

Creation and Purpose of the Digital Surrogate

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Let's Start



Here.

Right Here!

This is a PowerPoint Presentation



..... and we are viewing a Digital Surrogate -
actually many of them.

- This file was originally created on a Macintosh using PowerPoint:Mac
- Then moved (copied) to a memory stick
- Then moved (copied) to the computer we are viewing it on now. A Windows Machine

This file contains



- Graphic Backgrounds - or commands to generate them locally
- Pictures
- Fonts - let's start there... The Font

Here is a picture of a typographer



Actually it is a Digital Surrogate

- It was actually grabbed from the Web - note the white horizontal line.
- The file on the web server that it was moved from likely is a Digital Surrogate as well.




Here is part of the full page

Google Image Result for http://artoncampus.rit.edu/images/thumbs/200/24_Goudy.jpg


<http://images.google.com/imgres?imgurl=http://artoncampus.rit.edu/images/thu> Google


Getting Started Latest Headlines MyFreePaySite.com - ... Network Camera Apple Amazon eBay Yahoo! News


  [See full-size image.](#) artoncampus.rit.edu/.../thumbs/200/24_Goudy.jpg
200 x 159 - 22k
Image may be scaled down and subject to copyright.

[Remove Frame](#)
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Below is the image in its original context on the page: artoncampus.rit.edu/art/105/

 R·I·T LIBRARIES
Presents
Art on Campus





Frank Gannett Bust
Gutzon Borglum


The marble and bronze sculpture of Frank Gannett is a permanent record of his outstanding qualities as a man, citizen and employer.

[View this piece](#)

Home Art Artists Search

Browse by: Artist Type Collection Location

Typographer
by Robert Thom



Painting
Oil on canvas
38" x 29"

Types of Art
Architecture, Cartoon, Craft, Drawing, Mural ...
[All Types](#)

Collections
Bevier Collection, Campus Art

The Picture is a Digital Surrogate



- The “original” file is likely on a workstation at RTI somewhere
- A Digital Surrogate was likely made from that file to be at the correct resolution for Web Viewing
- That Picture was cut into a Web Page
- Which in turn was found by a Google Web Crawler and copied onto theirs - which is where it came from - before it was moved to Mac PowerPoint.....

But let's look carefully.....

Typographer
by Robert Thom



Painting

Oil on canvas
38" x 29"

This piece located: Cary Library, Wallace Library

This piece belongs to the *Cary Collection*

No..... Closer



- Very **CLOSE**

This Close



C

This letter C is actually a Digital Surrogate... or is it?

- The font I chose was Engravers MT
- The font that is appearing may be different - I have no idea what is being displayed
- Each Character comes from an outline font that is bit-mapped for display
- Where do those outline fonts come from?

Is this a Digital Surrogate or not?

- ✓ In this first of many OpenType Pro Pack releases from Bitstream, they are building the base with the Bitstream Originals, including Bitstream [Lowan Old Style](#), Bitstream [Arrus](#), and Bitstream [Amerigo](#), to name a few. Look for these and other OpenType Pro Packs from Bitstream in the coming months. ([Click for a thumbnail slide-show](#).) The Charter BT Pro Pack features 6 fonts built around Matthew Carter's original [Charter roman](#). Additional faces (With link to PDF sample sheets) are: Charter Italic ([PDF](#)), bold ([PDF](#)), bold italic ([PDF](#)), black ([PDF](#)), and black italic ([PDF](#)).

Type is generally sold in Libraries - your computer has a copy of them - specifically formatted for PC use. But is this a Digital **Surrogate**?

