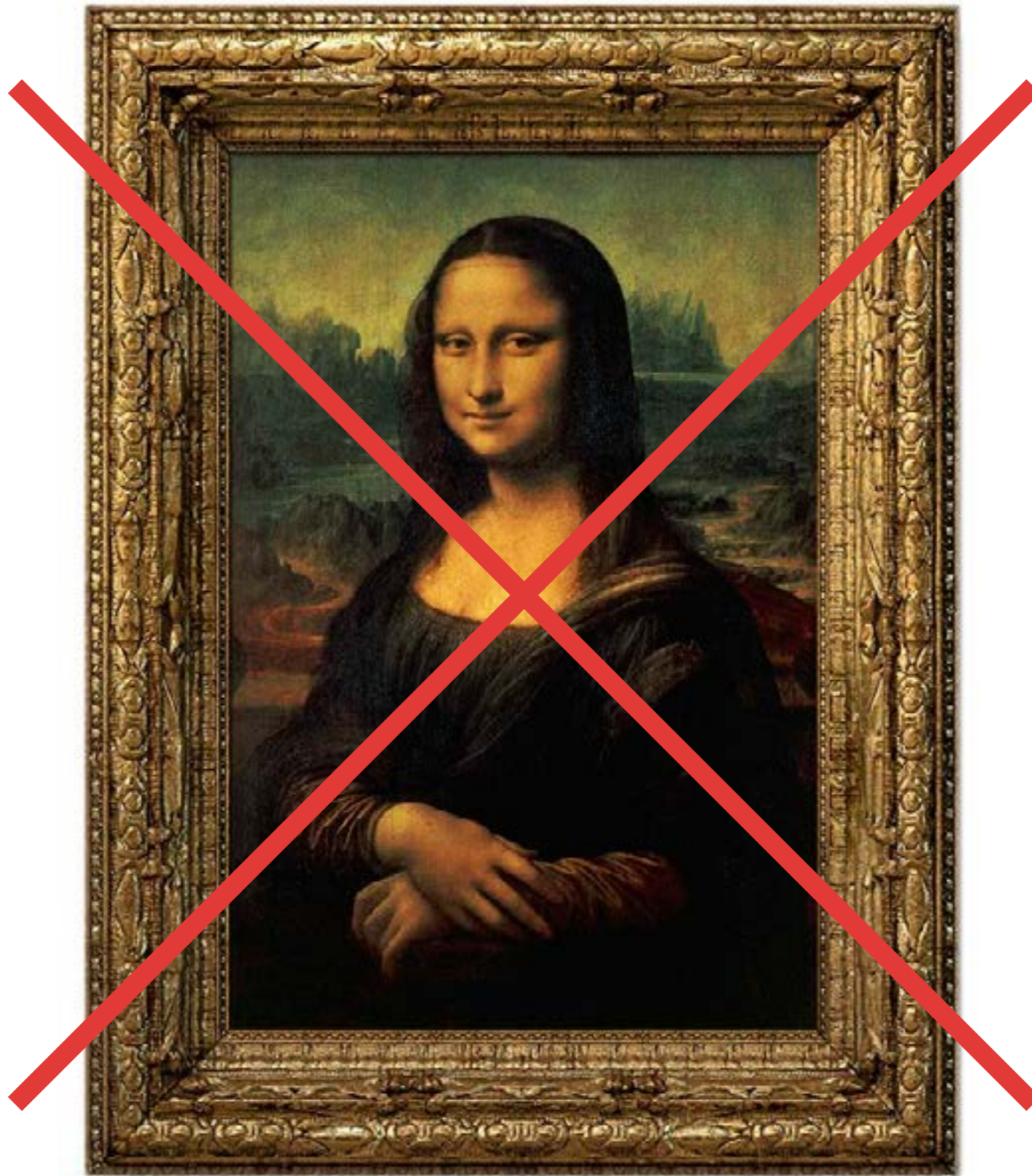
So let's make some adjustments.



Photoshop

~~Canvas~~







Photoshop

Collage







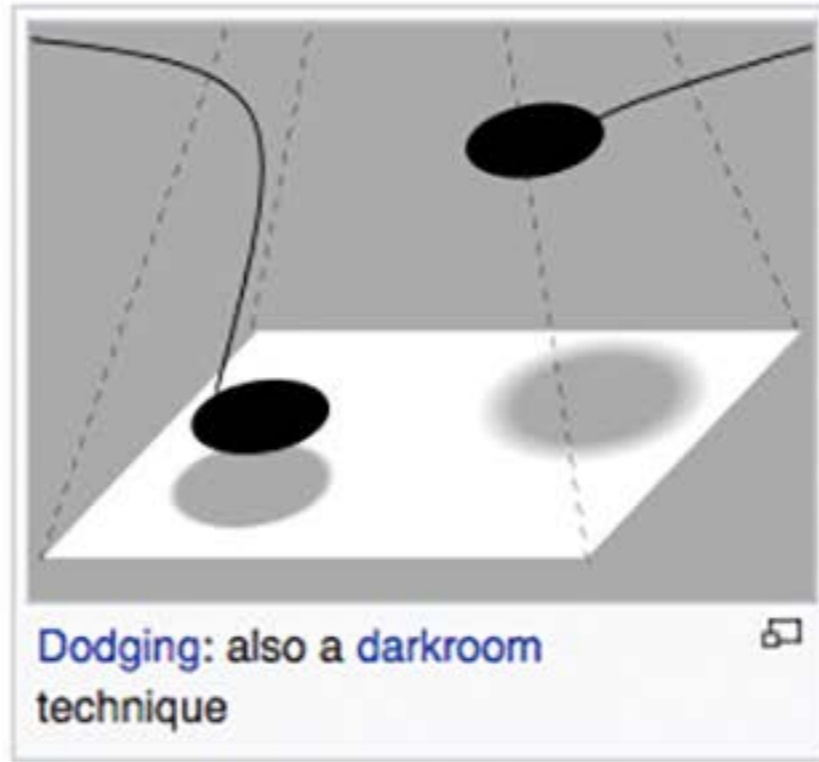
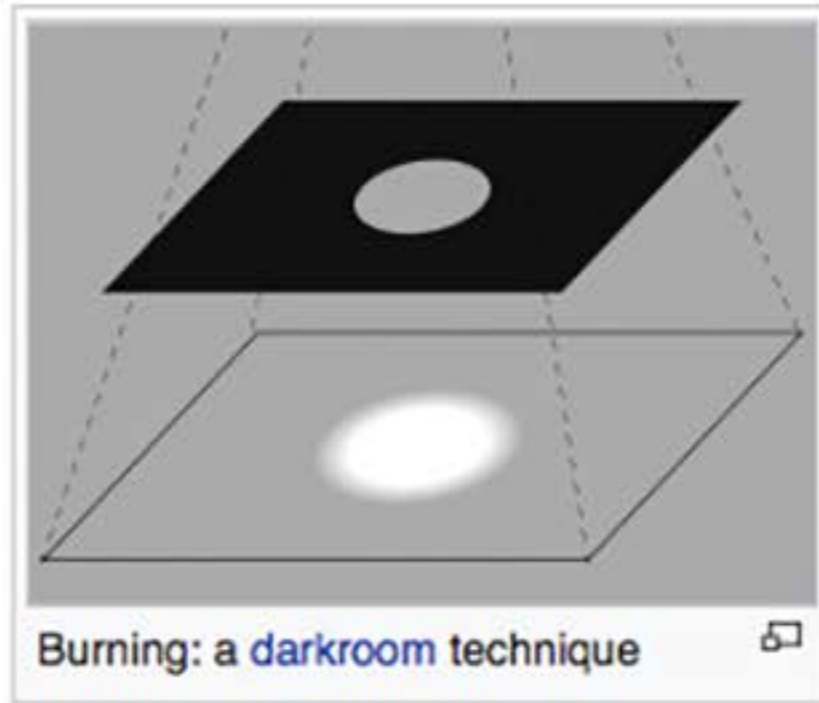
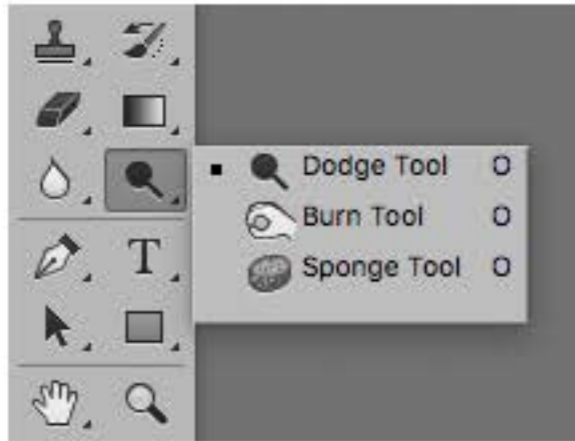
# Photoshop

Content is applied in **layers**.

