



conceptual design of software

sad stories

&

design puzzles

Field Trip Permission Form

Dear Parents:

Ms. Frizzle will again be taking her second grade class on an exciting field trip. Please sign and return the permission slip below.

Thank you!

Yes, I give permission for my child to go on the second grade "Touch and Feel" trip on Friday February 13th to the NastyCo Nuclear Dump. I understood that my child may encounter the normal risks of childhood play, including grazed knees, hurt feelings and exposure to toxic waste.

Count Olaf

February 11, 2013

Parents signature

Date

acrobat to the rescue

The image shows a screenshot of the Adobe Acrobat application window on a Mac. The menu bar at the top includes Apple, Acrobat, File, Edit, View, Document, Comments, Forms, Tools, Advanced, Window, and Help. The Tools menu is open, showing options like Comment & Markup, Select & Zoom, Advanced Editing (highlighted), Typewriter, Analysis, and Multimedia. A secondary menu for Advanced Editing is also visible, listing tools such as Select Object Tool, Button, Article Tool, Crop Tool, Link Tool, TouchUp Text Tool, TouchUp Reading Order Tool, and TouchUp Object Tool (highlighted). In the foreground, a text document window titled 'acrobat-sig-paste.txt' is open, displaying the following text:

```
1 how to add a signature in acrobat
2 -- open document in acrobat
3 -- Tools->Advanced Editing->Touchup Object Tool
4 -- right click at desired point | Place Image...
5 then select jpg
6
7 how to add date
8 -- Tools->Typewriter
9
```

what we hate ... & love



Adobe Acrobat is a family of computer programs developed by Adobe Systems, designed to view, create, manipulate and manage files ... »

47% Love Acrobat



Tweet 1



207 Positive Opinions out of 444



Adobe Photoshop is a graphics editing program developed and published by Adobe Systems Incorporated.

70% Love Photoshop



Tweet 87



30,305 Positive Opinions out of 43,283



Adobe Photoshop Lightroom is a photography software program developed by Adobe Systems for Mac OS X and Microsoft Windows, designed ... »

89% Love Lightroom



Tweet 3



2,335 Positive Opinions out of 2,632



Adobe Acrobat is a family of computer programs developed by Adobe Systems, designed to view, create, manipulate and manage files ... »

53% Hate Acrobat



Tweet 15

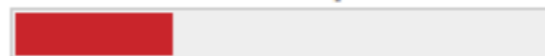


237 Negative Opinions out of 444



Adobe Photoshop is a graphics editing program developed and published by Adobe Systems Incorporated.

30% Hate Photoshop



Tweet 105

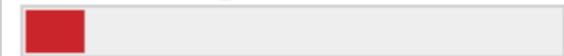


12,978 Negative Opinions out of 43,283



Adobe Photoshop Lightroom is a photography software program developed by Adobe Systems for Mac OS X and Microsoft Windows, designed ... »

11% Hate Lightroom

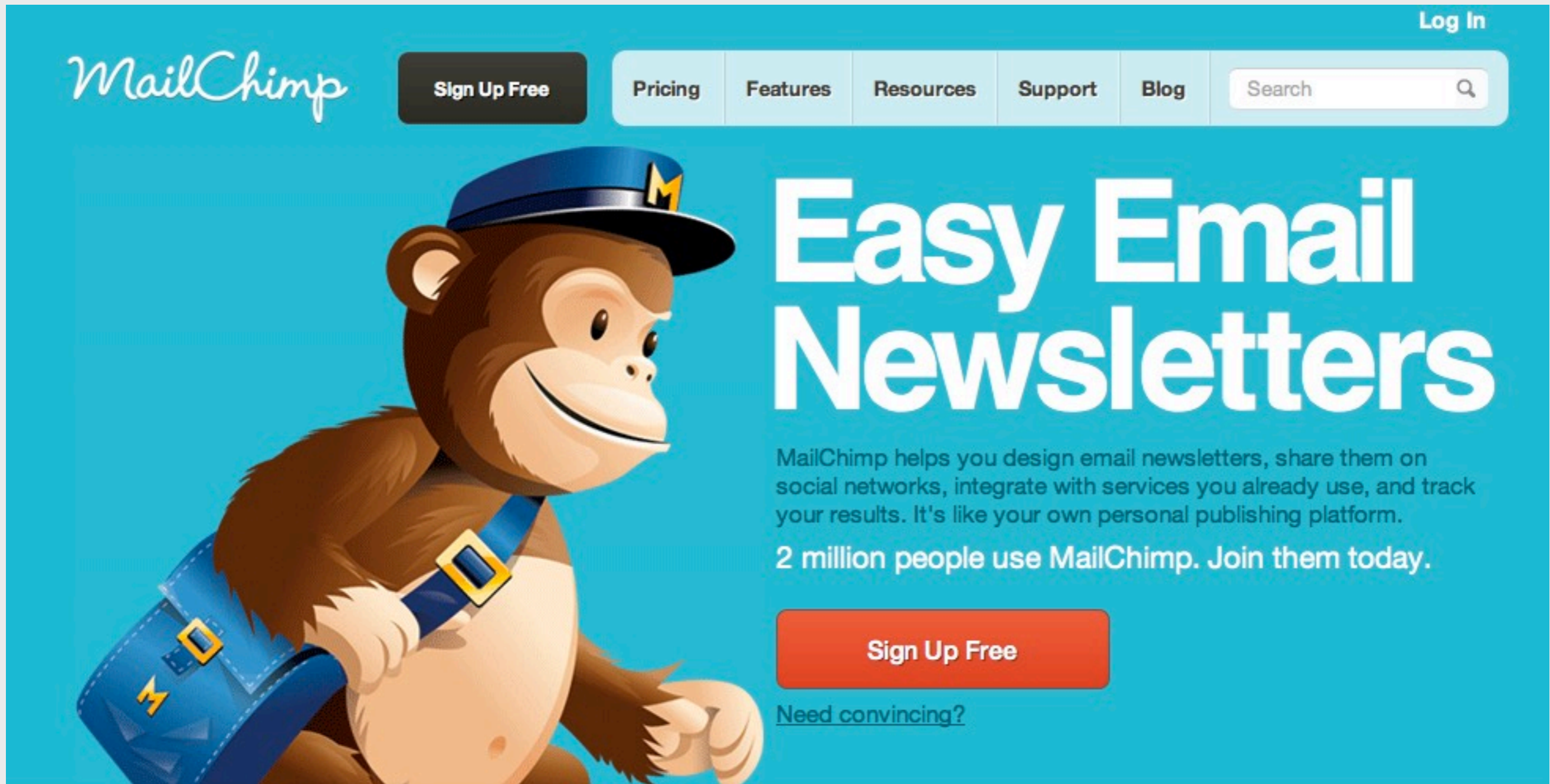


Tweet 5



297 Negative Opinions out of 2,632

just need some charm?



The image shows the top portion of the MailChimp website. On the left, the MailChimp logo is written in a white, cursive font. To its right is a dark blue button with the text "Sign Up Free" in white. Further right is a navigation menu with links for "Pricing", "Features", "Resources", "Support", and "Blog". A search bar with the placeholder text "Search" and a magnifying glass icon is located to the right of the navigation menu. In the top right corner, there is a "Log In" link. The main hero section features a large illustration of a brown monkey wearing a blue cap with a yellow "M" and a blue messenger bag with a yellow buckle. To the right of the monkey, the headline "Easy Email Newsletters" is written in large, bold, white sans-serif font. Below the headline, there is a paragraph of text: "MailChimp helps you design email newsletters, share them on social networks, integrate with services you already use, and track your results. It's like your own personal publishing platform." Below this paragraph is another line of text: "2 million people use MailChimp. Join them today." At the bottom of the hero section, there is a large orange button with the text "Sign Up Free" in white. Below the button is a link that says "Need convincing?" in a smaller, blue font.

MailChimp

Sign Up Free

Pricing Features Resources Support Blog

Search

Log In

Easy Email Newsletters

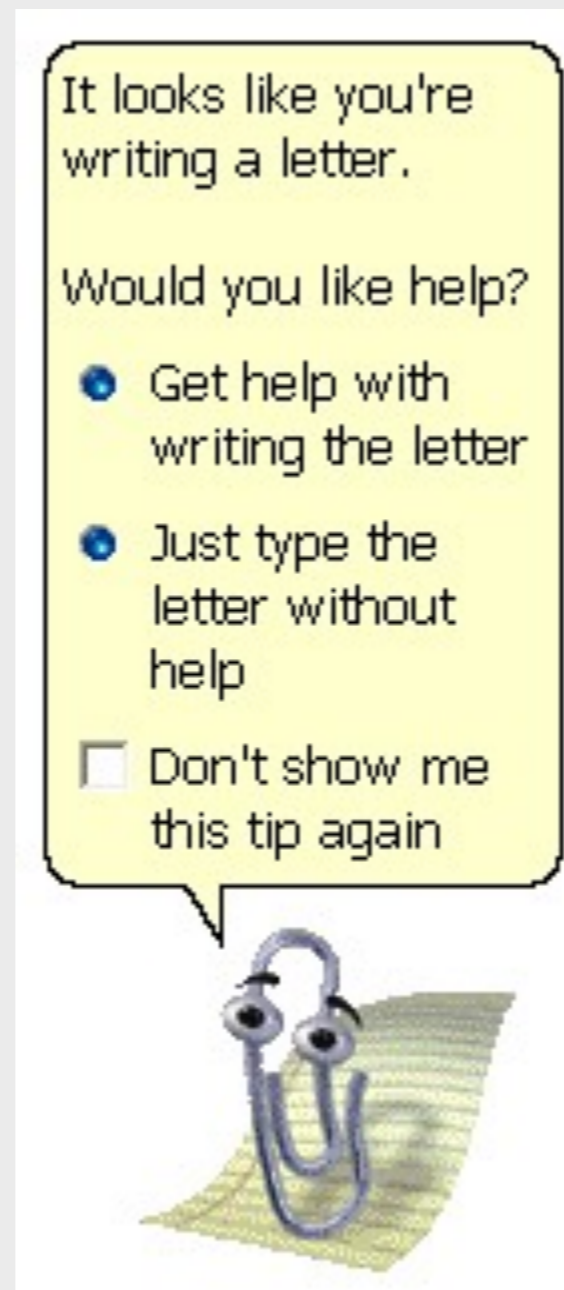
MailChimp helps you design email newsletters, share them on social networks, integrate with services you already use, and track your results. It's like your own personal publishing platform.

2 million people use MailChimp. Join them today.

Sign Up Free

[Need convincing?](#)

just need user anticipation?



Clippy
2003-2008
RIP

puzzles

about product

what makes a well-designed app?

about process

how does design impact project success?

about teaching

how can we teach students to design well?

about research

what would a theory of software design look like?

a theory of software design

explanatory

why is this app good or bad?

why is this feature unusable?

why is this hard to code?

constructive

how to fix this problem?

how to grow a good design?

objective & articulated

more than an ethos

substance, not apprenticeship

concepts

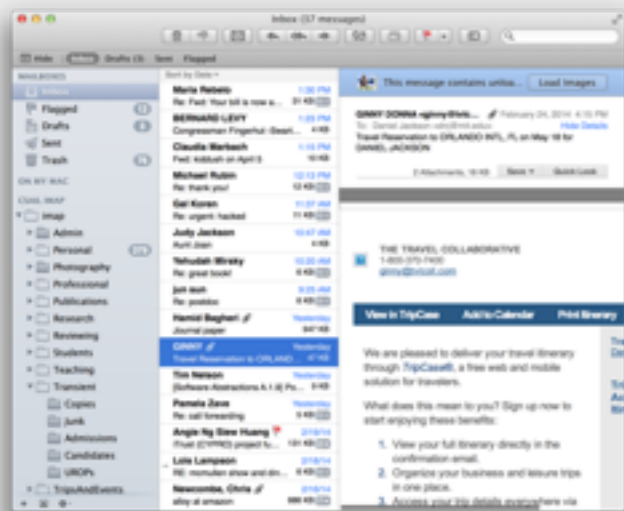
&

software

what characterizes an app?

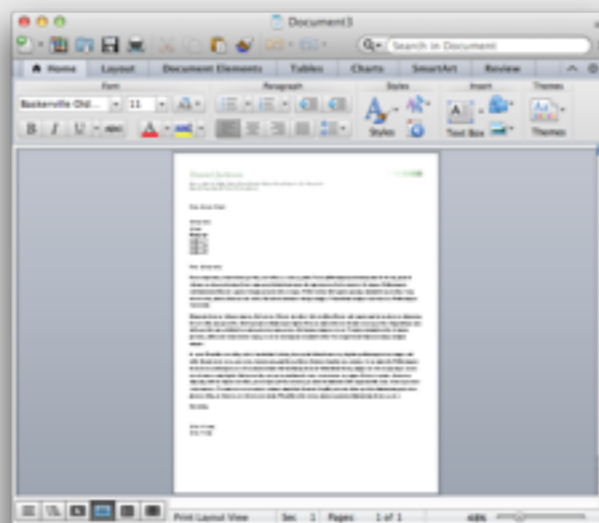
concepts!