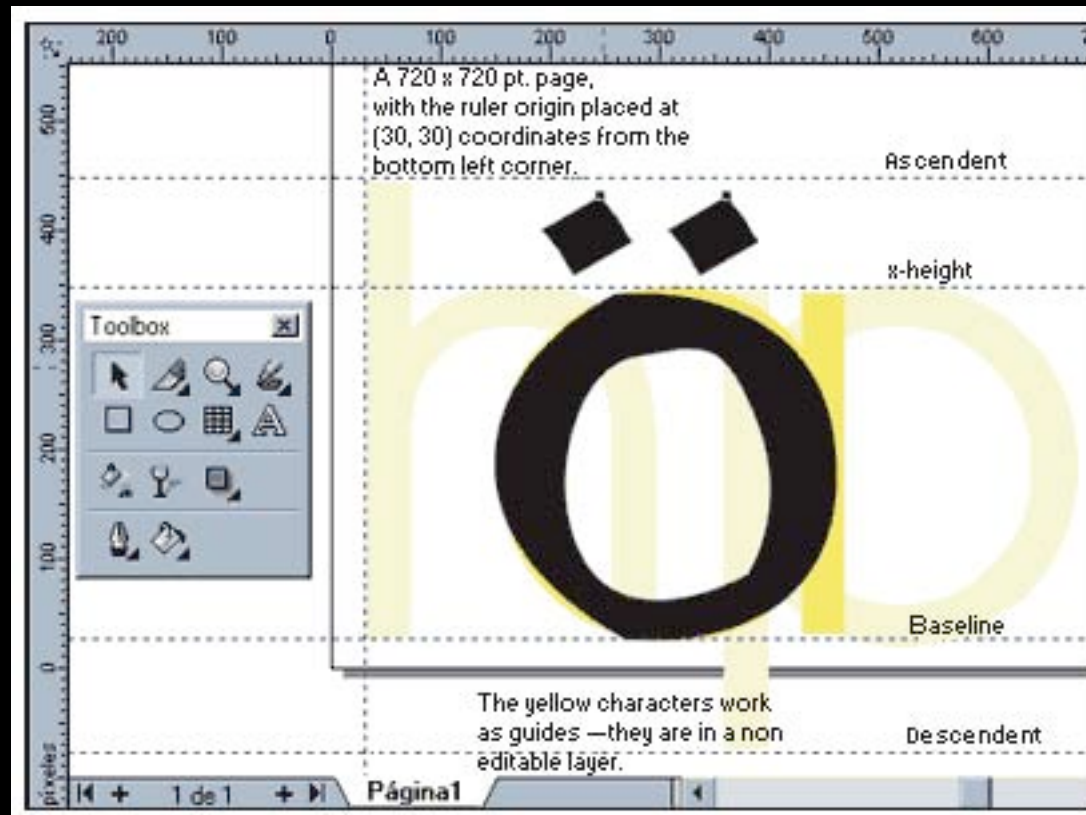


How Does it get designed in the first place?

Either on Paper.....



Or “Born Digitally”



Getting a definition of what a Digital Surrogate is in the first place is more difficult than you might imagine.

UNC Digital Library Metadata Guidelines

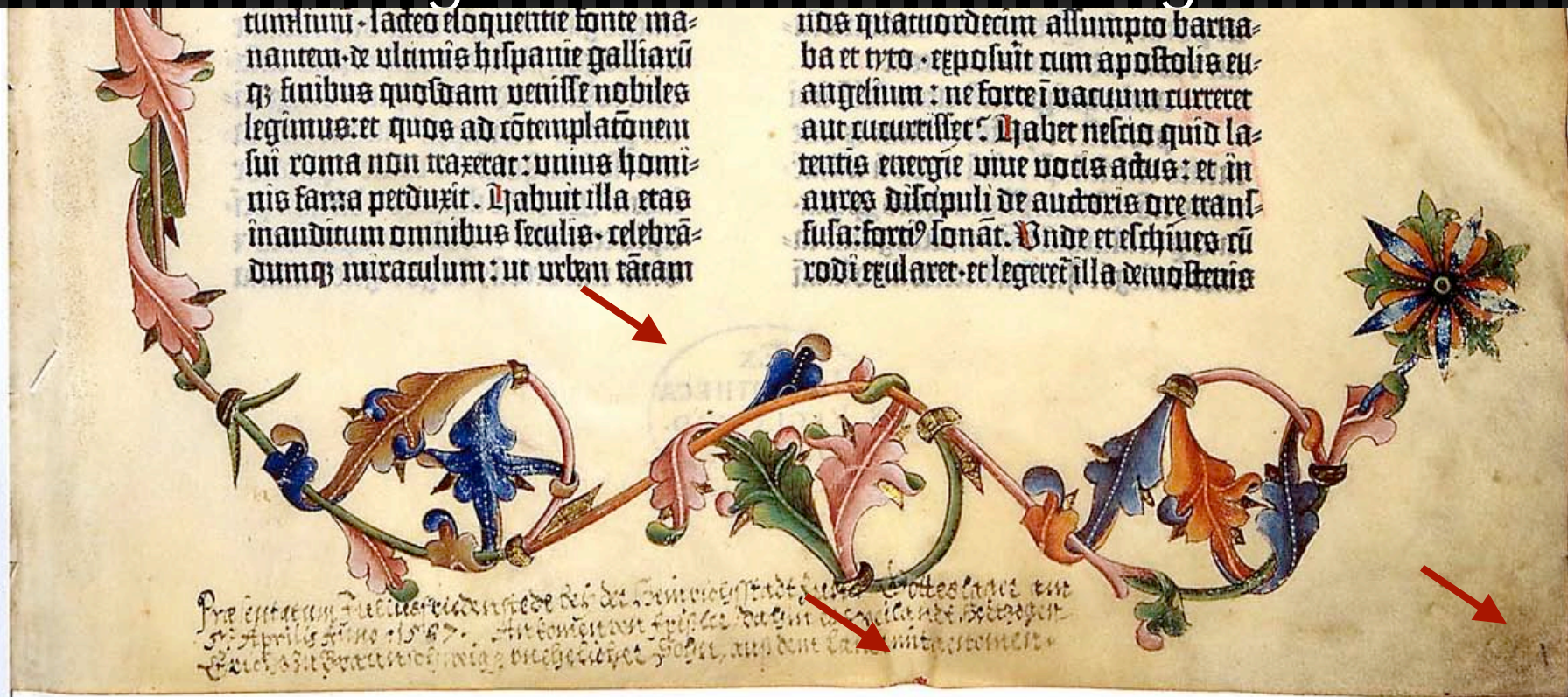
1. **<title>** *optional, repeatable, text content only*parent:
*<object>*Title is typically a name by which the object is formally known. Although according to the Dublin Core standard, title is optional, in practise there is little that can be done without one, so future schemas will probably make it required.**attributes:** *titlequalifier:* Denotes the type of title in the title element. The default is 'main.' Other options in version 1.1 are 'short,' 'abbreviation,' 'alternative,' 'release,' 'series,' 'subtitle,' and 'firstline.'*scope:* Scope indicates whether a given element describes the original object, a physical **surrogate**, such as a slide or photograph, or a **digital surrogate**, such as a scan of that slide. Valid values are 'original,' '**surrogate-physical**,' and '**surrogate-digital**'