Content “hangs off” the edges  
until trimmed (**cropped**).











Photoshop

**CollageMaker**

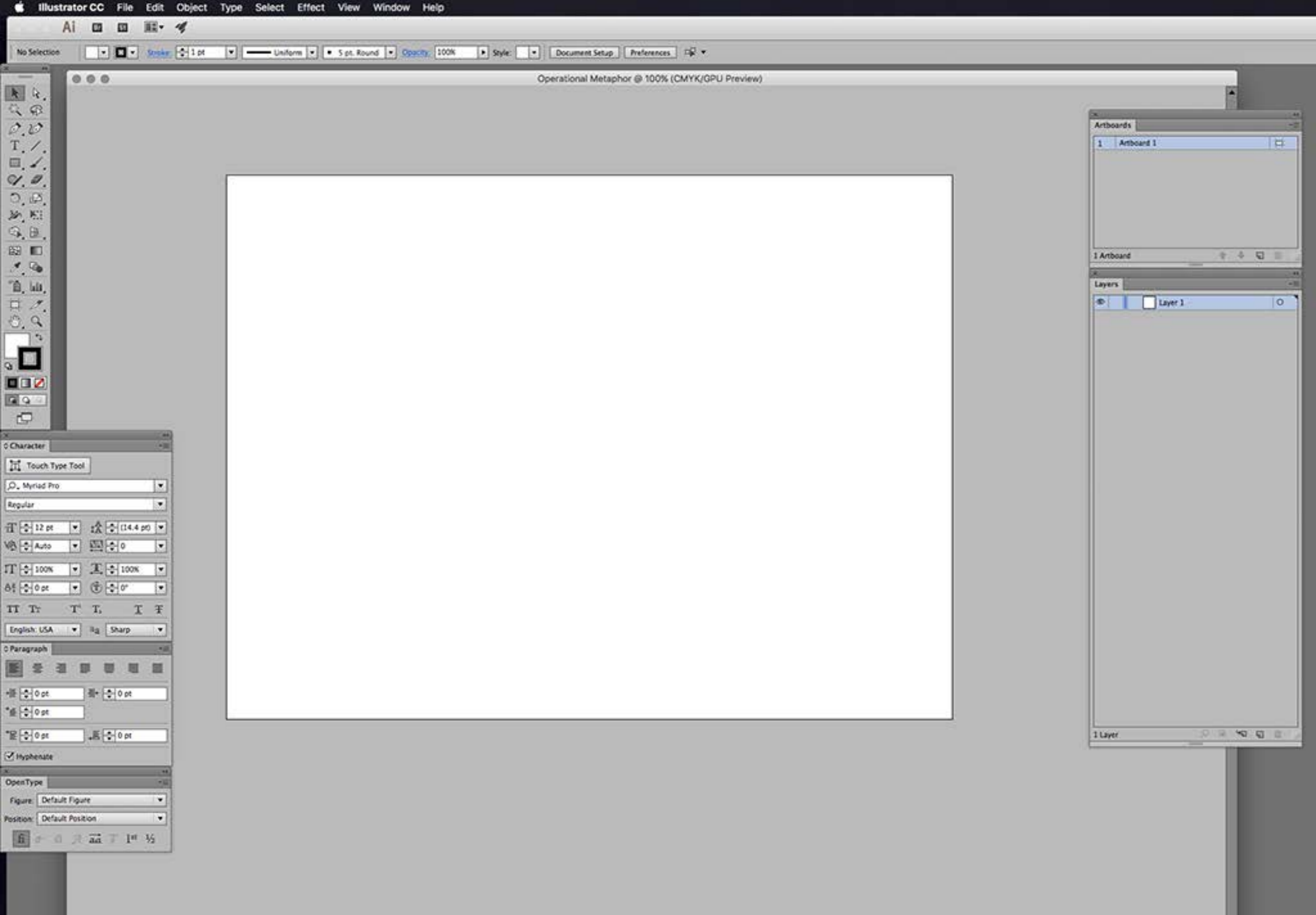
(which you can also edit  
photographs with)