Apple Mail



Message
Folder
Conversation

Microsoft Word



Paragraph
Format
Style

Twitter



User
Tweet
Following

Photoshop



PixelMap
Layer/Mask
Adjustment

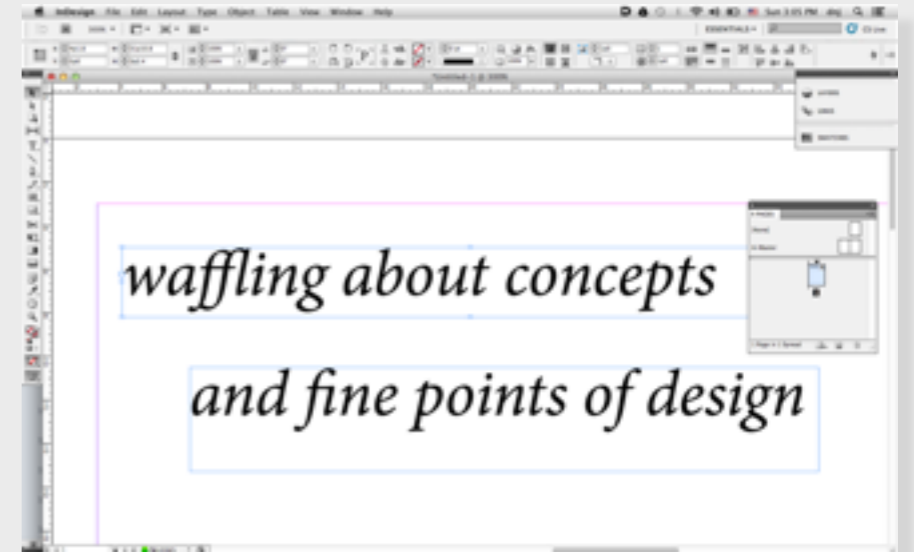
concepts differentiate classes



text editor
line, buffer,
character set



word processor
paragraph,
format, style



desktop publishing app
text flow, link,
page template

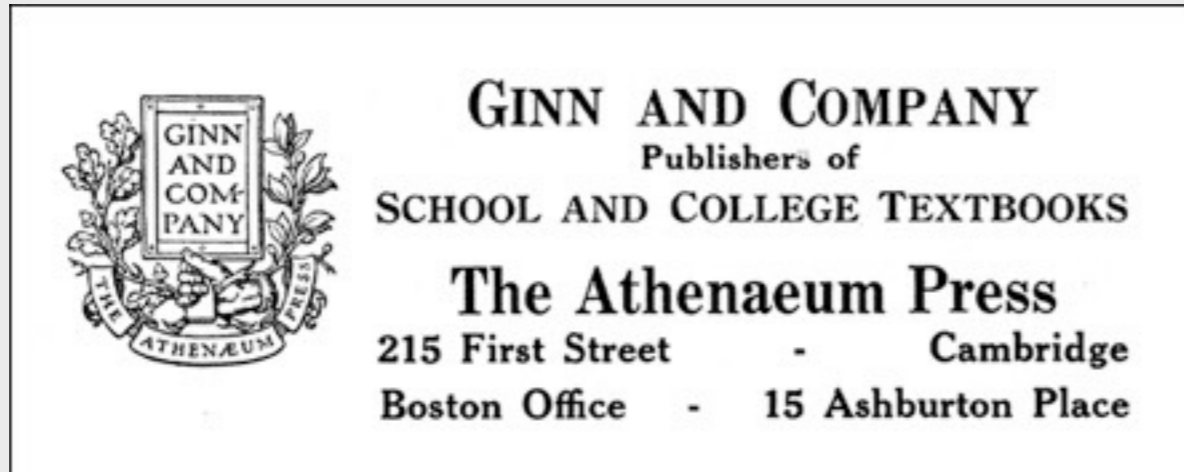


where are Word's concepts from?

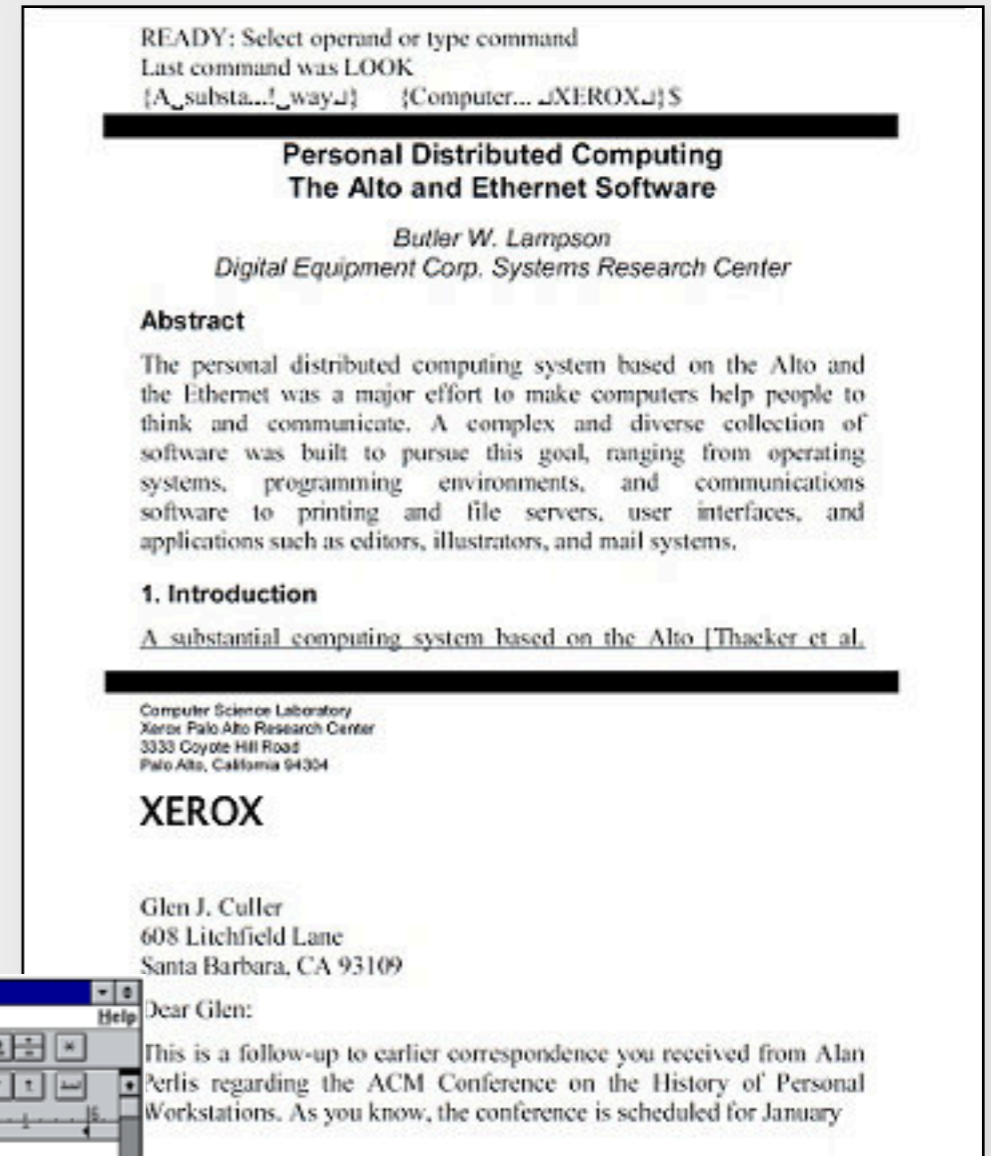


Charles Simonyi: brought key concepts to Word from Xerox PARC

rich concepts have long journeys



Ginn & Co, since 1868



Bravo, 1974



Apple Pages, 2005



Microsoft Word, 1983

where do concepts come from?

**domain concepts:
exist in problem domain**

photo, movie, song

account, balance

social security number

typeface, ligature

**analogic concepts:
based on known notions**

blog post, email, tweet

desktop, folder, file

layer, mask, stacking

cart, order, item

**synthetic concepts:
invented for software**

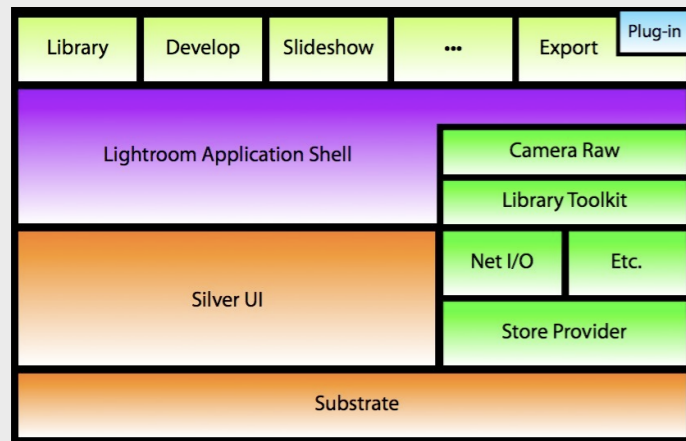
friend, follower

relative reference

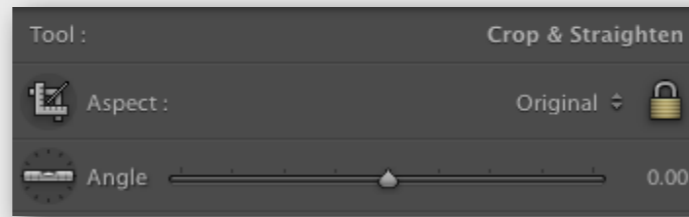
selection, buffer

permission, capability

pervasiveness of concepts



code



interface



Image

Ratio

Crop

Resolution

concepts

hypothesis

**software design is primarily
the design of concepts**

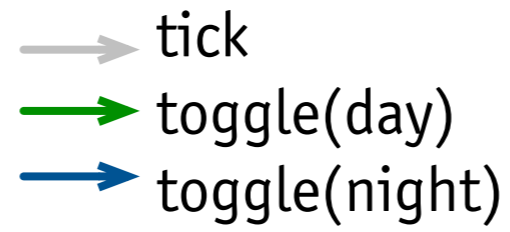
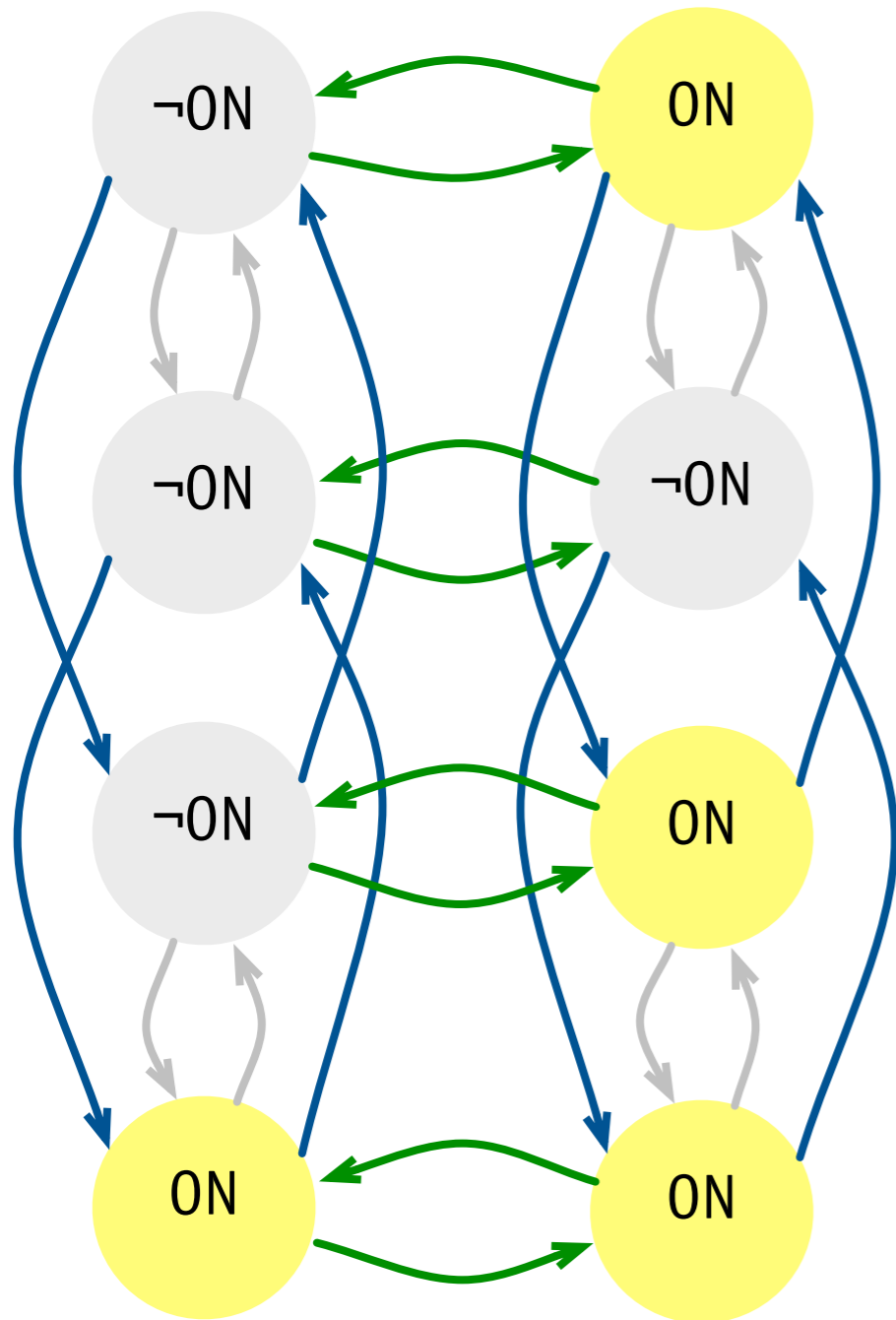
**once concepts are chosen
game over (for the most part)**