So What have we seen already?

- Digital Surrogates (Proxies) are ubiquitous
- It is often difficult if not impossible to tell exactly what you have (Provenance)
- Digital Surrogates are often “nested” (Containers)
- Digital Surrogates may be created in many different ways
- Digital Surrogates may be used in many different forms for different applications or purposes.

Gutenberg Bible

- Digital Surrogate - Photograph
- It IS Digital - but is it a Surrogate?



Digital Surrogates very widely in Quality

Frequently Digital Surrogates are missing some very important characteristics of the original.

Texture, Smell, Sound, other important characteristics that likely can never be truly copied.



Differences in quality are a key reason why Proxies are used

Proxies are frequently smaller to allow ease of use and storage.

One hour of uncompressed High Quality Video in Standard Definition could take 160 Gigabytes or more at "preservation quality"

The same content highly compressed could be 4 Gigabytes or less

Sometimes the process of compression creates no loss, and other times there is loss

Sometimes the artifacts created are easy to see and other times **not**

- ✓ Frequently Proxies are created with technologies that intentionally try to disguise the loss of quality.
- ✓ Sometimes you can only see the loss of quality when making direct comparisons in controlled circumstances with good equipment



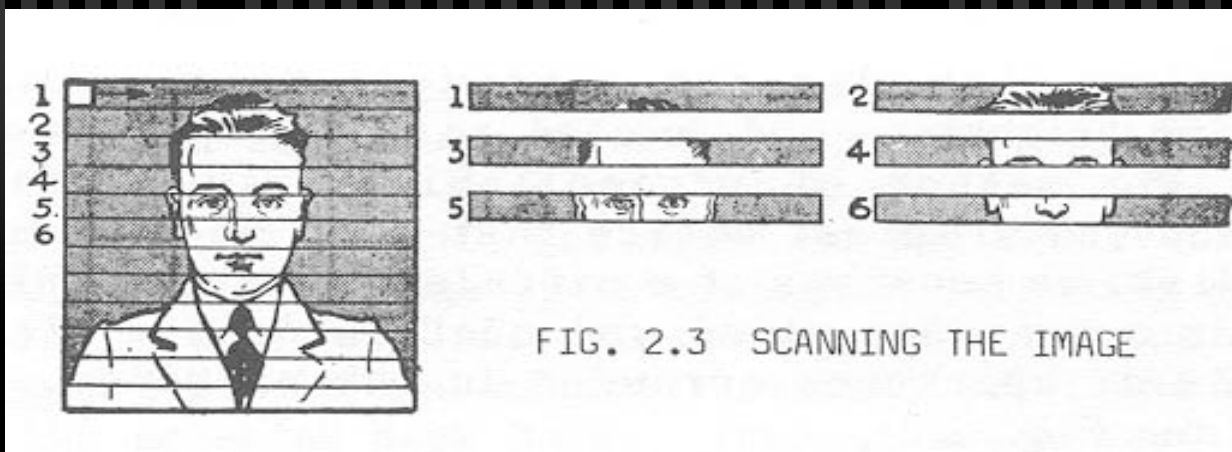


Is Compression New?