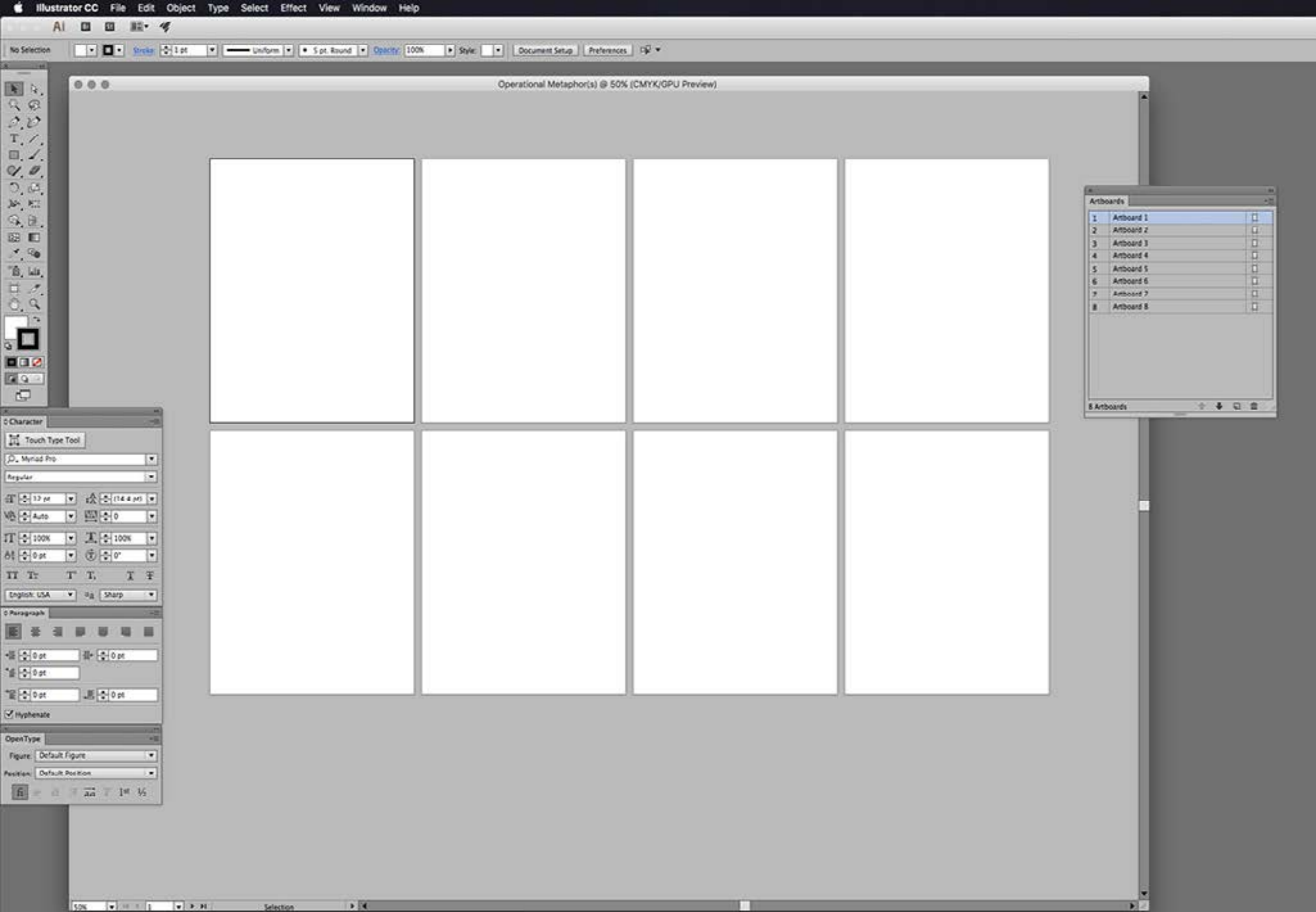


Illustrator

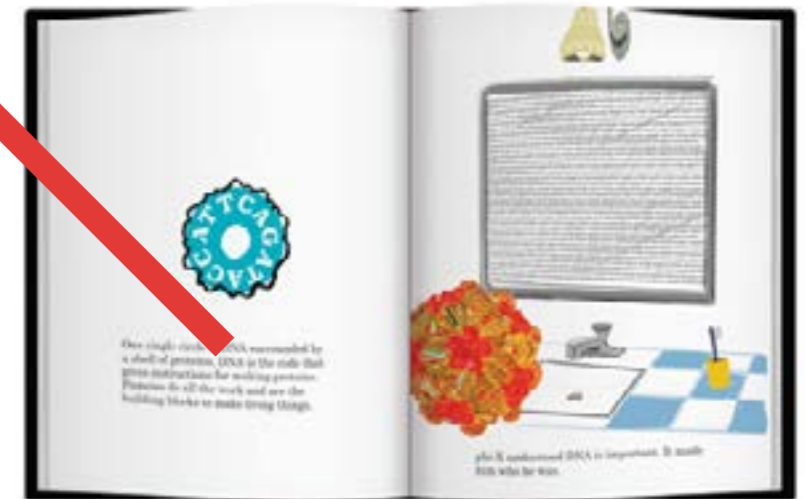
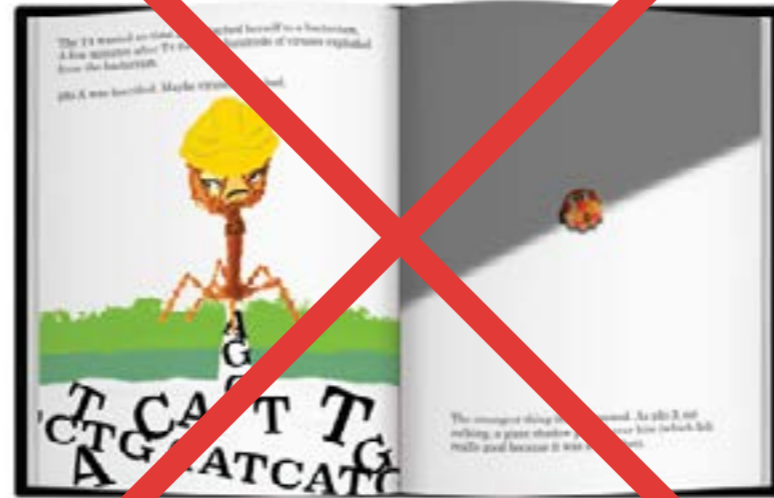
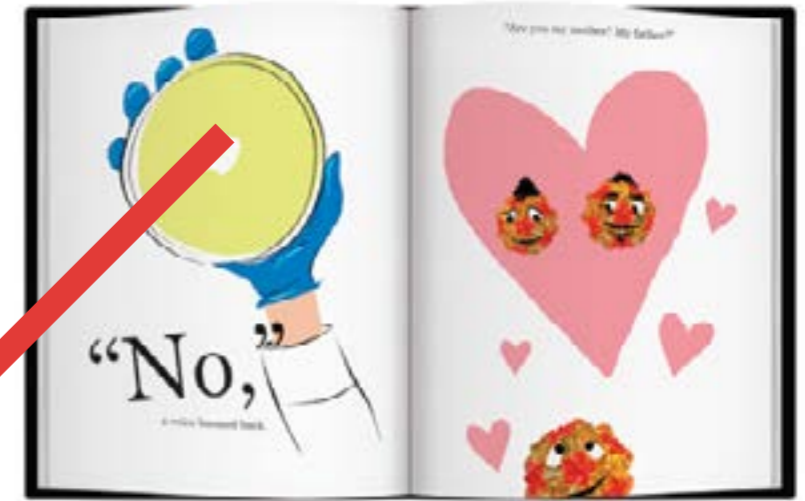
~~Artboard~~













Illustrator

Sketch Pad







Artwork and images are often traced using layers (like vellum).

Each “artboard” is a **draft**.



**DrawingMaker**

(which you can also incorporate  
images into)



InDesign

~~Page~~





**Id** InDesign

Plane



Plane

**ANY** two-dimensional surface





Master page templates are ideal for rapid prototyping.

Effective layout tool for all variety of print and digital media.



ASSEMBLAGES *and* DRAWINGS *of* KRIS KUKSI

# DBITY REINVENTED

ASSEMBLAGES + DRAWINGS + KRIS KUKSI  
SEPTEMBER 15 - DECEMBER 20



TO:

---

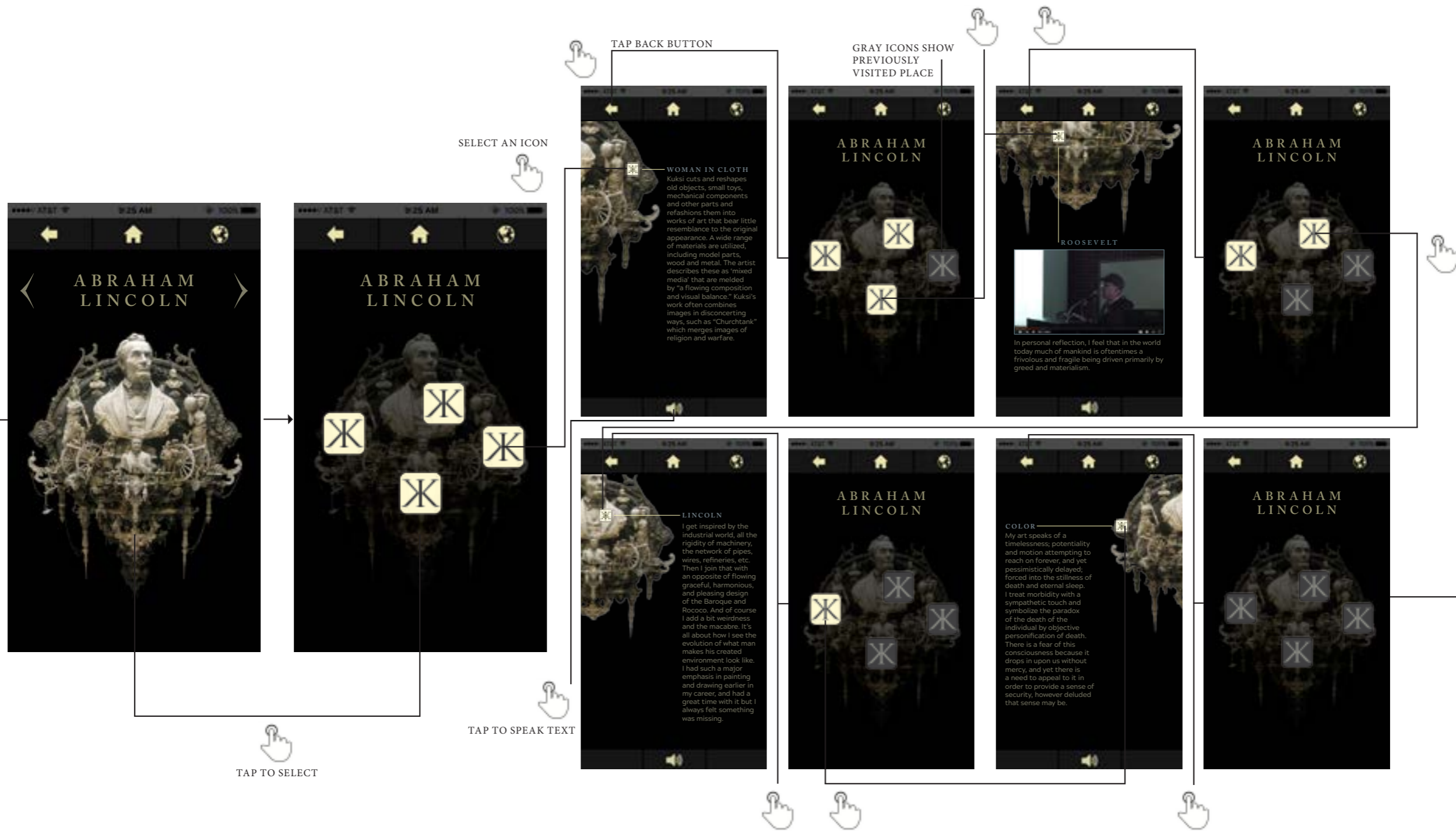
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MCA

Visit  
Calendar  
Exhibitions  
Series  
Artists in  
Residence

Programs  
Collection  
Learn  
Stories  
Support  
Who We Are  
About  
Rentals  
Buy Tickets  
Shop

Redesign

Exhibitions

SEARCH

# DEITY REINVENTED

SEPTEMBER 15 – DECEMBER 20



Kris Kuksi is an [Fantastic Realism] assemblage artist from Springfield, Missouri who also specializes in painting and drawing. He uses model kits, injection molded orphans, knick knacks, jewelry, figurines, and plastic animals in his assemblages. His work has been described as "a study in timelessness and intricacies, reminiscent of lost civilizations, deities, and ruins - perfectly preserved."