**good concepts
usable, robust, maintainable**

**bad concepts
frustrating, fragile, inflexible**

so what exactly
is a concept?

a behavioral model



a conceptual model

on: bool

time: Slot

schedule: set Slot

inv on = (time \in schedule)

tick \triangleq time := next(time)

toggle (s: Slot) \triangleq

if $s \notin$ schedule then schedule := schedule \cup {s}

else schedule := schedule \setminus {s}

concepts as explanatory state

a concept is

part of the internal state

modifiable by user actions

indirectly affecting the external world

examples

style (Word): affects formatting

tag (Facebook): affects view permission

selection (Finder): affects result of delete, move, etc

operational principle

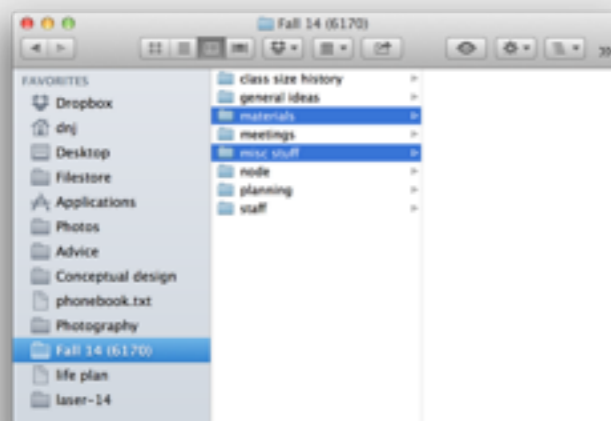
if you modify the concept like this, the outcome will be...



“if you change a style’s format,
then all paragraphs of that style
will change format accordingly”



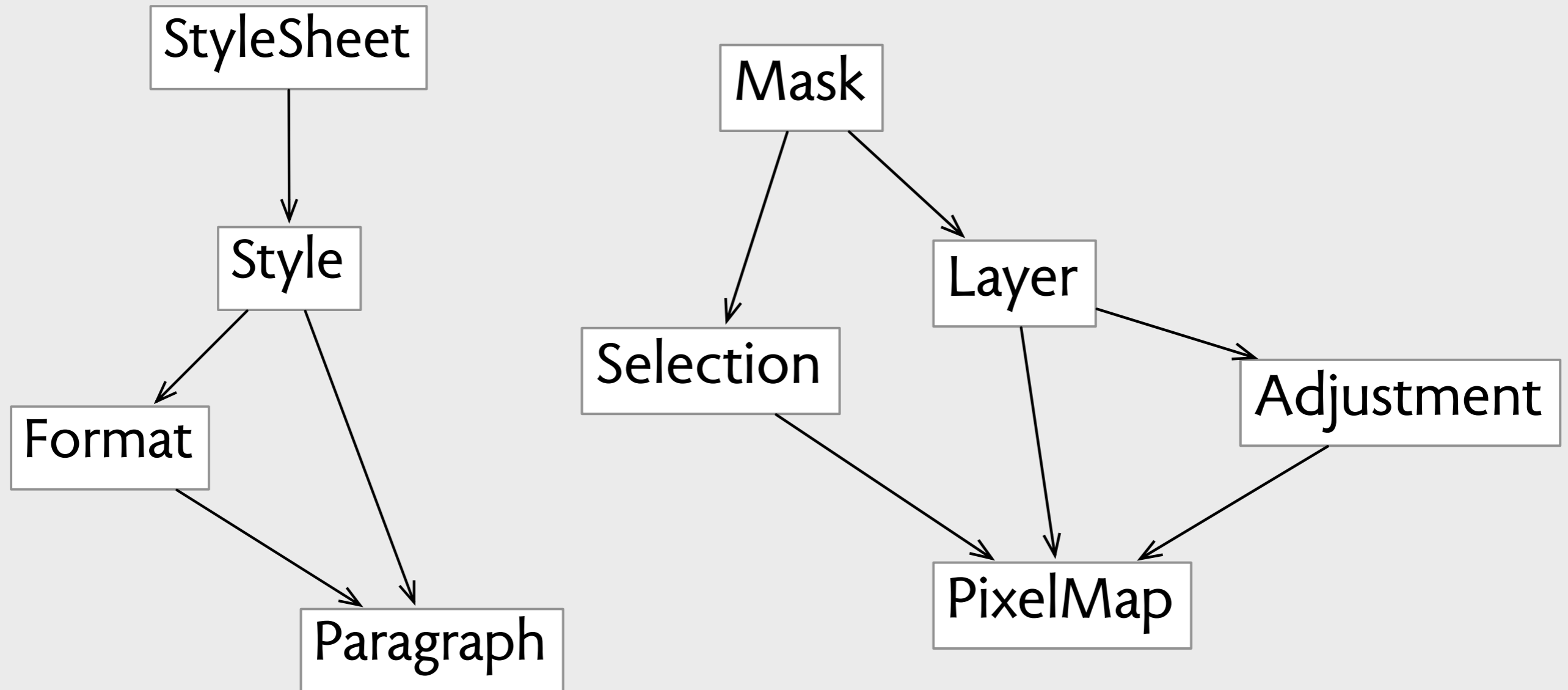
“if you tag a photo,
then all friends of the
person tagged will be
able to see the photo”



“if you select a file and it
belongs to a folder with
keyboard focus, **then**
pressing delete will move
the file to the trash”

concept sets and apps

for $c(a)$, set of concepts used in application a ,
 $\langle x, y \rangle \in \text{depends} \Leftrightarrow \forall a \cdot x \in c(a) \Rightarrow y \in c(a)$



note: if depends is cyclic, then cycle suggests a grouping of concepts

what makes a
good concept?

concept criteria

compelling

simple operational principle & motivated by one purpose

coherent

realization and interaction with other features is predictable

controllable

fulfills purpose without interference from other concepts

complete

general and uniform over all cases within concept's scope

consistent

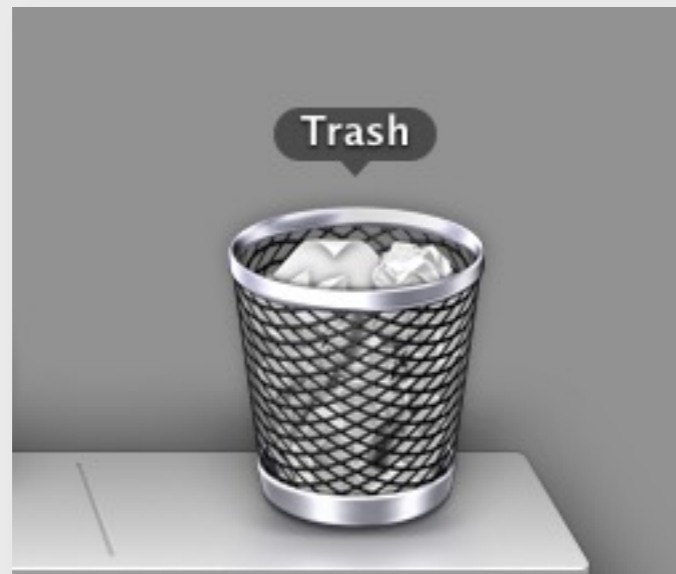
represented consistently in the user interface

conventional

reuses existing concepts when applicable

compelling

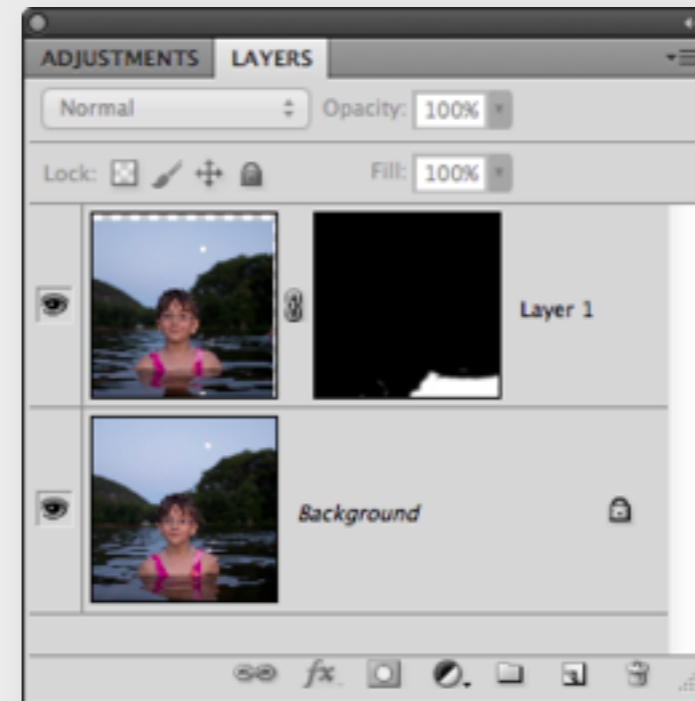
simple operational principle & motivated by one purpose



trash (OS X)

principle: delete moves to special folder; emptying it removes contents for good

purpose: allow undo of deletions



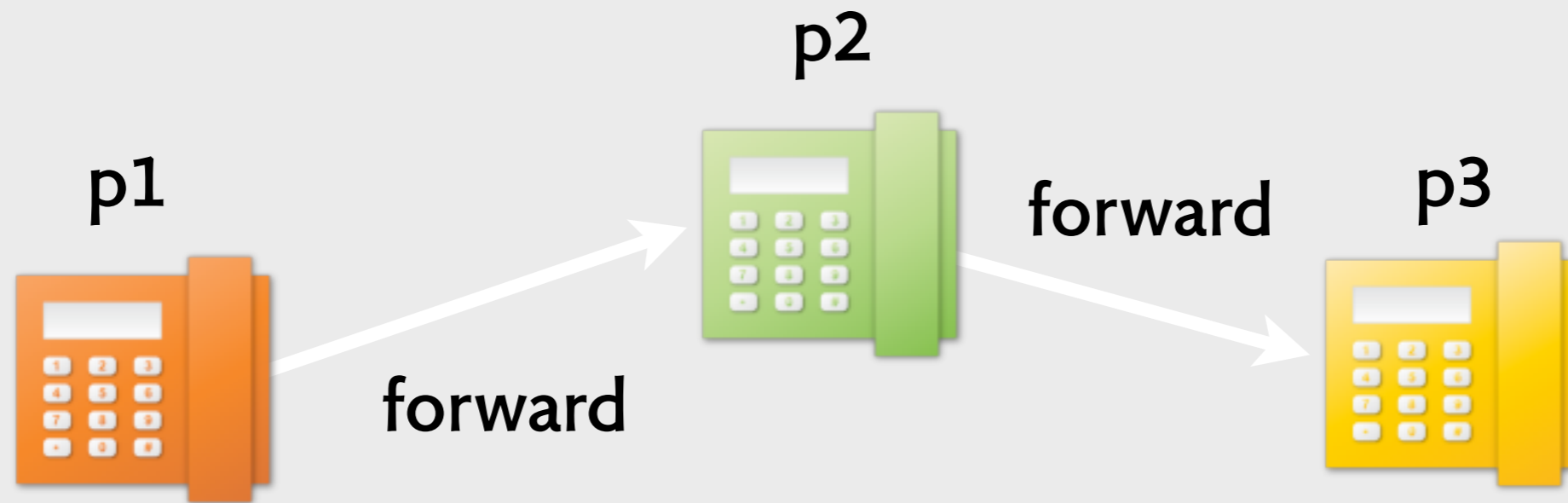
layer (Photoshop)

principle: resulting pixel map is background map with composition of functions given by layers

purpose: non-destructive edits

call forwarding

Pamela Zave, Secrets of Call Forwarding (1995)