✓ No –

✓ Analog

✓ Interlace Scanning



What are some of the ways that Proxies are compressed?

- ✓ Luminance (Brightness)
 - ✓ Only transmit the brightness DIFFERENCE
- ✓ Frequency Multiplexing
 - ✓ Stack Signals on top of each other in frequency
 - ✓ Telephone – only 3000 CPS Bandwidth
 - ✓ In a 20,000 CPS signal you can get almost 7 conversations

What are some of the ways that Proxies are compressed?

- ✓ Amplitude or Loudness Compression
 - ✓ Not necessarily to save bandwidth – it may “sound” better – Comanding
- ✓ Temporal Compression (Time)
 - ✓ In time between words more information can be sent. Time Slices
 - ✓ Frame Rate

What are some of the ways that Proxies are compressed?

- ✓ Color Space Compression
 - ✓ B&W Film
 - ✓ 2 Strip Technicolor
 - ✓ Color Negative VS 3 Strip Separation Recording
 - ✓ Response Curves
 - ✓ Color Difference Encoding
 - ✓ NTSC vs RGB vs R-Y B-Y Y

What are some of the ways that Proxies are compressed?

- ✓ State Change Compression
 - ✓ Don't have to record each data element – record only the change
 - ✓ Actually the way that digital data is recorded
 - Only record the changes from the status quo

What are some of the ways that Proxies are compressed?

- ✓ Compression saves valuable resources but there are almost always tradeoffs
 - ✓ Loss of Information / Quantitative
 - ✓ How critical was the loss?
 - ✓ Loss of Quality
 - ✓ Did anyone Notice?
 - ✓ Time / Processing Power to Encode/Decode
 - ✓ Software Encoders are slower than Hardware Encoders
 - ✓ Generally “real time” is fast enough but may not be as efficient

Where did that Digital Surrogate
come from? Often it is hard to know.

- ✓ Has it been altered? How do you know?
- ✓ Digital Rights Management
- ✓ Provenance
- ✓ Tracking changes in files becomes important in some applications.

Why are there so many different kinds?

- ✓ Different Applications expect different input
- ✓ Some file formats proprietary and require licensing and fees
- ✓ Diversity allows for different applications
 - You don't want a 40 GB file on your cell phone!

How do you move from one kind of proxy to another?

- ✓ Transcoding
- ✓ Both hardware and software products that “convert” files

virtualdub.org

Proof that I had too much free time in college

Current version

v1.6.17 (stable)

v1.7.1 (exp)

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Documentation

This is the beginning of what I hope to be a comprehensive on-line help area for VirtualDub. It's not coding the program – but it should answer a lot of the more common questions I've previously had to load, but you get faster answers than waiting for me to answer!

If you copy material from here, I'd appreciate an attribution; I tend to type these things at obscene hours with the FAQ, but I hope to eliminate the latter soon.

Suggestions are also very welcome. You know where to send them.