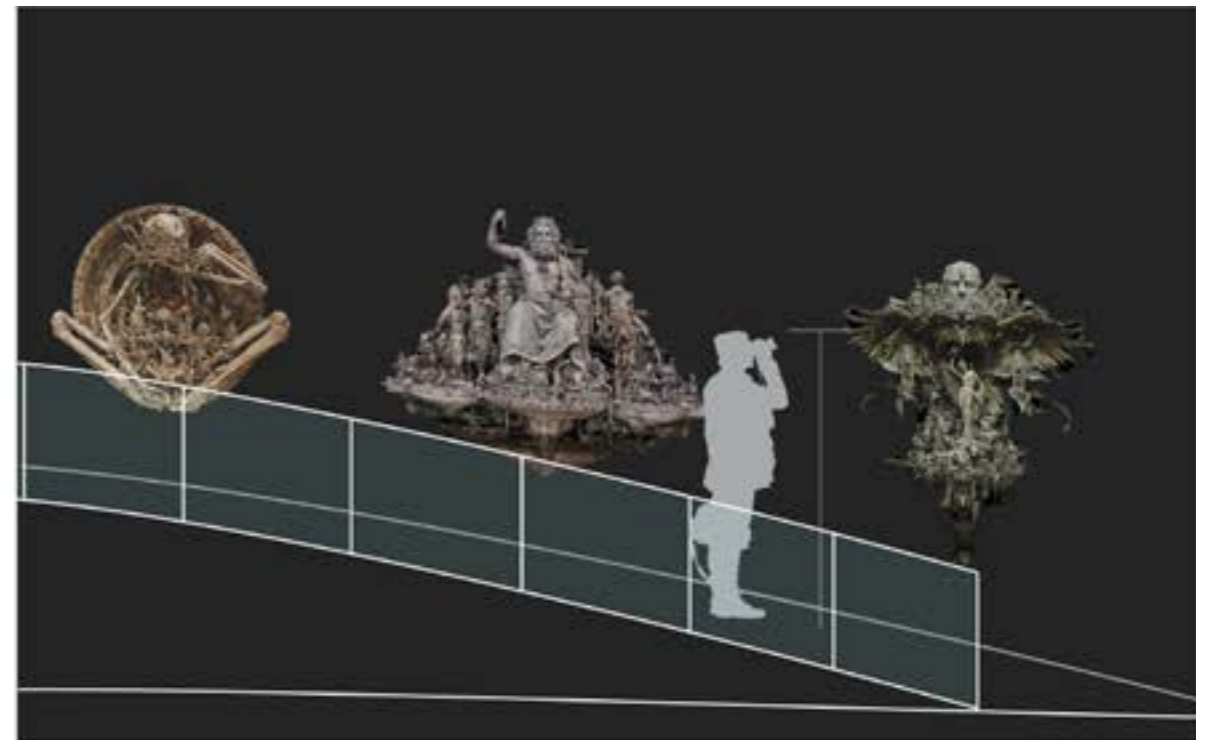
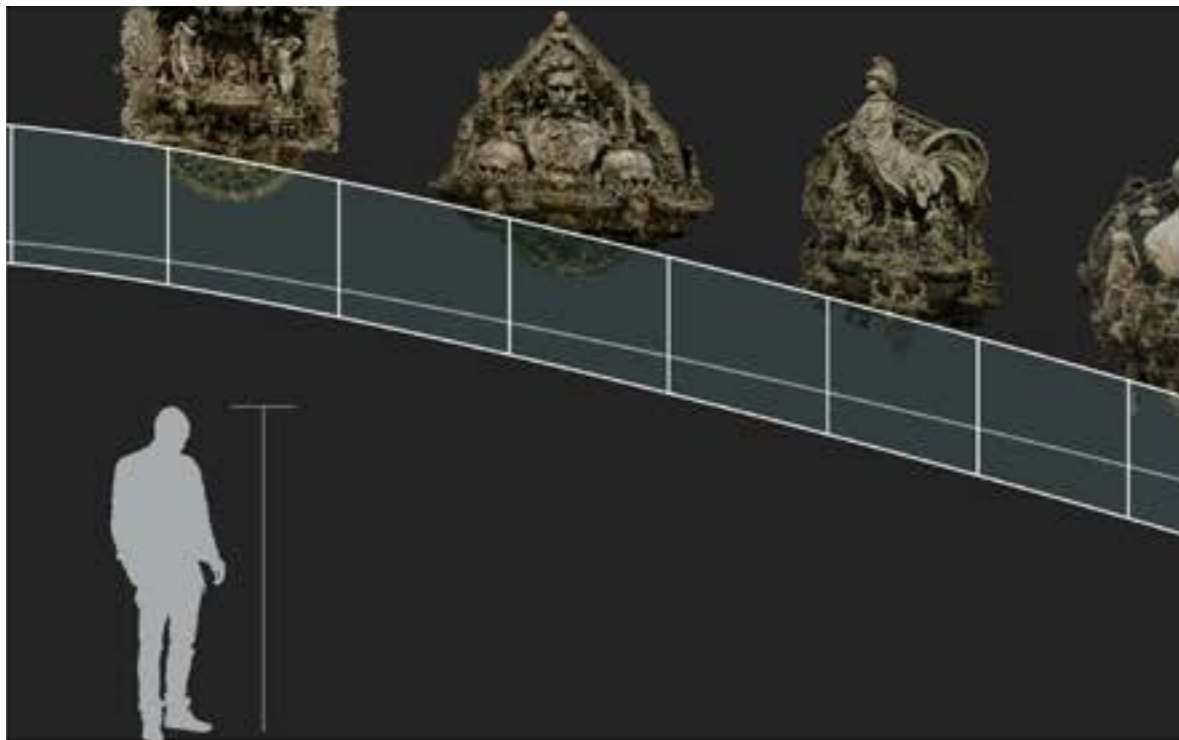
Some of Kuksi's influences include the Baroque and Rococo periods in time. He feels he belongs more to the "Old World" and his artwork is a reaction to the corruption and demoralization of modern-day society.

This exhibit focuses on 15 of his assemblages throughout his building career along with several of his more macabre paintings and drawings. There is an downloadable app at the beginning of the exhibit that will provide visitors with an even more in depth tour of the artist and his works. Visitors can create their own assemblages to take home or put on display.

He is represented by the Joshua Liner Gallery in New York. So far, Kuksi has collaborated with individuals and companies such as Saatchi Art, Nike, Cosmopolitan Hotel in Las Vegas, The Mortal Instruments: City of Bones (motion picture), Visionaire (publication by Givenchy), and more.