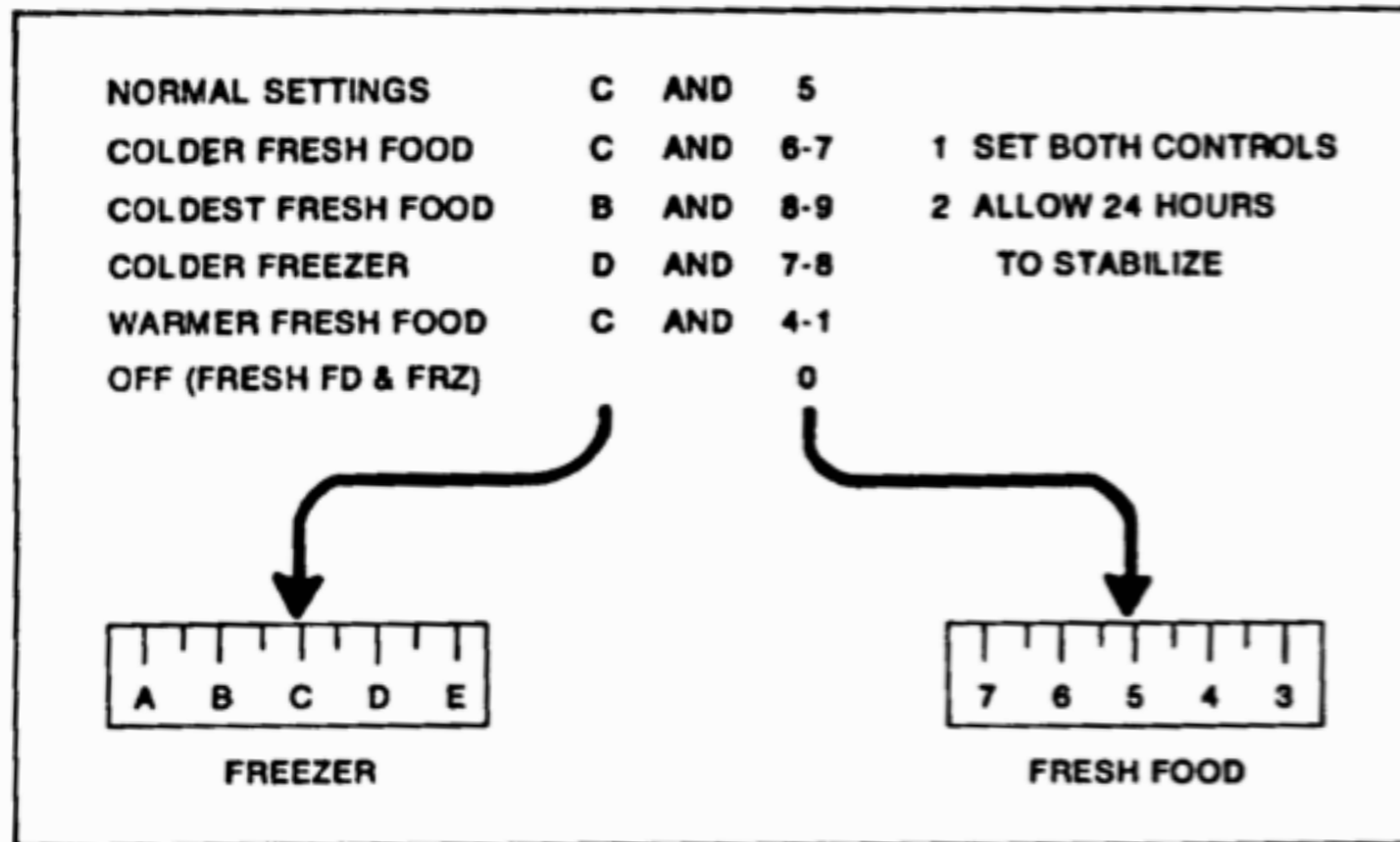
how should call to $p1$ be routed?

depends on **purpose**
"follow-me": to $p2$
"delegate": to $p3$

refrigerator controls

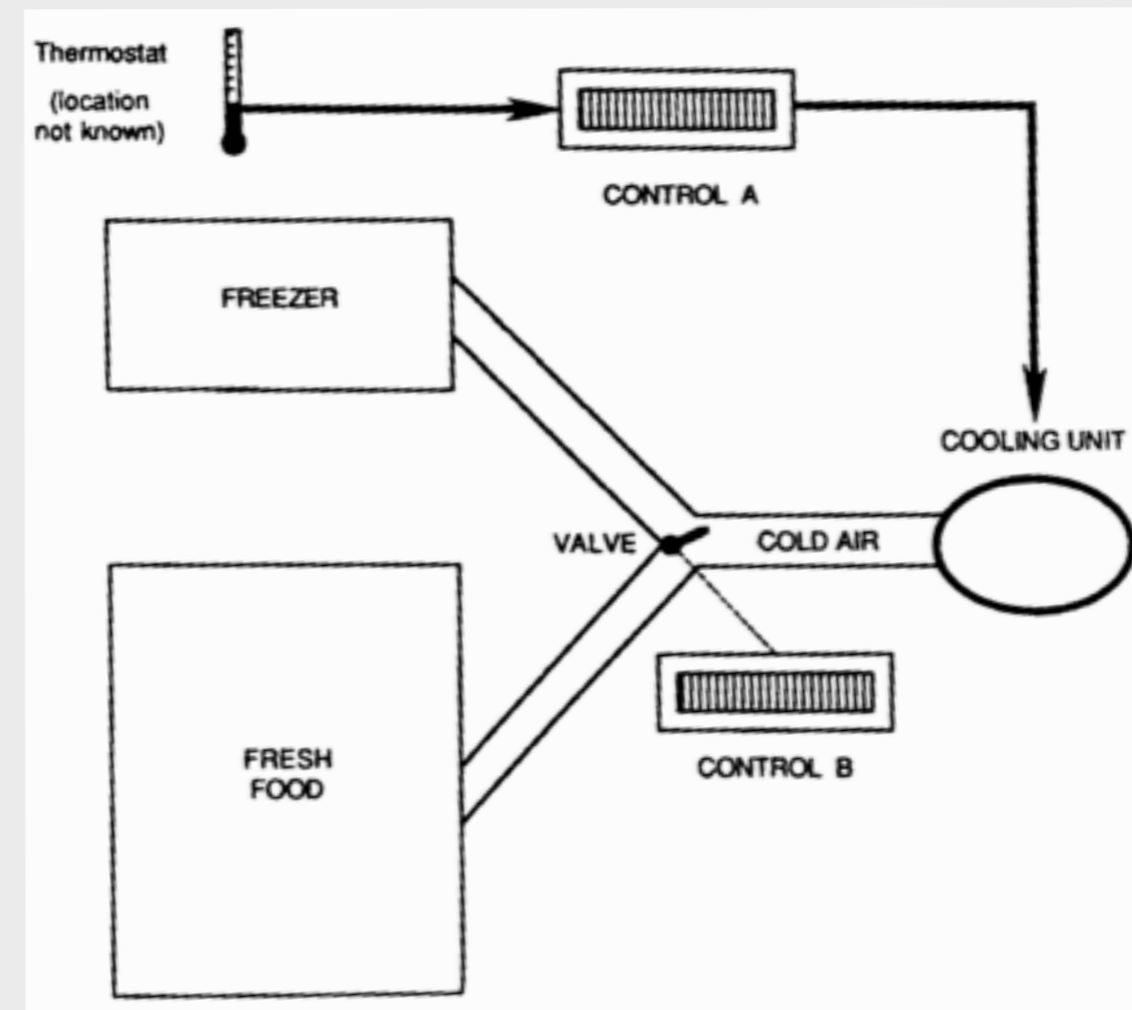
Don Norman, Design of Everyday Things, 1988

1.8 My Refrigerator. Two compartments—fresh food and freezer—and two controls (in the fresh food unit). The illustration shows the controls and instructions. Your task: Suppose the freezer is too cold, the fresh food section just right. How would you adjust the controls so as to make the freezer warmer and keep the fresh food the same? (From Norman, 1986.)



explanation of controls

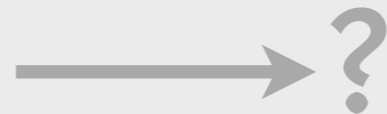
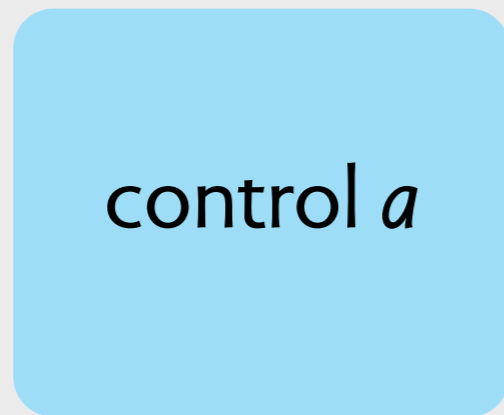
actual implementation



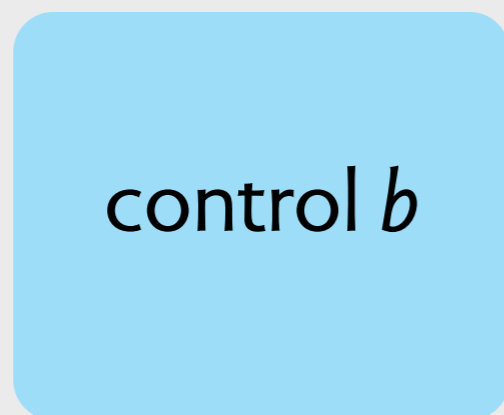
refrigerator mapping

concepts

purposes



?



faucets



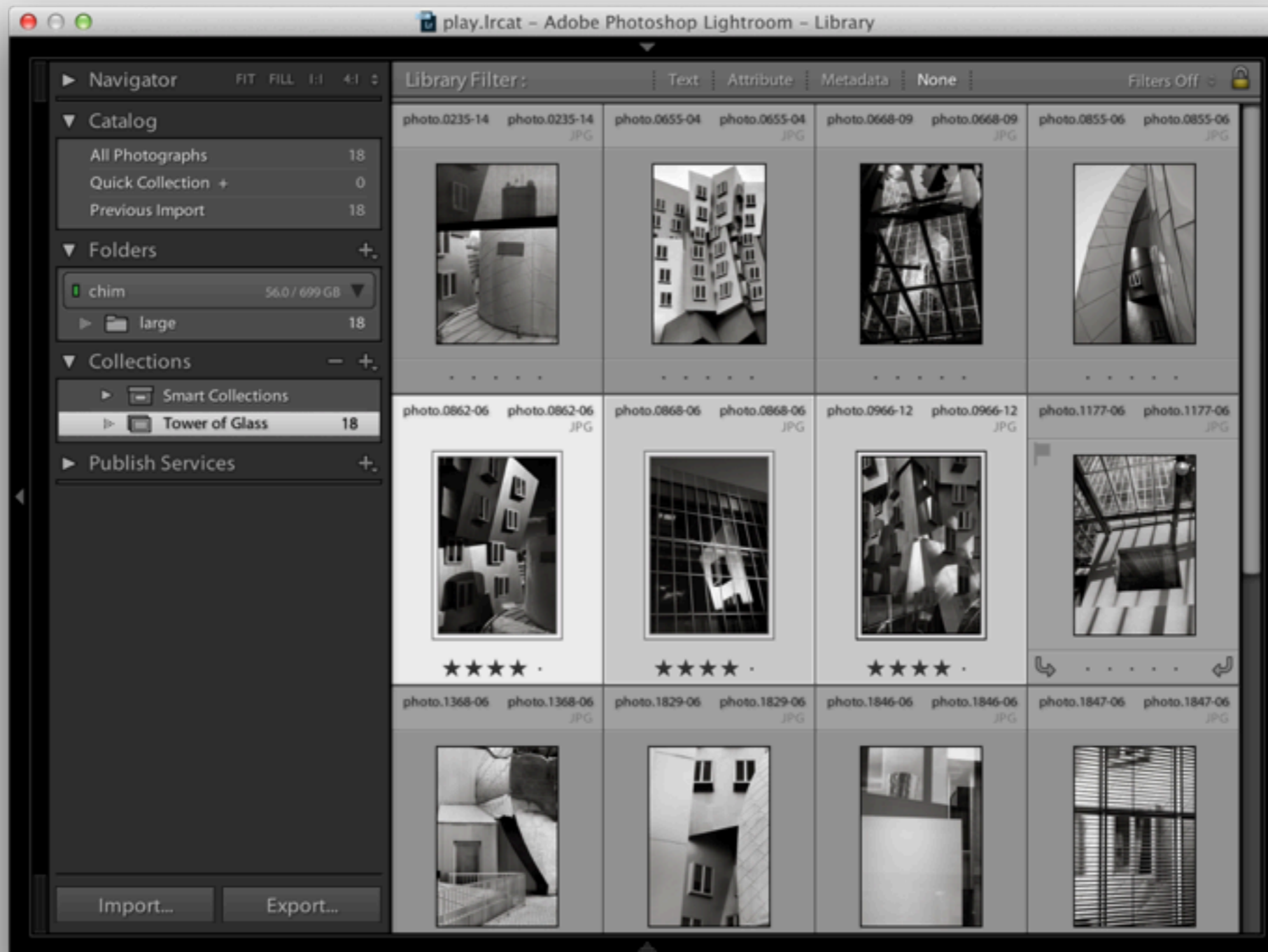
compelling



not compelling

rating stars

from Marc Hamburg, lead Lightroom engineer



purpose? not collection or even catalog specific

more unconvincing concepts

no single clear purpose

Git's staging area

JPEG quality and resolution

Gmail's categories (vs labels)

no simple operational principle

CSS's dimensions (inches, pixels)

