

Traditional Drawing – Digitally Remastered

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Simple Outline:

1. Background

- a. Why we like paper
- b. Why we hate paper
- c. Why we are going digital
- d. Why we don't like going digital

2. Digital Pens and Paper

- a. Digitizing Pens and plain paper
- b. Anoto Technology..
- c. Pulse Smartpen (Livescribe)
- d. Capturx for One Note, AutoCAD, ArcGIS
- e. eBeam Edge

3. Digital Paper and Digital Pens

- a. Interactive Pen Displays
- b. Software
- c. Techniques

4. Multi-touch-the next generation

- a. Technology Primer
- b. Walls and Tabletops
- c. Desktops and Laptops
- d. Software

Detailed Outline:

1. Background

A. Why do we like paper?

1. Affordances

- tactile (we like to touch)
- pencils & pens are simple to use
- low overhead (focus is on 'ideas)
- portable
- immediate feedback (input and output)
- direct media (pencil draws on surface)
- reliable and safe
- iterative and persistent (can compare)
- inexpensive
- 1:1 input and many sizes

2. Each affordance is a limitation

B. Why do we hate paper (and use digital)

1. Limitations

- analog
- unforgiving
- one-dimensional
- single use
- requires multiple scales
- can only be used locally not remotely

- requires physical space to store (1:1)
- not easily revised (see above)
- not easily combined & incorporated
- static images only

2. Each limitation is an affordance

C. Why we like digital media (why we are going digital)

1. Affordances

- documents come to you (easily shared)
- compact to efficient storage
- don't require physical delivery
- easy to edit, rearrange to combine
- easy to replicate
- can be edited by multiple people at the same time-together or remotely
- can display multimedia
- new tools automate complex tasks to make new methods possible
- uniformity & consistency of product
- accuracy
- augments our skills
- adds information to intelligence to graphics

2. Each affordance is a limitation

D. Why we don't like digital media

1. Limitations

- uniform & non expressive
- always looks finished-doesn't show process easily
- complexity and high mental overhead
- ties you to a computer
- hard to compare (without printings)
- never 1: 1 relationship with the drawing
- not the final product if printed copies are needed.
- expensive
- hardware & software upgrades
- not conclusive to spontaneous thoughts & ideas

2. Each limitation is an affordance

2. Digital Pens and Paper

A. Digitizing pens and plain paper

1. Dane-Elec ZPen and logear Scribe

- acoustic and infrared receiver
- pens write with ink
- pens contain a transmitter
- transmitter records movement of pen
- upload via USB connection
- portable and uses regular paper

2. Anoto Technology

- uses special digital paper with a proprietary pattern
- pens interpret pattern using infrared camera
- allows long term editing ability
- allows the inclusion of "command areas" in the paper

3. Pulse Smartpen by Livescribe

- based on Anoto technology
- also records sound linked to written notes
- lined and unlined "journals" and notebooks
- upload to PC and convert to pdf, images or text

4. Capturx by Adapx

- based on Anoto technology
- doesn't record sound
- professional software solutions for OneNote, AutoCad and ArcGIS
- allows field annotation of printed CAD and GIS files

5. eBeam by Luidia

- works like the ZPen
- Vertical or horizontal surface
- mouse control and annotation

3. Digital Paper and Pens.

A. Interactive pen displays

1. technology

- digitizer component
- pen component
- display sizes

2. "Penabled" Tablet PC

- several form factors
- highly portable
- other technologies – N-trig, NextWindow

B. Penabled Software

1. Operating System

- Window Vista and 7
- tablet PC functionality

2. Applications

- One Note - Microsoft
- Sketch Book Pro - Autodesk
- Sketchpad – Corel
- Photoshop CS4

C. Penabled Techniques

1. freehand drawing expression

- sketch with traditional techniques
- allows personal style to be expressed

2. drawing "plus"

- simulate traditional media
- custom brushes – one stroke, many lines
- copy and transform
- selections and layers

3. rendering with images

- custom patterns
- filters and cloning
- filters and photomontage

4. Multi-Touch computing - the next generation of touch

A. Technology Primer

1. background and history

- developed in the 1980's
- Jeff Han 2006 Siggraph presentation
- 30 year timeline
- Windows 7

2. multi-touch technology

- optical – ftir, di, llp
- capacitive
- capacitive with digitizer
- infrared lcd overlay

B. Walls and Tabletops

1. Perceptive Pixel

- ftir technique and custom software
- 48" x 81" multi-touch wall
- 27" x 48" workstation (describe as a "drafting table")
- multi-touch only

2. Microsoft Surface

- di technique
- 30" diagonal
- multi-touch and tagged objects

3. SALAmt table

- ftir technique and Snowflake Suite software
- 24 " x 32" screen size (literally a drafting table)
- multi-touch only

C. Desktops and laptops

1. Dell Studio One - 19

- Nextwindow IR optical system
- 19" all in one form factor
- two-touch capable
- fingertapps software

2. HP Touchsmart desktop

- Nextwindow ir optical system
- 22" and 25.5" all in one form factor
- two-touch capable
- fingertapps software

3. Laptops

- Dell Latitude XP
- HP Touchsmart tx2
- both capacitive/digitizer screen by N-trig
- not pressure sensitive in Photoshop

4. Lcd monitors and overlays

- 3M multi-touch 19" lcd display
- Nextwindow lcd/plasma overlay system (32" to 88")
- Windows 7 compatible, multi-touch
- Wacom developing a hybrid multi-touch Cintiq

D. Software

1. Operating System

- Windows 7 has full multi-touch support
- N-trig, Nextwindow, Fingertapps API's

2. Applications

- Autodesk has Han's multi-touch wall for development
- Photoshop has basic "multi-touch" support on the Mac
- Spaceclaim Direct 3D multi-touch
- Flash as a development platform
- look for many more this year