# OBITUARY REINVENTED

ASSEMBLAGES and DRAWINGS of KRIS KUKSI

*This gallery features the intricate assemblages, paintings, and drawings of the artist Kris Kuksi from the very beginning of his artistic career. The work featured comes from a part of Kuksi that always felt he belonged to the "Old World", as he has always had a distaste for American life and fascinated with more machines and surreal subjects. Kuksi is inspired by the industrial world, machinery, the Russian and European periods of time, and combines all of that together into complex, profound assemblages and artworks to make his audience aware of the fallacies of man. Kuksi's work is in the realm of Fantastic Realism and speaks of simultaneity, the potential of humans reaching on and on, however delayed by death and eternal sleep. Kuksi hopes to warn his viewers of the appeal of security, how death is always upon us, but how we should never neglect our capability.*





Plane

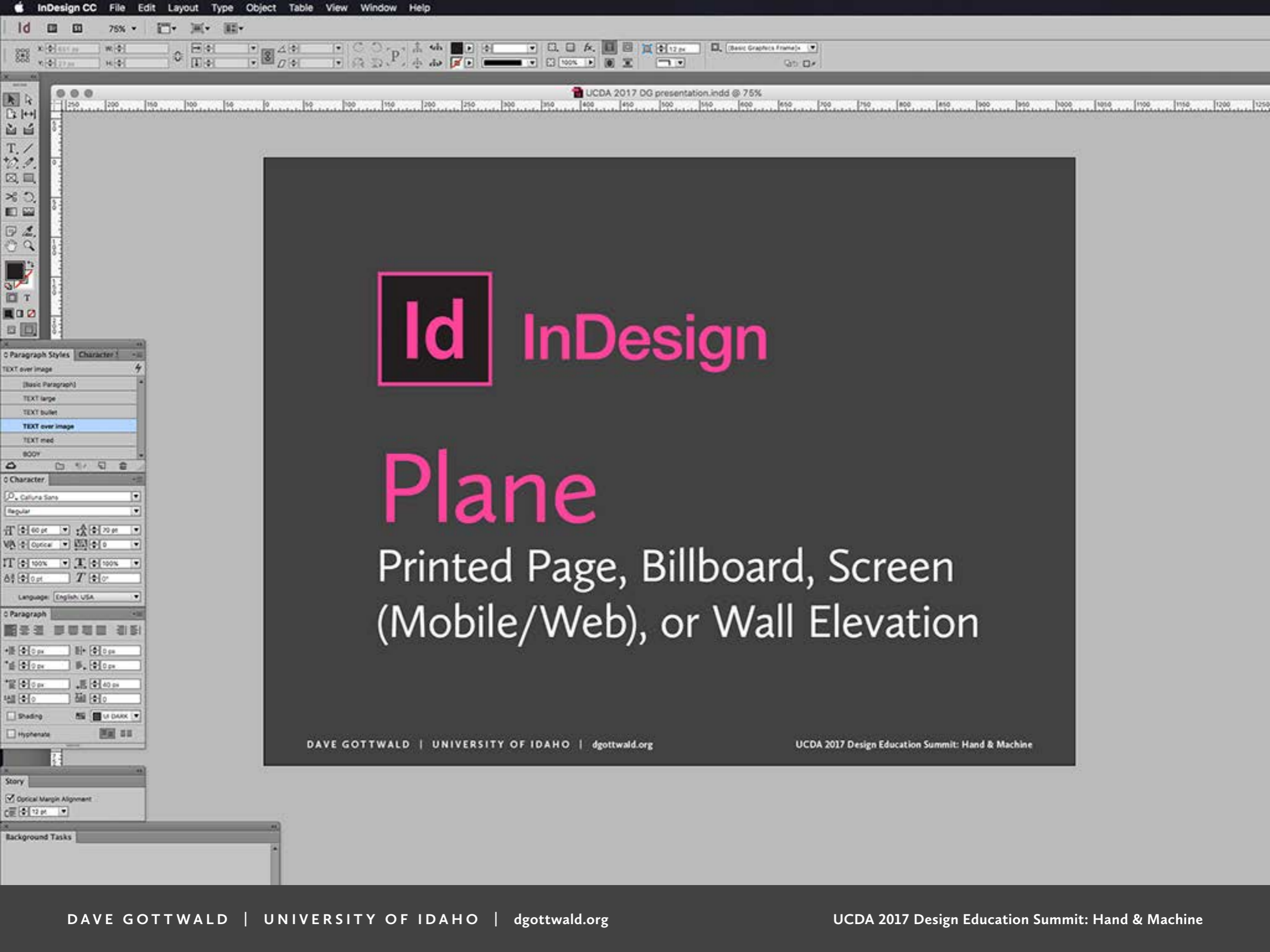
**ANY** two-dimensional surface



Plane

Presentation Deck!





Id InDesign

Plane

Printed Page, Billboard, Screen  
(Mobile/Web), or Wall Elevation

DAVE GOTTWALD | UNIVERSITY OF IDAHO | dgottwald.org

UCDA 2017 Design Education Summit: Hand & Machine



## LayoutMaker

(combining text, illustrations,  
and photos into compositions)



**CollageMaker**



**DrawingMaker**



**LayoutMaker**

**Adobe CC Suite**



OPERATIONAL METAPHORS

Where Mind Meets Software

INPUT BIASES (POINTING / DRAWING)

Where Hand Meets Machine

Adobe CC Suite

# What do I mean by *Input Biases?*

Adobe CC Suite

*Keyboard*

*Mouse*

*Tablet + Stylus*

*Trackpad*

*Touchscreen*

Adobe CC Suite



**Strong bias** towards  
keyboard shortcuts + mouse  
input workflow.

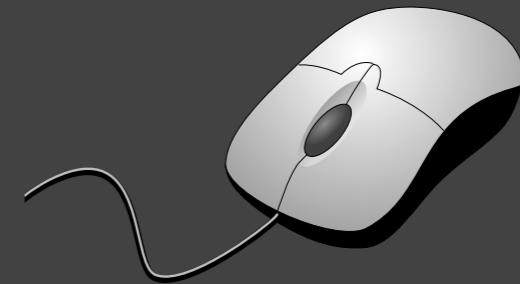
Original Mac bias of the 1980s  
and early 90s.

Adobe CC Suite

**Ps** Photoshop

**Ai** Illustrator

**Id** InDesign









A laptop trackpad is frustrating.




A desktop trackpad can be workable.







A hand is shown using a white stylus to interact with a tablet. The tablet screen displays a design application with various tools and a color palette. The background is slightly blurred, showing a laptop keyboard and another tablet. The overall scene is dimly lit, with the tablet screen being the primary light source.

A tablet + stylus can be very productive, if used in conjunction with the original biases of the software.

(keyboard shortcuts + mouse)



A hand holding a white stylus is shown interacting with a tablet. The tablet screen displays a design application with various tools and a sketch of a face. The background is dark and slightly blurred, showing a laptop keyboard and another tablet. The text is overlaid on the image in white and orange colors.

We are in a **transitional phase** towards a truly touch / gesture environment.

We are in a **transitional phase** towards a truly touch / gesture environment.

But we're *not there yet*.

And Adobe knows this.





# Photoshop Touch Announcement

Search Adobe Support



## Photoshop Touch is no longer being developed - May 21st, 2015

Photoshop Touch will no longer be available for purchase. This was a difficult decision, and we encourage you to learn more about where we're focusing our attention here: [Photoshop Mobile Apps...a Peek at What's to Come](#).

For customers who purchased the app previously, it will continue to work on your device but no future updates will be provided (bug fixes, operating system updates, etc). You may continue to use the app for the foreseeable future, but please make sure to save your work outside the app.

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[FAQ](#)

[Reinstalling or restoring Photoshop Touch](#)

Applies to: **Photoshop Touch for phone**

Last Published: March 12, 2016

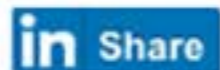
### FAQ





May 21, 2015 / Photoshop / Photoshop Mix / Photoshop Touch / Bryan O'Neil Hughes

# Photoshop Mobile Apps...a Peek at What's to Come



We've been very busy here at Adobe, redefining what connected mobile creativity means, both for our growing family of free mobile apps and in components for our partners that are leveraging Adobe technology via our Creative SDK. Today, I'd like to share what we're doing to bring significant Photoshop functionality to more people in unique and powerful ways, and to extend your creative experience beyond the desktop.



family of free mobile apps and in components for our partners that are leveraging Adobe technology via our Creative SDK. Today, I'd like to share what we're doing to bring significant Photoshop functionality to more people in unique and powerful ways, and to extend your creative experience beyond the desktop.

Photoshop on the desktop has opened a world of unparalleled creative freedom, but as Scott Belsky, Adobe's VP of Products, Community and Behance explained in a recent blog post of his own, bringing that kind of power to mobile presented us with some pretty daunting challenges.