Tumblr's answers vs comments

serves someone else's purpose

direct flight (legs share flight number)

coherent

realization and interaction with other features is predictable

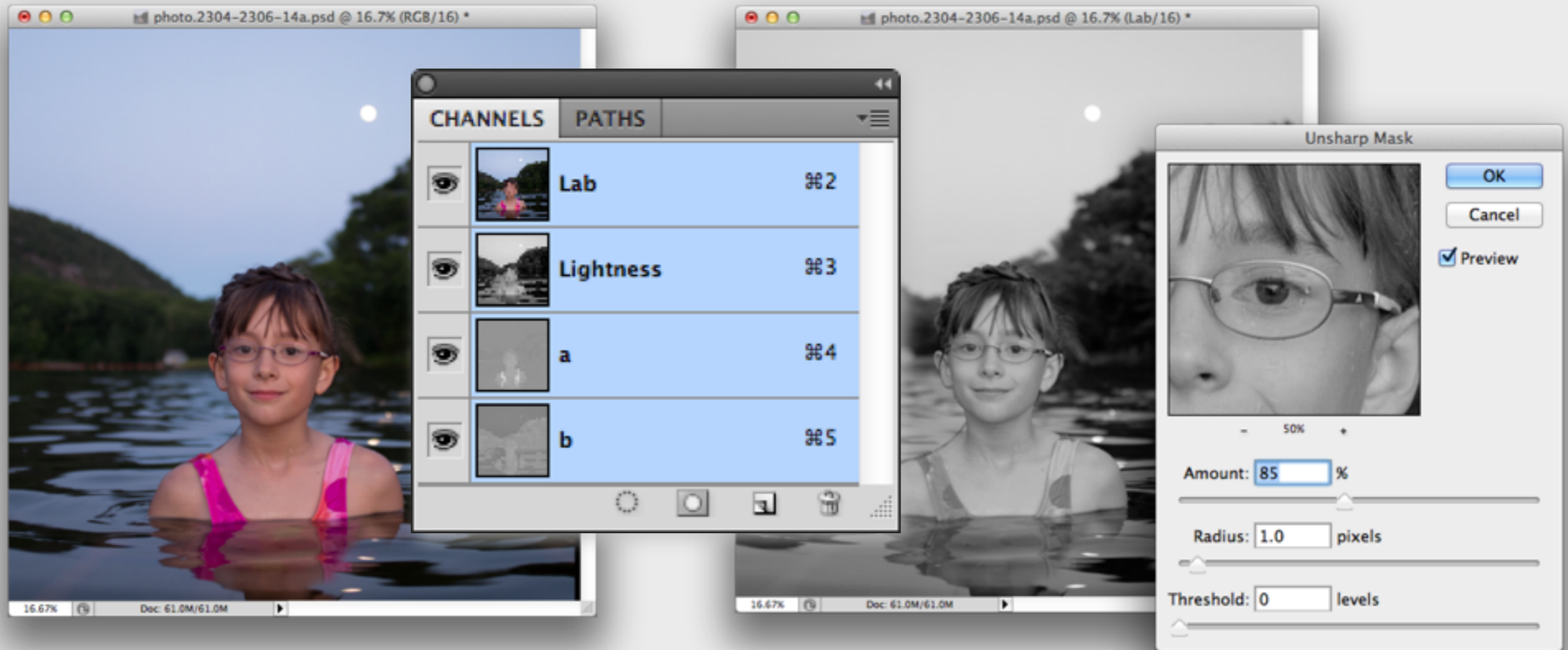
=AVERAGE(B3:B12)			
	A	B	C
1	year	population	increase
2			
3	1999	272,690,813	2,442,810
4	1998	270,248,003	2,464,396
5	1997	267,783,607	2,555,035
6	1996	265,228,572	2,425,296
7	1995	262,803,276	2,476,255
8	1994	260,327,021	2,544,413
9	1993	257,782,608	2,752,909
10	1992	255,029,699	2,876,607
11	1991	252,153,092	2,688,696
12	1990	249,464,396	
13	average	261,351,109	

relative reference

=AVERAGE(B3:B12)			
	A	B	C
1	year	population	increase
2			
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12	1990	249,464,396	
13			
14	average	261,351,109	

adding row: values unchanged

photoshop



can apply sharpening on luminance channel

email conversations

Sort by Date ▾		
↶	Santiago Perez De Rosso designations and dependences	12/11/13 32 KB 2 ▶
↶	Santiago Perez De Rosso Fwd: Software Carpentry and Git	10/31/13 7 KB 1 ▶
	Jonathan Edwards Fwd: Re: 500 lines or less	10/30/13 12 KB 1 ▶
↶	Michael Jackson Conceptual Models	10/25/13 3 KB 1 ▶
	Daniel Jackson Analysing git with Alloy	10/11/13 46 KB 2 ▶
↶	Leonid Grinberg some initial "bad design" examples	10/11/13 5 KB 1 ▶
↶	Kelly Zhang Re: SuperUROP	10/10/13 13 KB 1 ▶
↶	Santiago Perez De Rosso SuperUROP project - Re-designing Gmail	9/13/13 376 KB 1 ▶
	William G. Griswold memo on research agenda	9/9/13 197 KB 16 ▶
	Daniel Jackson Conceptual Design of Software: A Research Agenda	8/18/13 42 KB 2 ▶
	Daniel Jackson Shepherding Note 2	7/26/13 72 KB 3 ▶
↶	Santiago Perez De Rosso Re: memo	7/12/13 17 KB 1 ▶
	Santiago Perez De Rosso Re-thinking software design kickoff kit	6/28/13 255 KB
↶	Michael Jackson Re: yippee!	6/26/13 10 KB 1 ▶
↶	Anthony Finkelstein Re: requirements diagrams with influences	6/7/13 7 KB 1 ▶
↶	Santiago Perez De Rosso Re-thinking software design kickoff kit	5/16/13 253 KB 1 ▶

William G. Griswold <wgg@cs.ucsd.edu> September 9, 2013 4:55 PM
[Hide Details](#)
To: Daniel Jackson <dnj@mit.edu>
Cc: Kevin Sullivan <sullivan.kevinj@gmail.com>, Shriram Krishnamurthi <sk@cs.brown.edu>
Re: memo on research agenda

Just catching up here, sorry for the long silence.

Thanks for thinking so hard about my thoughts.

Your observation about CI reducing the design space is a superb one. The fact that this works at both the artifact and behavioral levels makes it especially attractive. I'll definitely use this idea when I next teach it!

--bill

On 9/1/13 3:10 PM, Daniel Jackson wrote:
Hi Bill,

On Aug 21, 2013, at 9:59 PM, William Griswold <wgg@cs.ucsd.edu <<mailto:wgg@cs.ucsd.edu>>> wrote:

If I might counter/expand on this a little here. In Daniel's manuscript, he critiqued my definition of conceptual integrity for being too code centric.








I didn't mean to imply that. I meant only to be observing that one definition of CI is what I called "stylistic uniformity", and I quoted your definition as (what seemed to me) a nice and clear articulation of that. I think CI likely involves that, but other properties too. I went on to say that my view of CI is that it's not so much about how the code is structured, but that wasn't intended to be a critique of your point of view. Code seems to be a very good arena in which to define the notion of stylistic uniformity.

While I agree, I think that my definition is appropriate for software engineers in contrast to interaction designers (or software engineers doing interaction design, which is dangerous -- just look at Google's interaction designs :).

Your definition, it seems to me, would work for I/A design too: all it seems to require is the idea that you can perceive the hidden hand behind the artifact, and that seems equally true of an interface.

Apple Mail: conversation consists of messages in multiple folders
move, delete, etc apply only to the subset in this folder

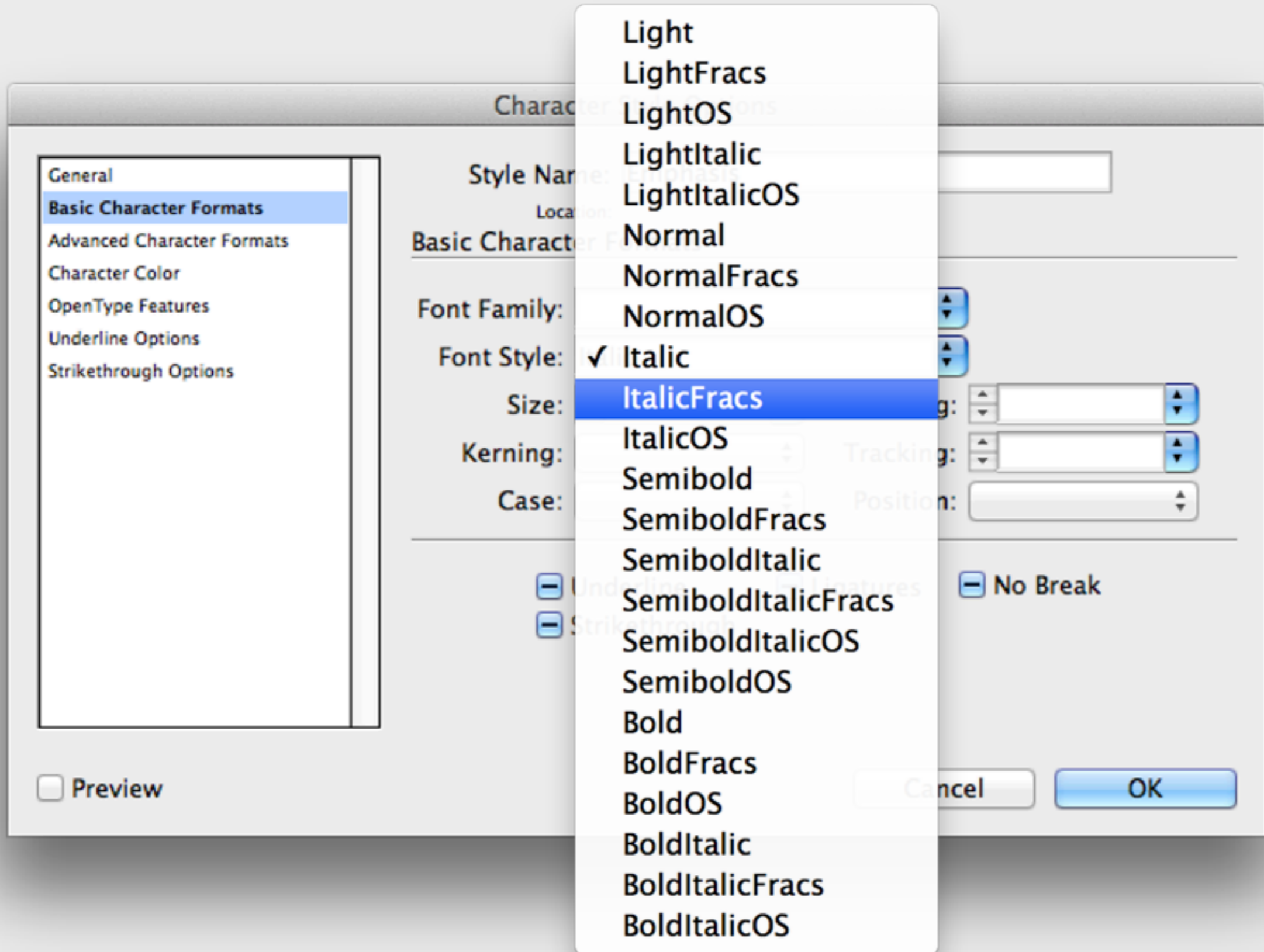
deletion woes

Trash		
Name	Date Modified	Size
 Screen Shot 2013-02-25 at 11.46.27 AM	Today 11:46 AM	58 KB
 Screen Shot 2013-02-25 at 11.45.46 AM	Today 11:45 AM	39 KB
 bits.key	Yesterday 7:09 PM	326 KB
▶  2013 2.16.58 PM	Feb 22, 2013 2:16 PM	--
▶  2013-02-18	Feb 22, 2013 2:12 PM	--
▶  2013-02-17	Feb 22, 2013 2:12 PM	--
▶  2013-02-15	Feb 22, 2013 2:12 PM	--

if you move an old file to trash by mistake,
how do you find it?

how do you make space on a USB key?

what's a font?



so character style can only italicize some fonts

more incoherent concepts

Apple Mail's contact names
appear in sent messages!