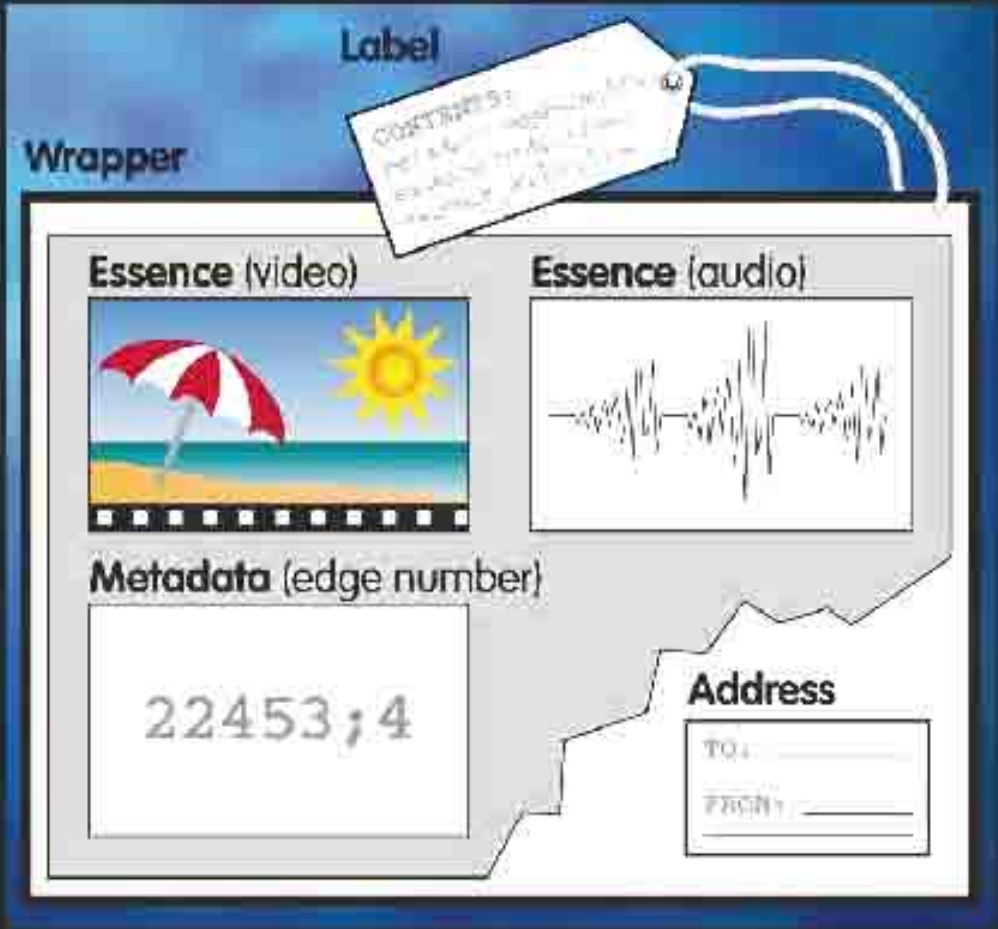
- [Capturing video with VirtualDub \(HTML\)](#)
- [Processing video with VirtualDub \(HTML\)](#)
- [Getting the frameserver to work \(HTML\)](#)
- [How to compile VirtualDub \(HTML\)](#)
- [\[Trying\] to make VirtualDub go faster \(HTML\)](#)
- [Deciphered versions of several common VirtualDub errors \(HTML\)](#)
- [Help with codecs \(HTML\)](#)
- [Common crashes in VirtualDub \(HTML\)](#)
- [How to install the Microsoft WDM-to-VFW capture translation wrapper for Windows 2000 \(HTML\)](#)
- [A note on VirtualDub's optimizations \(HTML\)](#)
- [VirtualDub scripting language documentation \(text\) updated for 1.6.7](#)

This isn't really part of the VirtualDub documentation, but I put it here for your amusement anyway:

- [Why I wrote VirtualDub \(HTML\)](#)

Making Proxies and Converting Them

- ✓ Sometimes the process is without loss, but that is the exception and not the rule.
- ✓ Proxies are all about access
- ✓ Frequently proxies are put into “containers”



The Value of Digitization for Libraries and Humanities Scholarship by John Unsworth

- ✓ "Digitization" implies the production of a digital surrogate for a physical object. Obviously, we don't speak of "digitizing" something that's already digital. And in the context of our discussion today, it is the digitized, not the born-digital, artifact that is most important, because the most common kind of digital artifact in library collections today is a digital surrogate for a physical artifact. For that reason, too, the most important questions about the value of digital artifacts, at the moment, are questions having to do with the artifact as surrogate. Chief among those questions are:
 - When can a digital surrogate stand in for its source?
 - ✓ When can a digital surrogate replace its source?
 - ✓ When might a digital surrogate be superior to its source?
 - ✓ What is the cost of producing and maintaining digital surrogates?
 - ✓ What risks do digital surrogates pose?

Sometimes Digital Surrogates aren't very good..... Surrogates!

Manjushri Wisdom Sand Mandala

The Manjushri Wisdom Sand Mandala in Tibetan Buddhism represents the power in all of us to take knowledge and wisdom and use it to combat negativity, hatred, anger and violence in the world. It symbolizes the use of knowledge and wisdom to end suffering in the world rather than to cause it. Manjushri is pure compassion at work, integrating positive thoughts, speech and actions for the benefit of all beings, something every one of us can choose to do on an hourly and daily basis in our lives.



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