One major challenge to creative freedom was, simply, access. While the phone may be your go-to for all of your daily snapshots, how do you get to those images on your tablet? And how do you access your projects or elements of your projects that reside on your desktop? This was among the first problems we set out to solve. Our new mobile apps can open files from Creative Cloud, so all of your mobile content and many of your desktop files are accessible to you on your mobile device, and the work you create while on your mobile device is accessible to you when you're on your desktop. This means you can get to what you need, wherever you are.

Then there's the editing challenge. We recognized that bringing core Photoshop technology to mobile would open many creative opportunities for our customers, but it had to be done right, which meant nailing the experience. To do that, we needed to distill very complex desktop workflows and features into a naturally intuitive touch environment. We've also sought to provide a solution that helps people achieve great results quickly. So we've recently focused on creating individual mobile apps that each perform core tasks, rather than provide all-in-one solutions that mirror the desktop versions of our applications.

Photoshop Mix demonstrates how we laser-focused on a traditionally complex workflow in the name of making it available to a broader group of people. With Mix, you can quickly merge multiple photos into one. What's more, using Mix means tapping into the power of Photoshop and Adobe's digital imaging technologies wherever you are. When you use "Auto" to adjust an image, for example, you're leaning on Lightroom's powerful processing engine, and when you use "Auto" in cut-out, you're leveraging next-generation technology from our labs. And of course, you can access your files in Photoshop Mix from Creative Cloud and get the work you created with Mix back into Photoshop on your desktop, where it remains fully editable.



So we're *not there yet*.  
And Adobe knows this.

**Best practices for today's  
design students?**

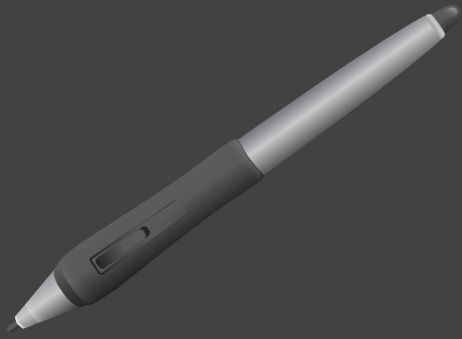


# Consider your students along this gradient.

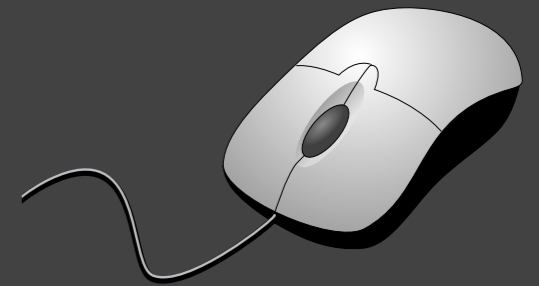
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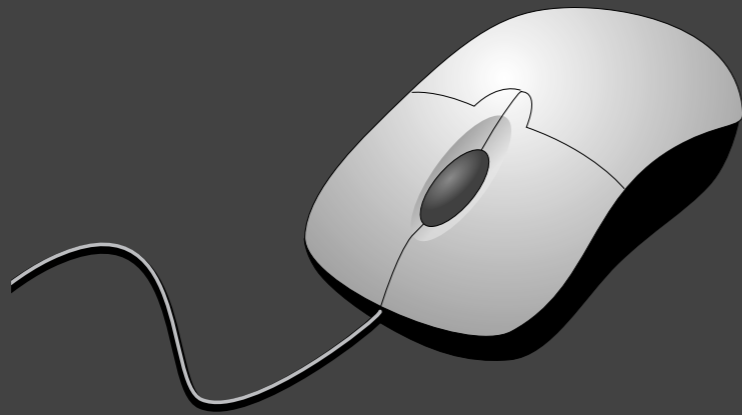
In my experience, for  
most students...

(your mileage will vary)

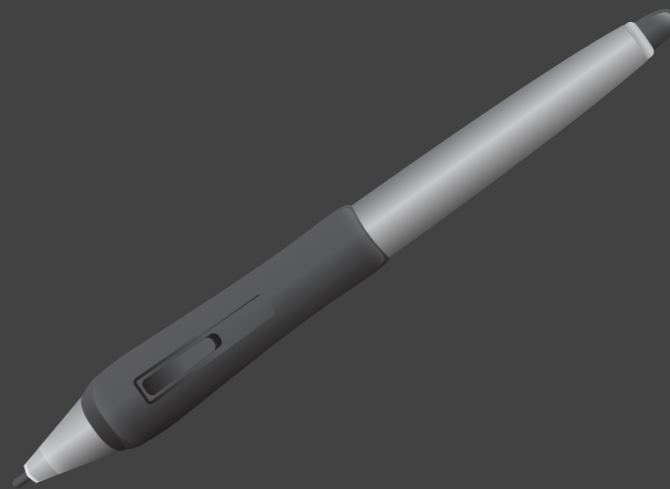




Photoshop



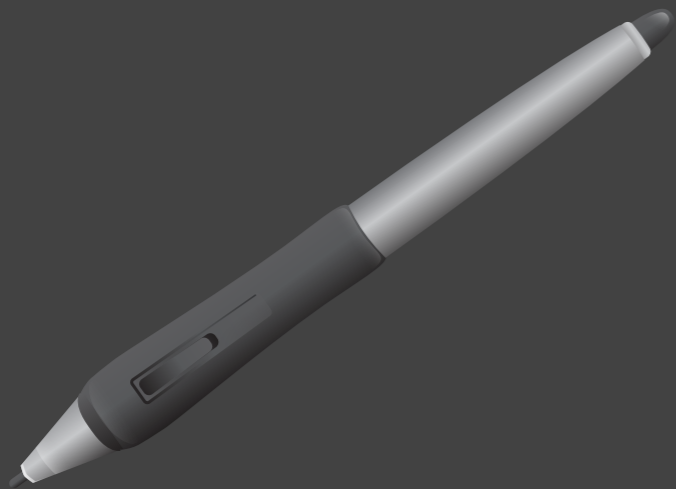
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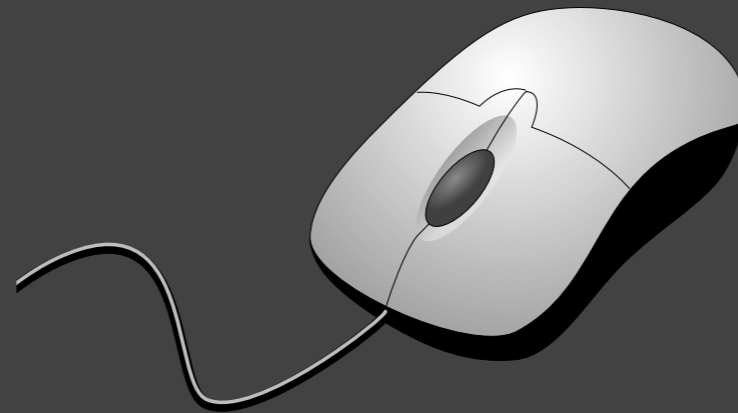
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# Illustrator



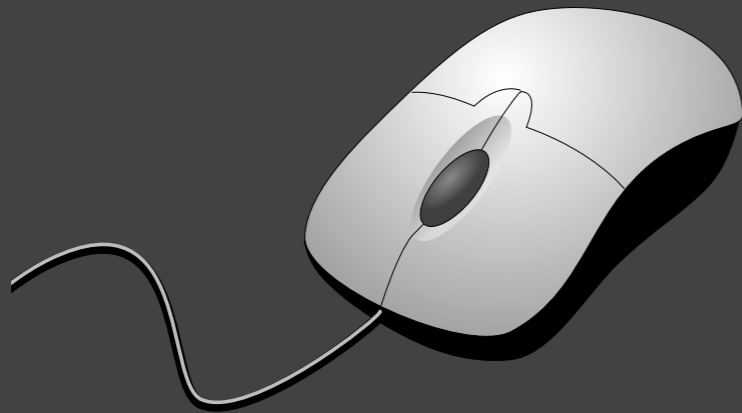
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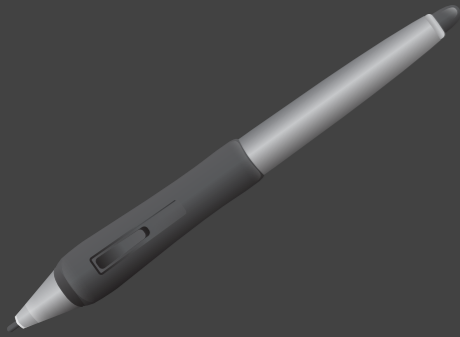