Facebook's shared album
can move photos in but not out

Google form column hide
hides in sheet, but not in published summary

controllable

fulfills purpose without interference from other concepts



skip slide



make parent



make parent
and skip

skipping and hierarchy do not interfere in Apple Keynote

gmail labels & conversations

from Eunsuk Kang

Eunsuk Kang <eskang@csail.mit.edu>

December 11, 2014 2:27 AM

To: Daniel Jackson <dnj@MIT.EDU> , Santiago Perez De Rosso <sperezde@csail.mit.edu>

[Hide Details](#)

an example of bad coupling in gmail?

[Conceptual Design](#) ↑

Hi Daniel, Santiago,

I am not sure whether this falls into one of the conceptual design issues that you have been analyzing, but here's a little annoyance that I just ran into using labels in Gmail.

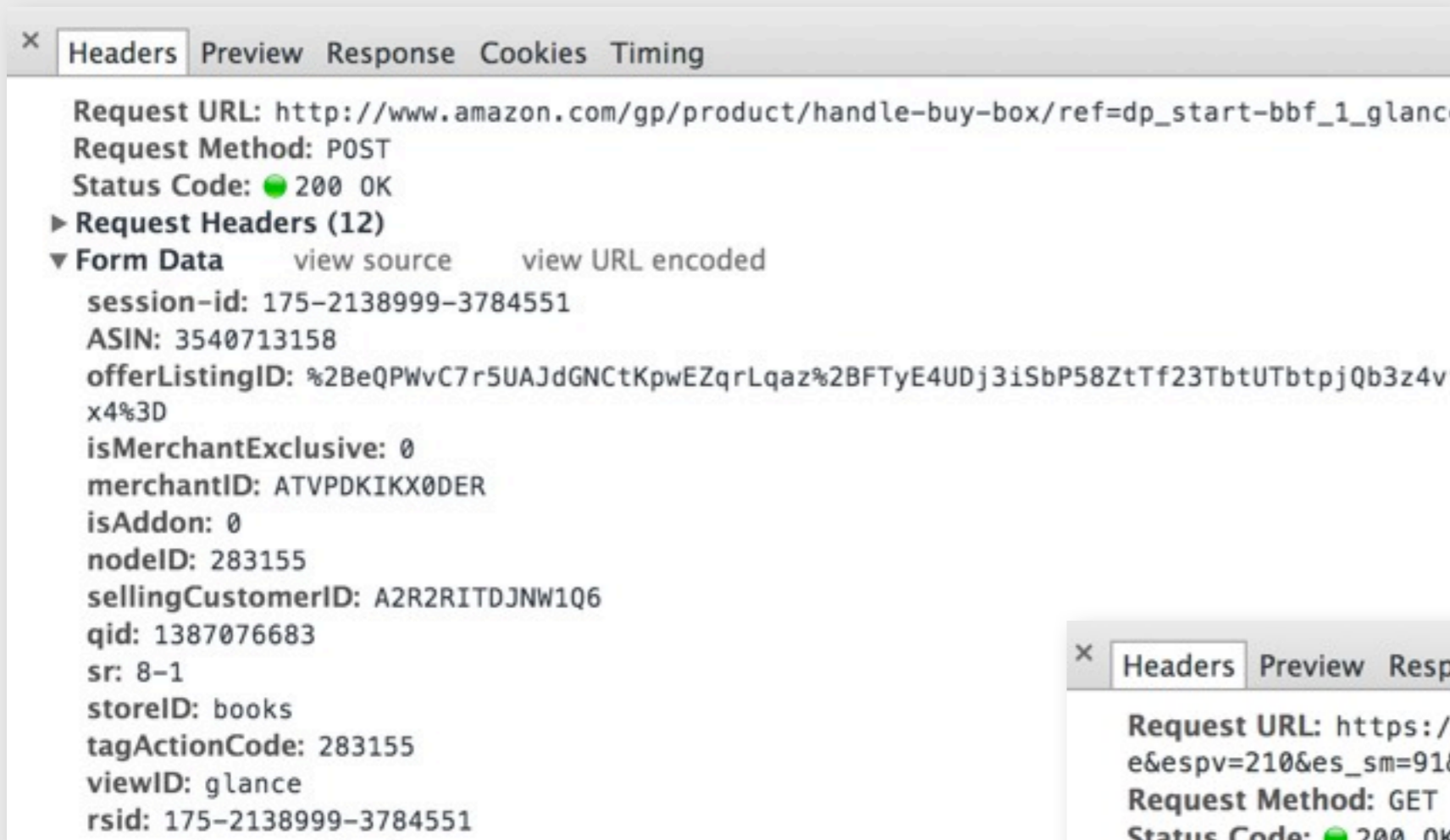
This evening, I made two separate reservations with Enterprise (one in Phoenix and another one in Vegas), and the company sent me a confirmation e-mail for each one of them. Usually, I tag travel-related e-mails using a label (e.g. "Vegas Trip 2014") so that I can easily find all the relevant e-mails for a particular trip. Now, the problem is that Gmail automatically grouped the two Enterprise emails into a single conversation. It turns out that in Gmail, a label applied to an e-mail in a conversation is applied to every other e-mail in the same conversation. This means I can't assign separate labels to the two car rentals! Uggh!

(By the way, is it possible to take an e-mail out of a conversation? Either this is impossible or the Gmail UI does not make this easy).

Eunsuk

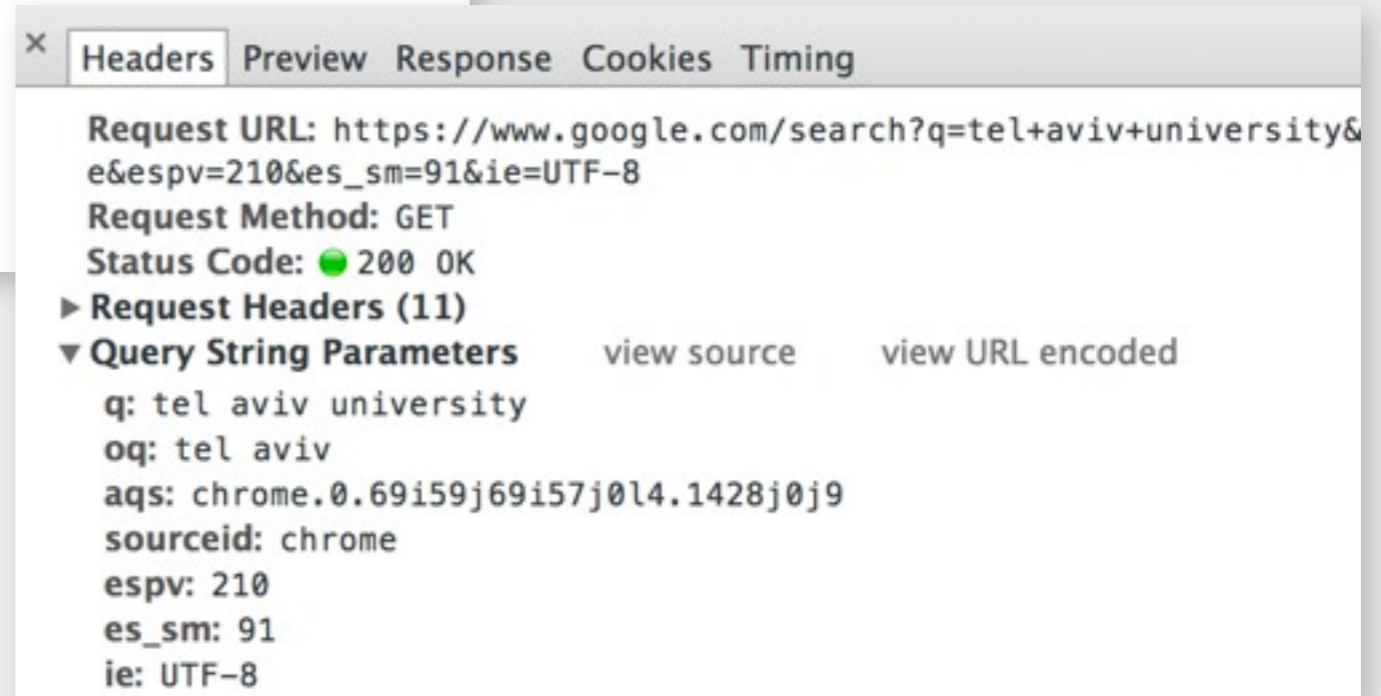
conversations interfere with labels

http get & post



```
Request URL: http://www.amazon.com/gp/product/handle-buy-box/ref=dp_start-bbf_1_glance
Request Method: POST
Status Code: 200 OK
Request Headers (12)
Form Data
  session-id: 175-2138999-3784551
  ASIN: 3540713158
  offerListingID: %2BeQPWvC7r5UAJdGNcKpwEZqrLqaz%2BFTyE4UDj3iSbP58ZtTf23TbtUTbtpjQb3z4v
  x4%3D
  isMerchantExclusive: 0
  merchantID: ATVDPKIKX0DER
  isAddon: 0
  nodeID: 283155
  sellingCustomerID: A2R2RITDJNW1Q6
  qid: 1387076683
  sr: 8-1
  storeID: books
  tagActionCode: 283155
  viewID: glance
  rsid: 175-2138999-3784551
```

POST: query params & form data

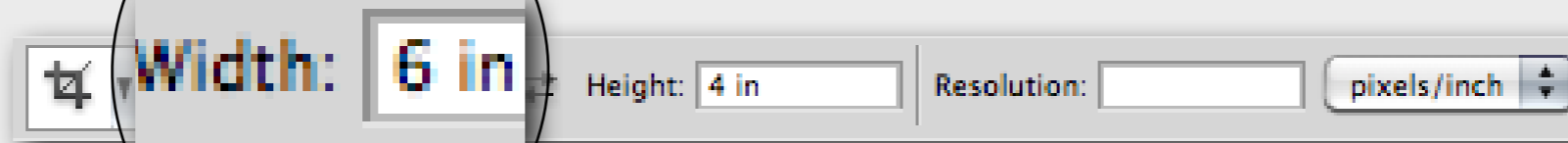


```
Request URL: https://www.google.com/search?q=tel+aviv+university&
e&espv=210&es_sm=91&ie=UTF-8
Request Method: GET
Status Code: 200 OK
Request Headers (11)
Query String Parameters
  q: tel aviv university
  oq: tel aviv
  aqs: chrome.0.69i59j69i57j0l4.1428j0j9
  sourceid: chrome
  espv: 210
  es_sm: 91
  ie: UTF-8
```

