```
                        Hover + :hover

                        Interactive 1
```

Many people have proposed projects that would utilize animation, and the hover
studio state in their webpages. As such, i thought it would be helpful to discuss how
hover and transitions work in HTML and CSS

:hover is a gesture made with the pointer
in computer user interfaces that occurs
when the mouse is on top of an element. It
is defined as a pseudo-class, a special
state of an element.

Cursors
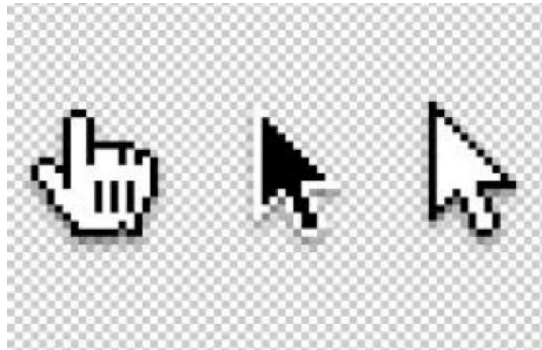


on desktop computers our primary mode on interaction is through the mouse and mouse cursor and a pointer that translates those actions into a digital space
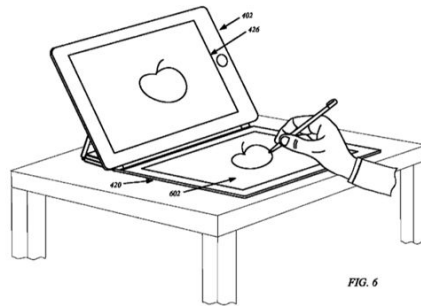
1984



Apple Macintosh

this is most familiar to us via the mouse. a concept developed by Xerox Parc and popularized by Apple

Trackpad

we still see this separation of action in new products, like the trackpad. where our touch gets translated on screen
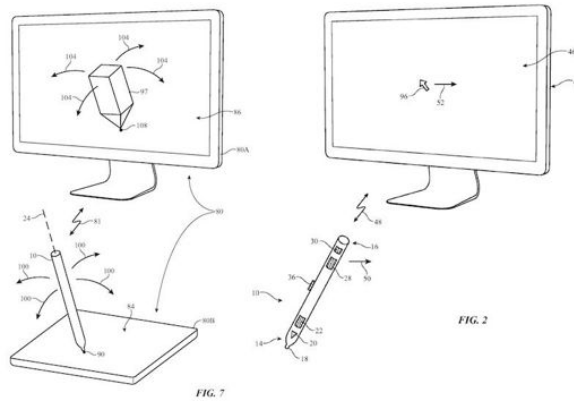
2016



FIG. 6

Apple Pencil Patent

and we're seeing more mainstream adoption of this in things like the apple pencil

2016



FIG. 7

FIG. 2

Apple Pencil Patent

what i really want to emphasize though, is the separation between our actions and the interface. and that we have these intermediaries for control and a digital avatar in the UI that represents us.
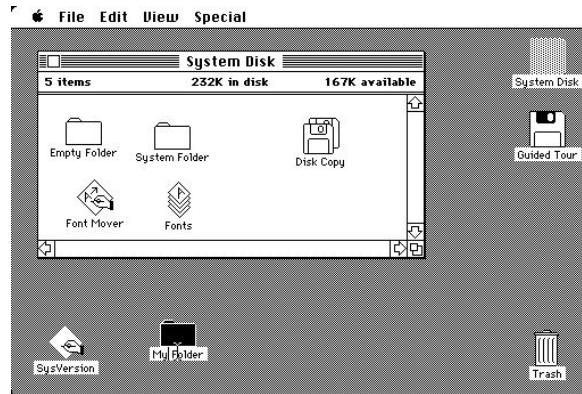
Apple Macintosh Ad

a lot of this way of computing has to do with the GUI and desktop metaphor popularized by apple. as you can see in the video, it's even suggested we magically are able to command the actions of the desktop, without actually touching things

https://www.youtube.com/watch?v=1UtlOgkOGy4

1984

Mac OS

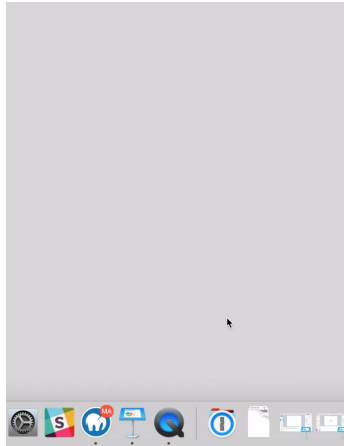this 30+ year old metaphor is still very alive today

2020



Mac OS – Catalina

and largely the way we think about our interaction on a desktop space.