InDesign

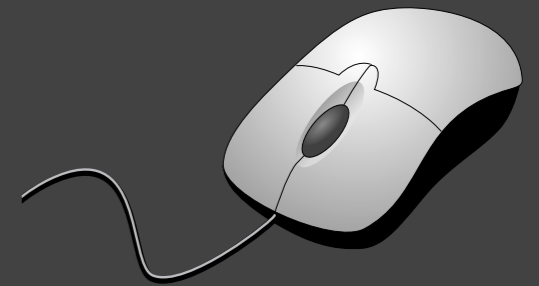


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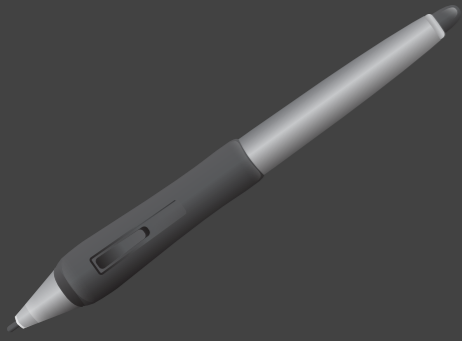


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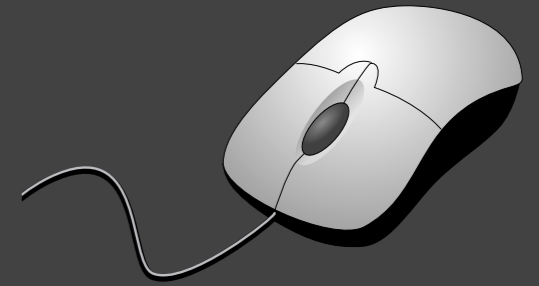


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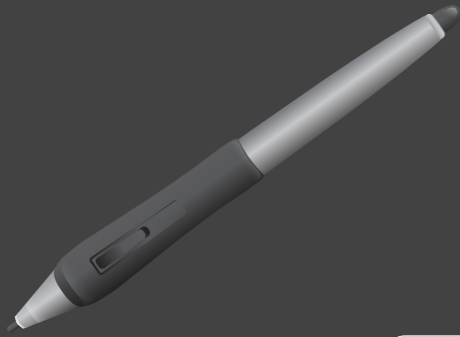


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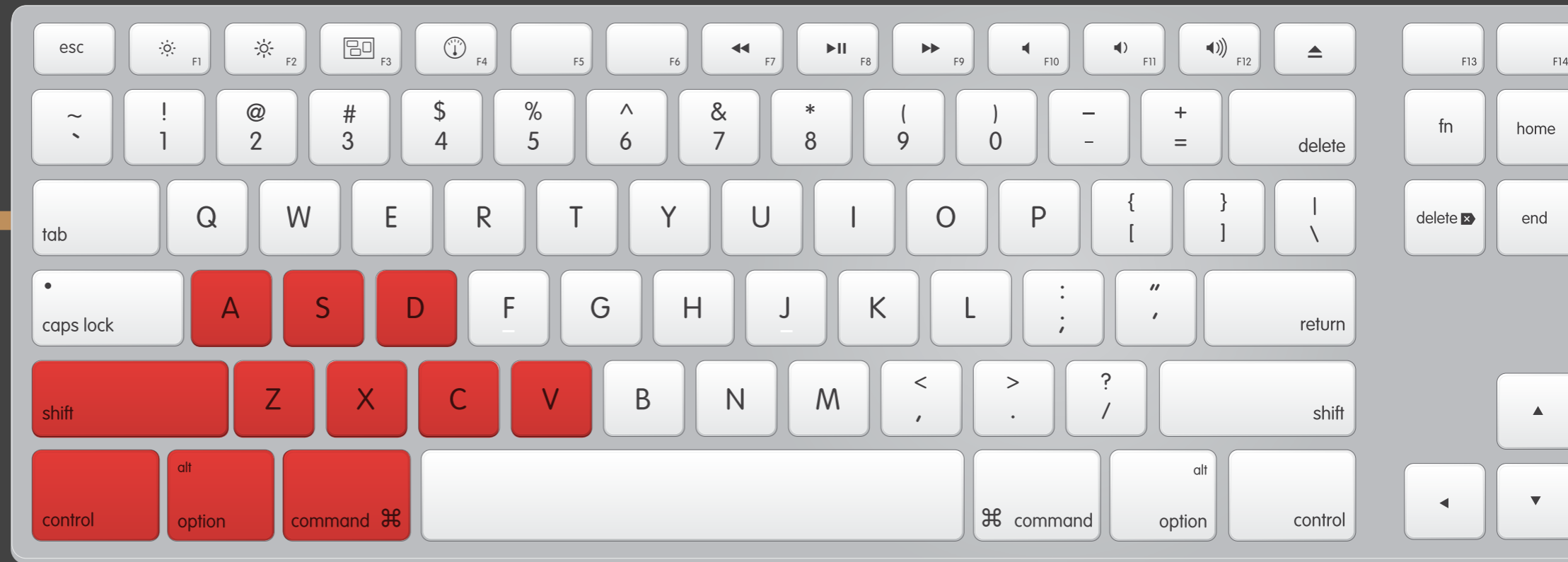


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# Analog Artisans









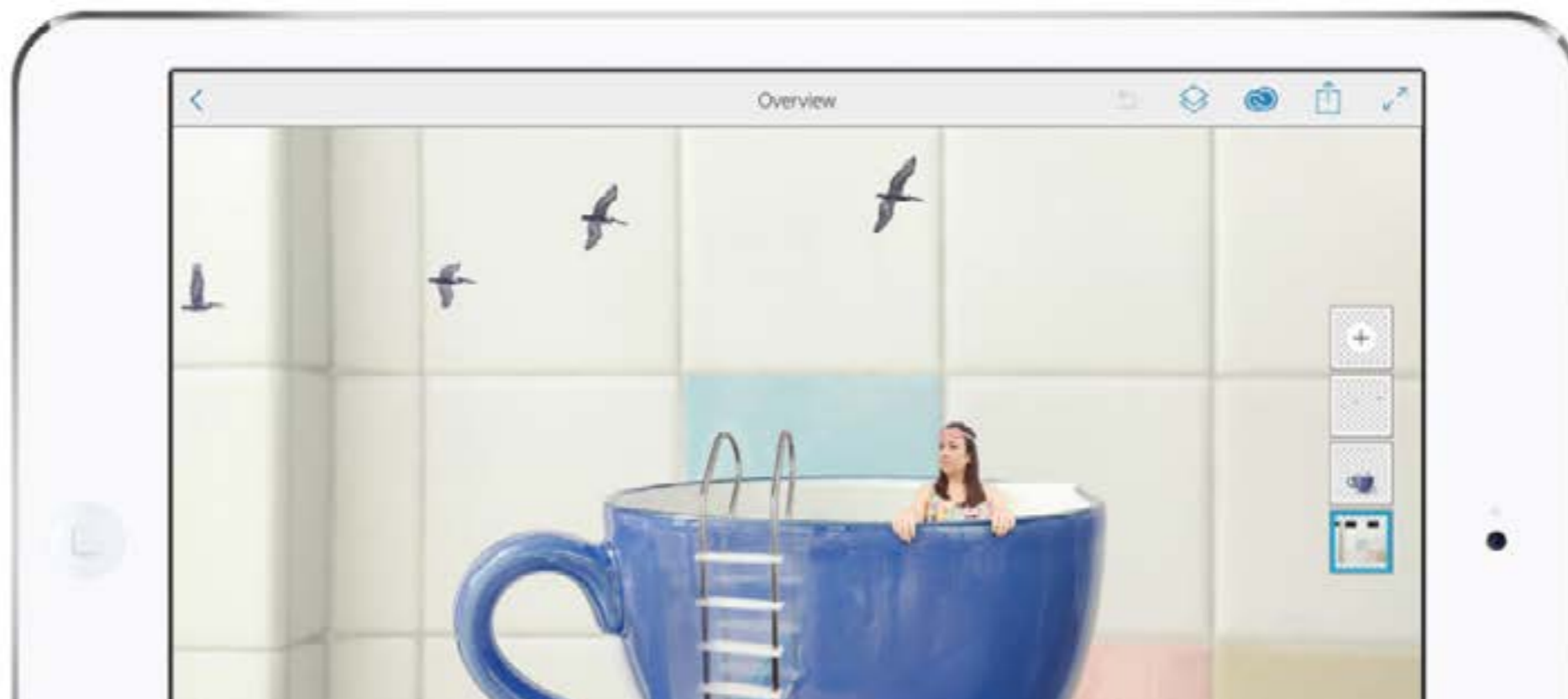




# Cut out, combine and create amazing images. Anywhere.

Get the app that brings serious Photoshop editing to your mobile device. Photoshop Mix lets you cut out and combine elements from different images, blend layers and apply looks on your iPhone, iPad or Android device — all compatible with Photoshop CC.