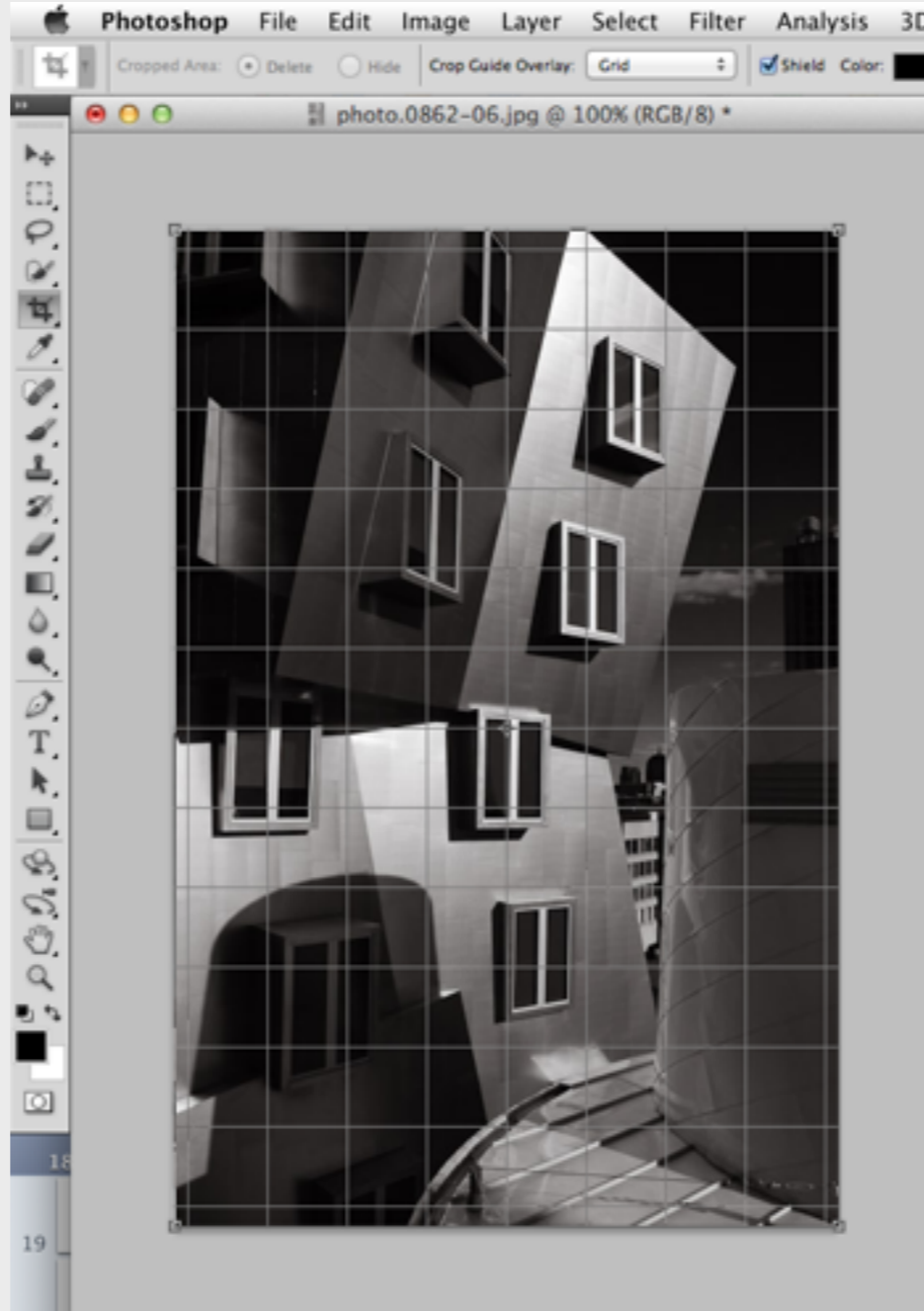
GET: query params but no form data

choice of http method interferes with data packaging

cropping in photoshop



cropping in photoshop (part 2)



bounding box ratio interferes with resolution & dimensions

aspect ratio fuji x100s



image quality setting



aspect ratio



"image size" setting



non-standard ratio + RAW?



image quality interferes with image size

complete

general and uniform over all cases within concept's scope

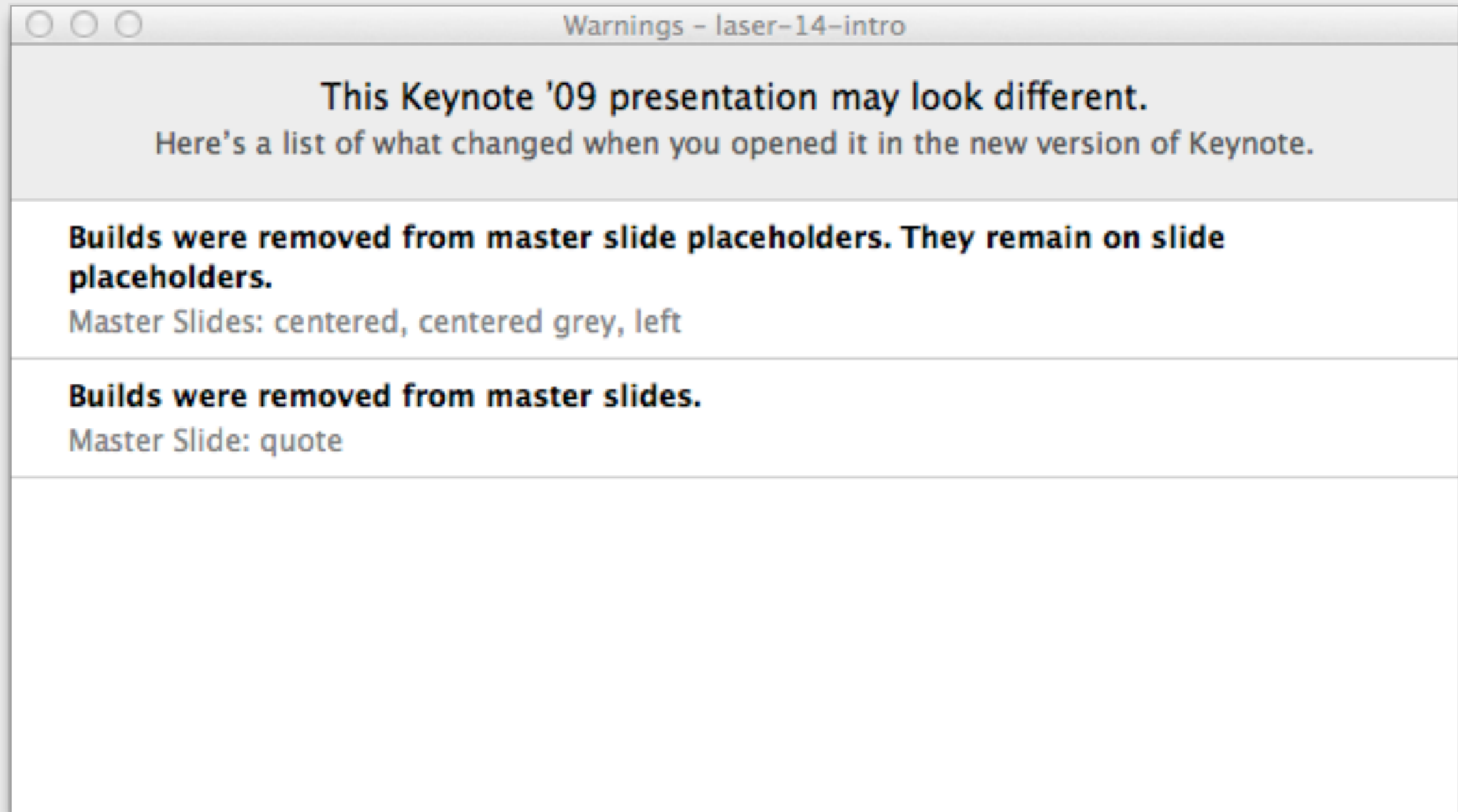
general

no special subsets for scope of action

uniform

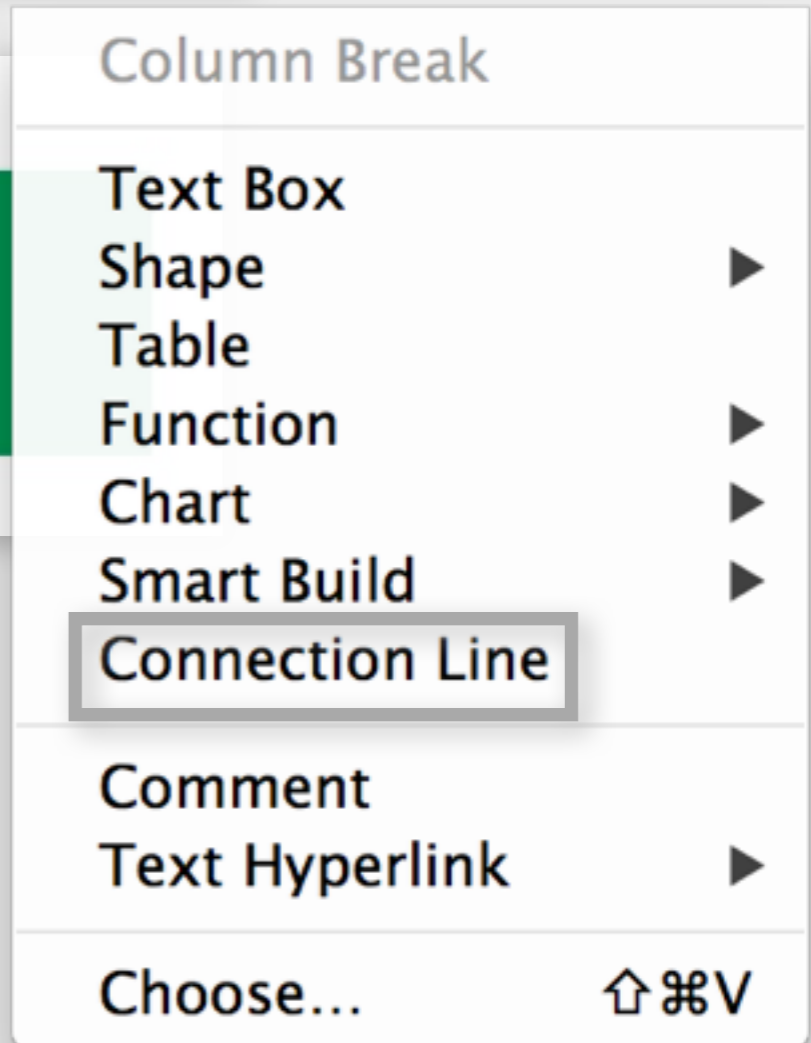
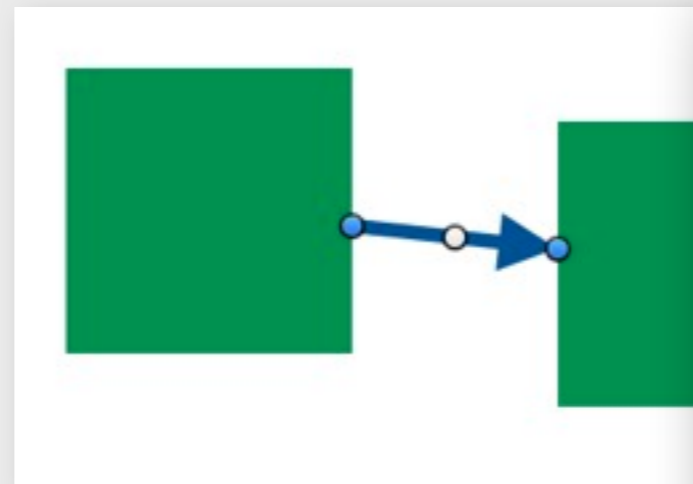
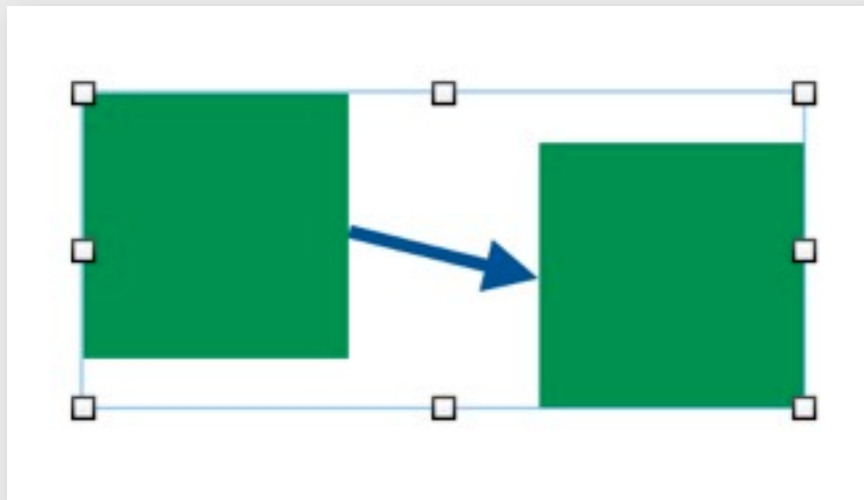
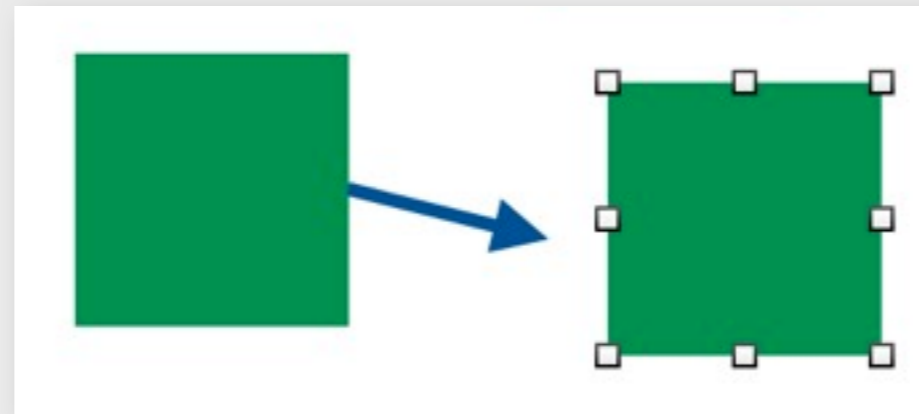
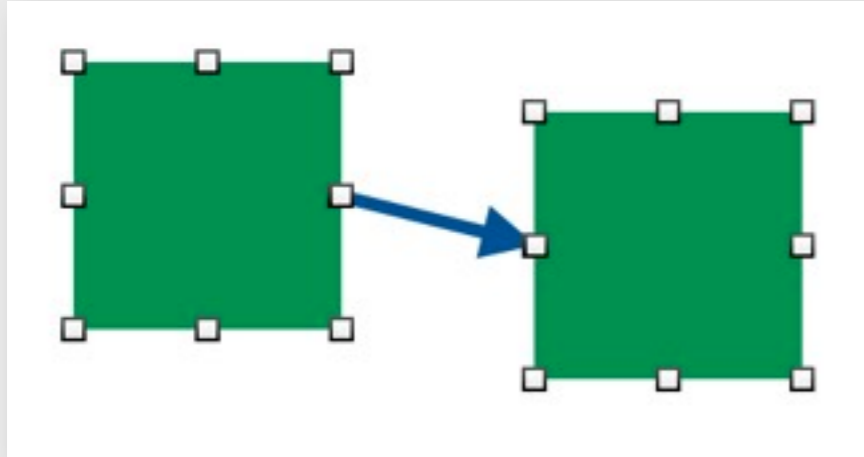
same (sub)purpose fulfilled with same (sub)concept