2020



Mac OS – Catalina

for instance, the genie effect of the doc, and opening a file folder from there, reminds me a lot of that video
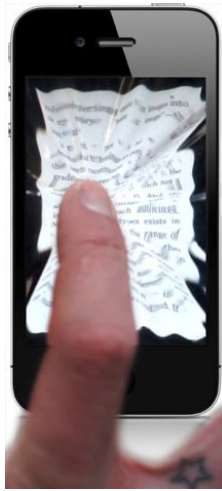
2006



iPhone

now with touch interfaces however, we are seeing the desktop metaphor, as well as the cursor avatar lose relevance

iOS

as you can just reach in and tap on something, there's no longer a need for the degree of separation

iOS

and the metaphors we use our becoming more abstract. increasingly we're questioning the validity of skeumorphic design

```
                              2013

         "After 50 years of pointing and clicking,
            we celebrate the nearing end of the
         computer cursor with a music video where
         all our cursors can be seen together for
                       one last time."

                      Studio Moniker
```
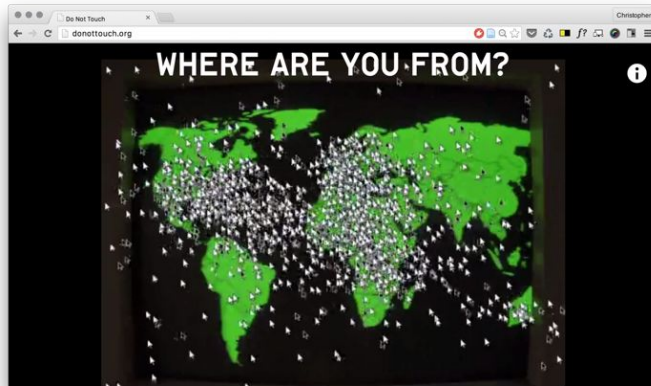
this transition to touch screens hasn't been lost on designers. for their project 'do not touch' studio moniker presented it with the following statement

2013



Studio Moniker

http://donottouch.org/

```
:hover
```

so back to how we use overstates in web coding.
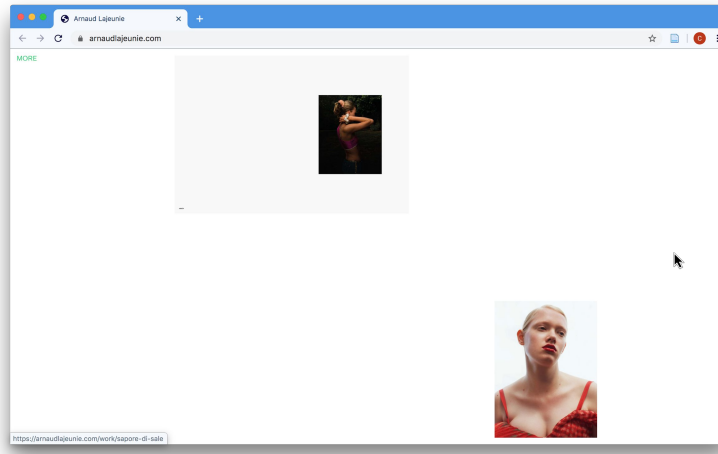
technically a hover state is a css pseudo class

so, at it's simplest, and i think, how we most often think of hover states, in in their application to text links.

Arnaud Lajeunie

however, they can easily be extended beyond that, and can acts as a toggle for information

https://arnaudlajeunie.com/work

Arnaud Lajeunie

however, they can easily be extended beyond that, and can acts as a toggle for information

https://arnaudlajeunie.com/work
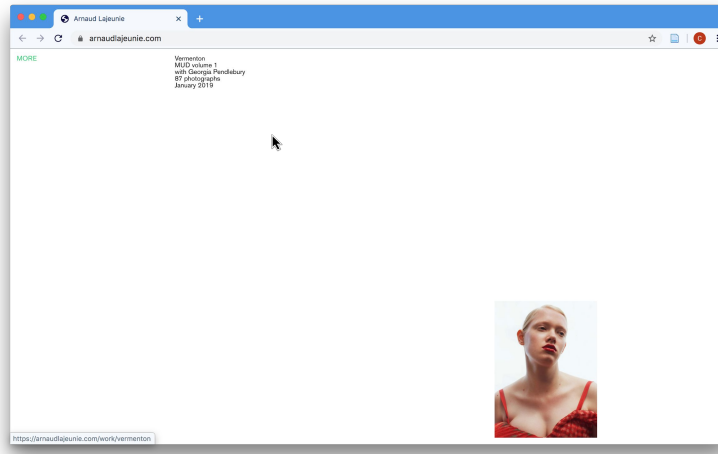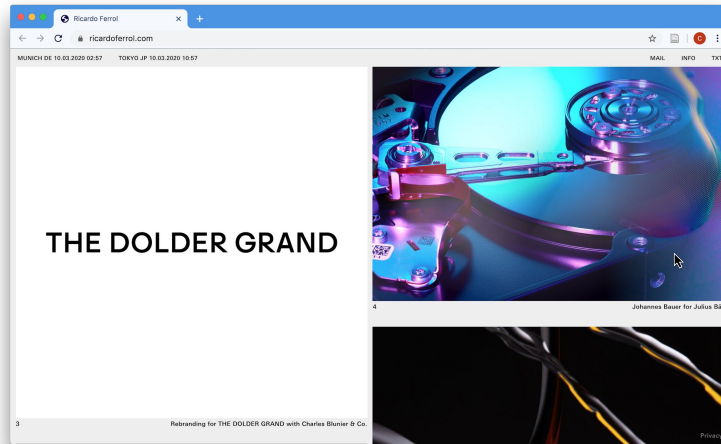
Ricardo Ferrol