[Watch the video >](#)







## Powerful retouching. At a touch.

With new Photoshop Fix on your iPhone, iPad or iPad Pro, you can liquify, heal, lighten, color and adjust your images to perfection — then easily share them across other Adobe Creative Cloud desktop and mobile apps.

[Watch the video >](#)

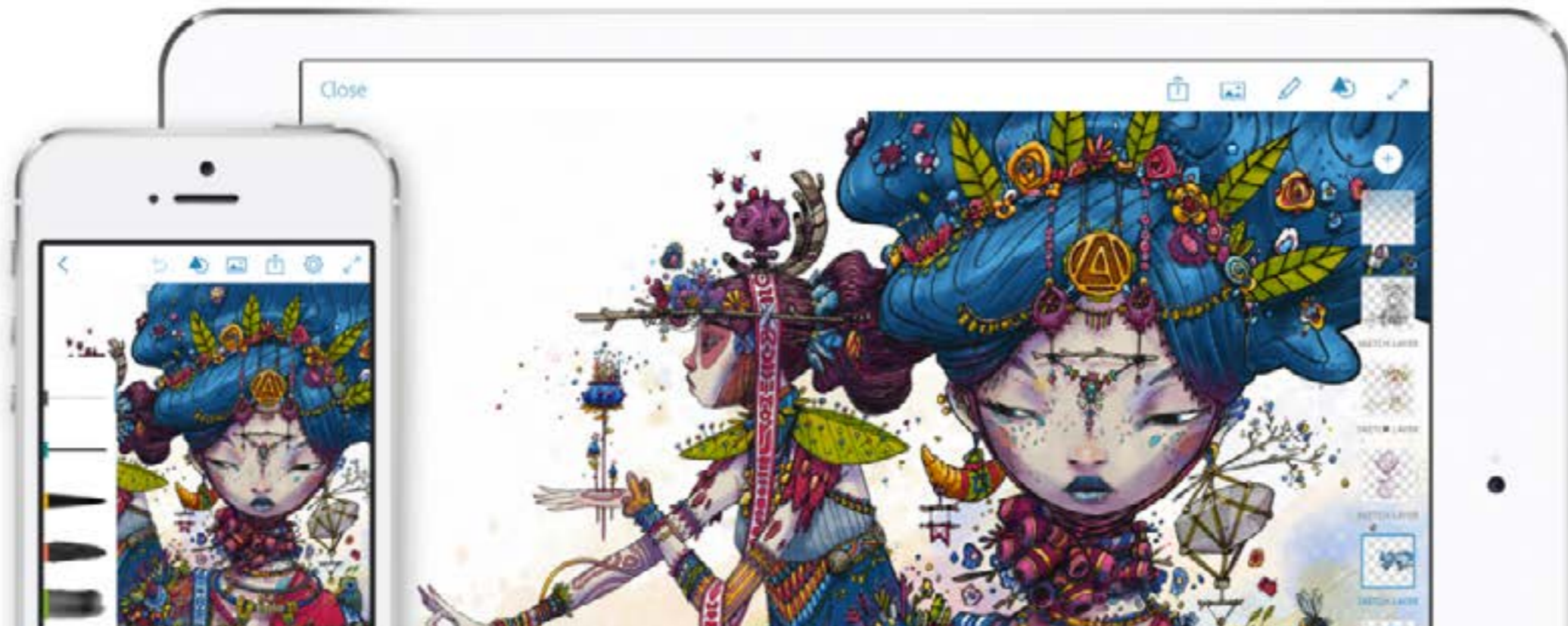




# Expressive drawing and painting with Sketch.

Photoshop Sketch lets you create expressive drawings anywhere using natural drawing tools like pencils, pens, markers, and watercolor brushes to get all the textures and blending effects you'd get on paper.

[See how it works >](#)



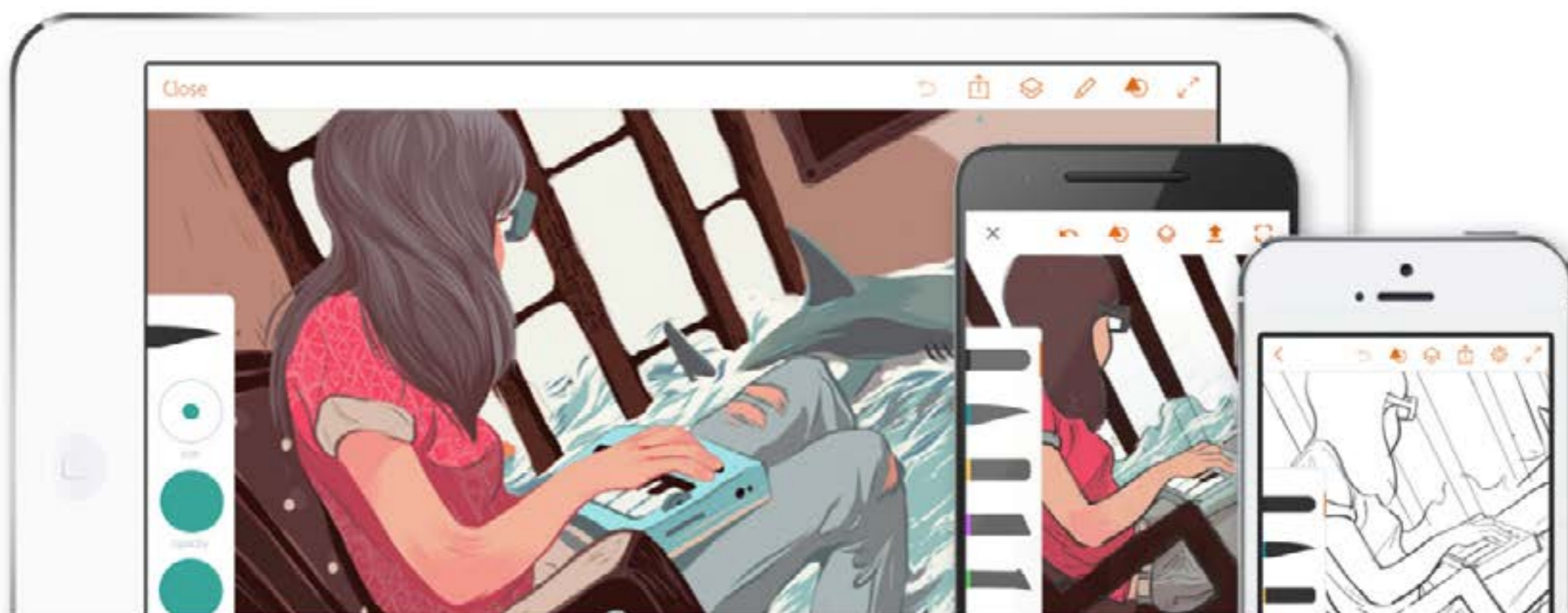




## Draw on any inspiration — anywhere you are.

Create beautiful free-form vector designs on your mobile device with Illustrator Draw, the app that lets you turn your ideas into production-quality artwork wherever inspiration strikes.

[See how it works >](#)





A photograph of a large, multi-story brick building with a prominent clock tower. The building features Gothic-style architecture with arched windows and a central entrance. The clock tower has a large circular clock face and is topped with a crenellated roof. The building is surrounded by green trees and a clear blue sky. The text "University of Idaho" is overlaid in large white letters, and "College of Art and Architecture" is overlaid in smaller white letters below it.

# University of Idaho

College of Art and Architecture

dgottwald.org