To reveal unexpected forms

https://ricardoferrol.com/
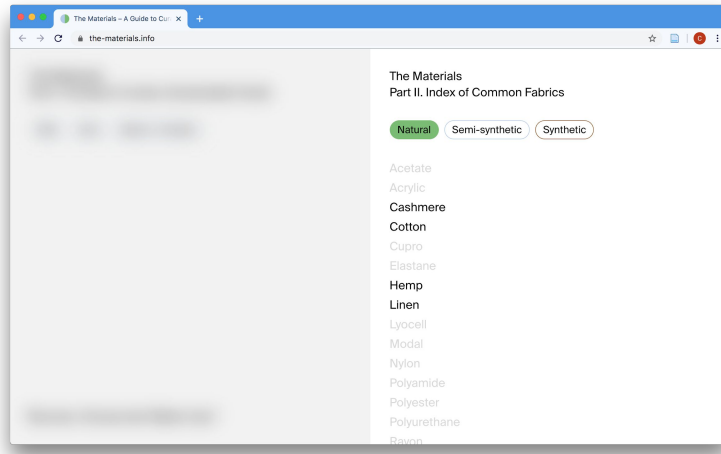
The Materials

Focus our attention

https://the-materials.info/

Vinovell

Or in more playful ways – like to emulate a scratcher ticket (i guess this is skeuomorphic, but it's also cool)

http://vinovell.cat/
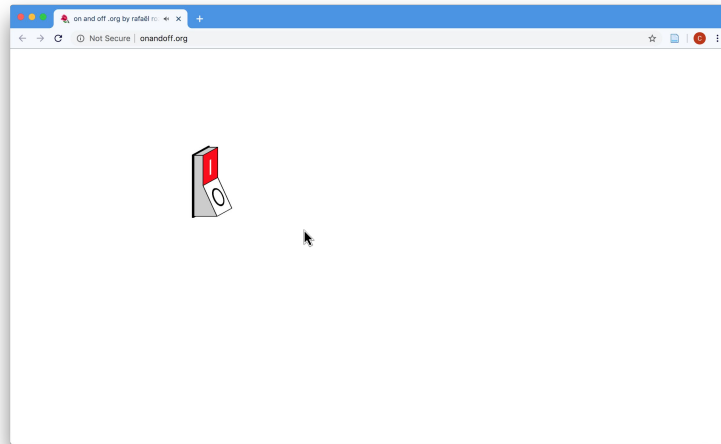
On/Off

but, at their simplest, they are simply an on/off switch

http://www.onandoff.org/

```
:hover
can be applied to any element you can select with CSS.

div:hover
a:hover
.button:hover
#switch:hover
#container div:hover
```

so, to get back to hovers in code, they can be applied to any element you select with CSS

```
:hover
CSS Properties and Selectors

color
font-size
line-height
height
width
opacity
border
box-shadow
```

i think it's really enabling though, when you take into account all the attributes you can effect temporarily.

you can manipulate any CSS attribute on hover for an element – so this means you can change the color of an element, the opacity of something – make something appear or disappear, or add movement to something

```
:hover
At its most simple, a hover effects the element it overlaps
directly.

div:hover {
    background: red;
}




https://glitch.com/edit/#!/join/ef46cead-2374-4d0b-a33c-7cedeb335553
```

at it's most basic, you can select the element which you want to change by adding the
:hover pseudo class directly on that element

in this example you're altering the background color of an element. so, when you
hover on the element, it would change that elements background color

```
transition
In order to enable animations in CSS, you'll add a 'transition'
property to their selector in CSS. With transition you can
control which elements you want to animate, how long the
animation takes, what animation curve it uses, and how long to
delay the animation before it is triggered:

div {
    transition-property: all;
    transition-duration: 1s;
    transition-timing-function: linear;
    transition-delay: 100ms;
}


https://glitch.com/edit/#!/join/7ea05b60-086f-4800-a418-d929624e5711
```

at it's most basic, you can select the element which you want to change by adding the
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transition

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```css
div {
    transition: all 1s ease 100ms;
}
```

https://glitch.com/edit/#!/join/7ea05b60-086f-4800-a418-d929624e5711

You can write that same code using this shorthand

Transform

As a sidebar, transform allows you to change the appearance of an element using CSS

Transform

The transform property applies a 2D or 3D transformation to an element. This property allows you to rotate, scale, move, skew, etc., elements.

https://www.w3schools.com/cssref/css3_pr_transform.asp

Transform
To do this you can skew, rotate, and scale elements for example.

```
transform: rotate(20deg);
transform: skewY(20deg);
transform: scale(1.5);
```

https://www.w3schools.com/cssref/css3_pr_transform.asp

Now let's get back to our sketch on Glitch to try some of these transformations on hover

```
transition
Then to actually use the effect, this transition would then
occur on any state changes I've specified:

#square1:hover {
    background: rgb(0,0,255);
}

#square2:hover {
    transform: scale(1.5);
}




https://glitch.com/edit/#!/join/7ea05b60-086f-4800-a418-d929624e5711
```
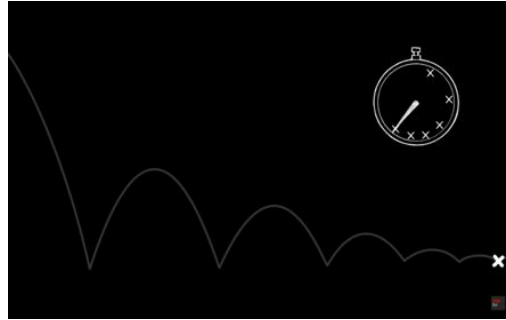
these can be written in a short hand like follows

Animation Curves

when working with animation, the rate and timing of animations
becomes very important. When an animation is totally linear if
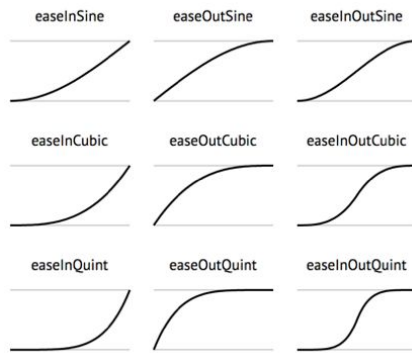often feels mechanical.

when we code with animation these are known as 'curves' which symbolize the rate of accelaration and deccalaration

websites have pre-built curves you can copy and paste into your code

Watch till 6:04

Animation Curves

in CSS you can program complex transition-timing-functions with
Bezier curves to make animations feel more natural.

easeInSine   easeOutSine   easeInOutSine

easeInCubic   easeOutCubic   easeInOutCubic

easeInQuint   easeOutQuint   easeInOutQuint
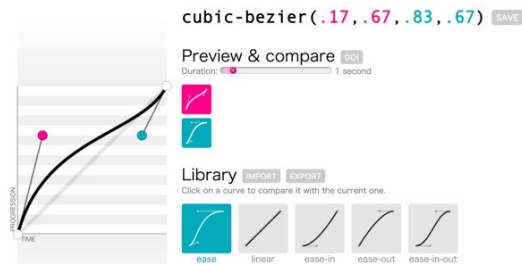
http://easigns.net

there's also tools where you can customize your own animation curves

Animation Curves

in CSS you can program complex transition-timing-functions with
Bezier curves to make animations feel more natural.

cubic-bezier(.17,.67,.83,.67) SAVE

Preview & compare GO!
Duration: 1 second

Library IMPORT EXPORT
Click on a curve to compare it with the current one.

ease   linear   ease-in   ease-out   ease-in-out

https://cubic-bezier.com/#.17,.67,.83,.67

this is a famous bouncing ball example, in which the point is made a ball doesn't
bounce at a consistent pace when dropped.

```
Transition-timing-function
rather then using a predefined timing function, you can write your own
animation curve:


div {
    transition-property: width;
    transition-duration: 2s;
    transition-timing-function: cubic-bezier(0.645, 0.045, 0.355, 1);
    transition-delay: 1s;
}
```

These would then be substituted for the transition timing function property

Add :hover to your personal websites using a transition
Add a hover state to the links on your personal websites.
In addition, add :visited and :active states to your links.

```css
a:hover {
    color: red;
    Transition: all 500ms ease;
}

a, a:visited {
    color: blue;
}
```

[do this to my own homepage]

Reference

Psuedo-class (hover)
https://www.w3schools.com/css/css_pseudo_classes.asp

Transitions
http://www.w3schools.com/css/css3_transitions.asp

CSS Animation Curves
http://easigns.net
https://cubic-bezier.com/#.17,.67,.83,.67