keynote master slides



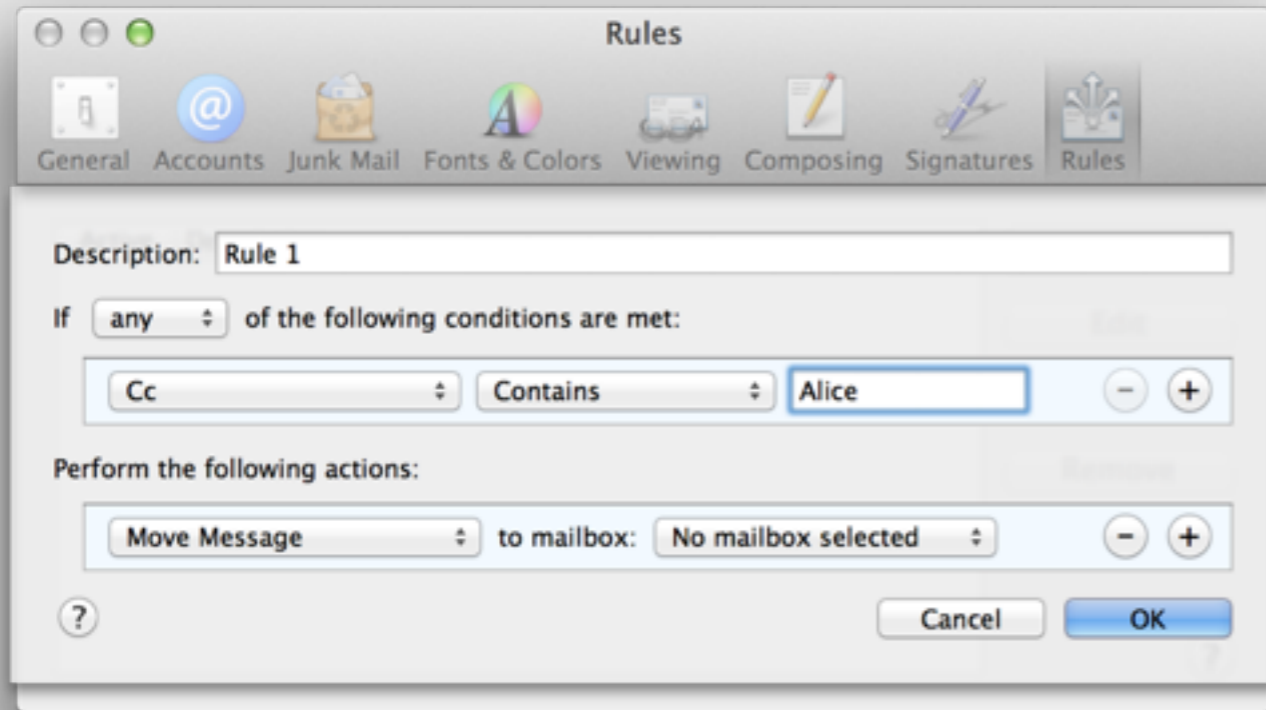
master slide placeholders can no longer include animation properties

keynote connection lines

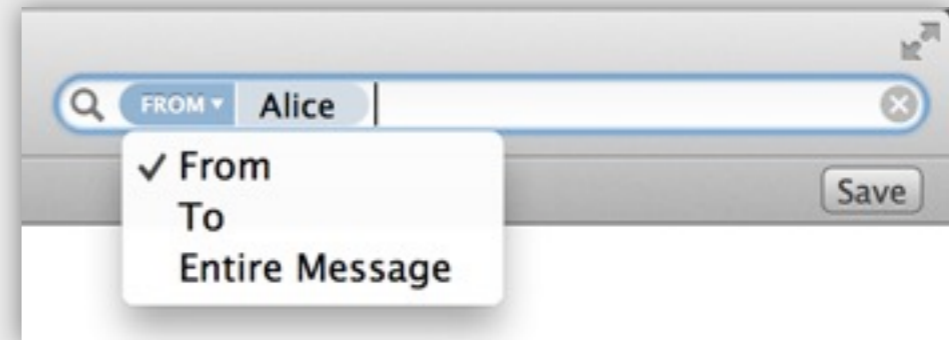


connection lines are not groupable

apple mail



filtering rules

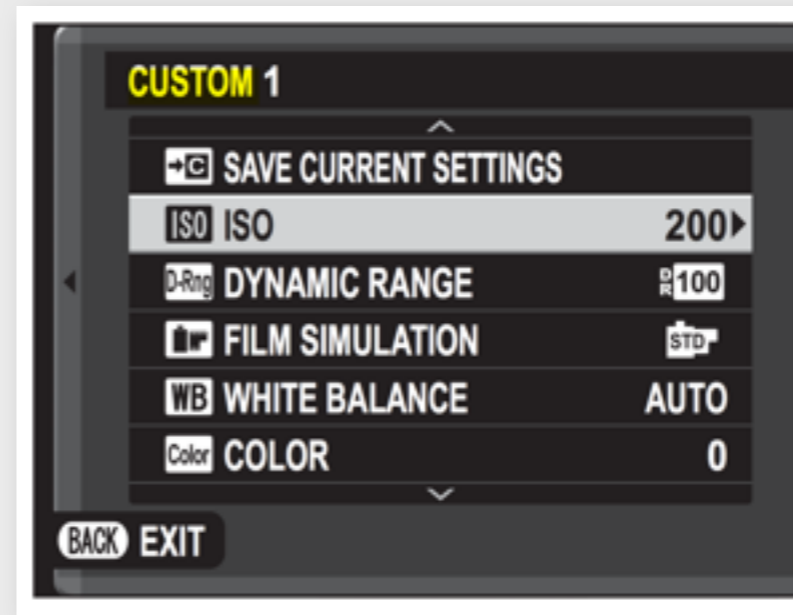
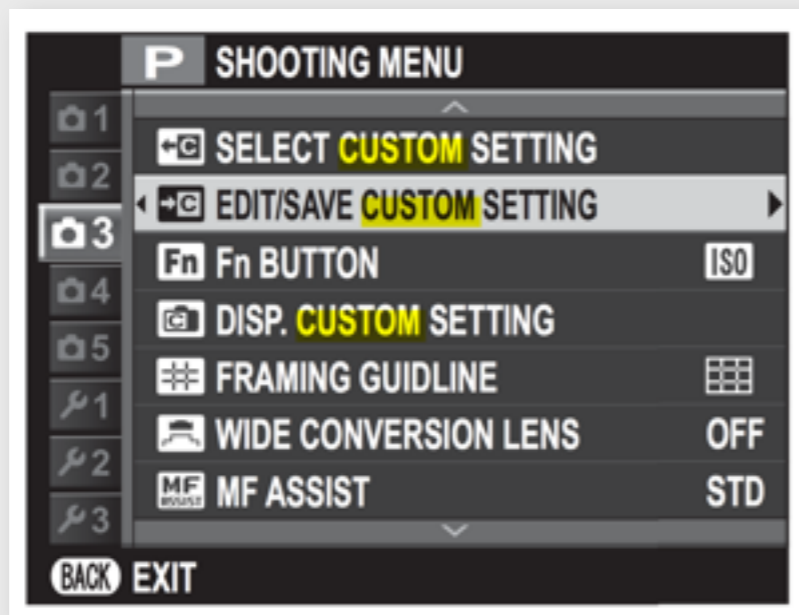


searching rules

cc field is a parameter for filtering but not searching

custom settings fuji x100s

2 Highlight a custom settings bank and press **MENU/OK** to select. Adjust the following as desired and press **DISP/BACK** when adjustments are complete: **ISO** ISO, **D-Rng** DYNAMIC RANGE, **Film** FILM SIMULATION, **WB** WHITE BALANCE, **Color** COLOR, **Sharp** SHARPNESS, **H-Tone** HIGHLIGHT TONE, **S-Tone** SHADOW TONE, **NR** NOISE REDUCTION, and **Reset** RESET.



only some settings can be defined in a custom settings bank

what a reviewer said

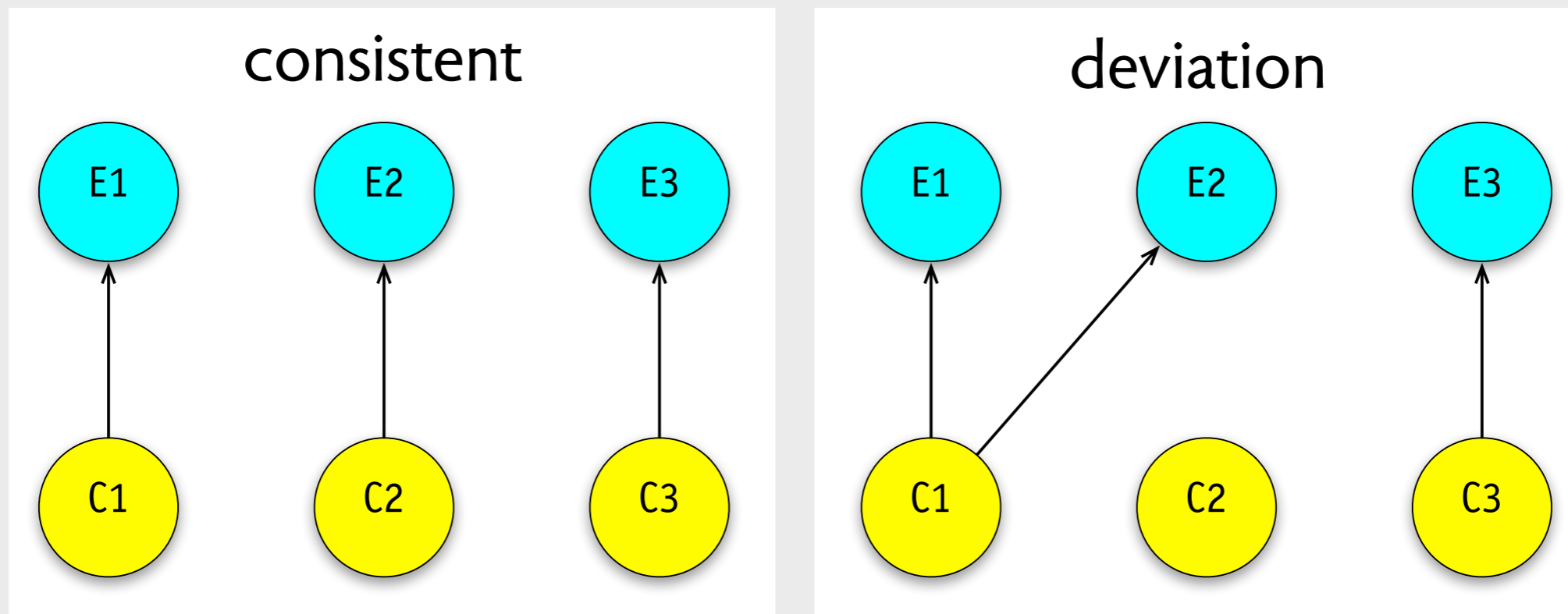
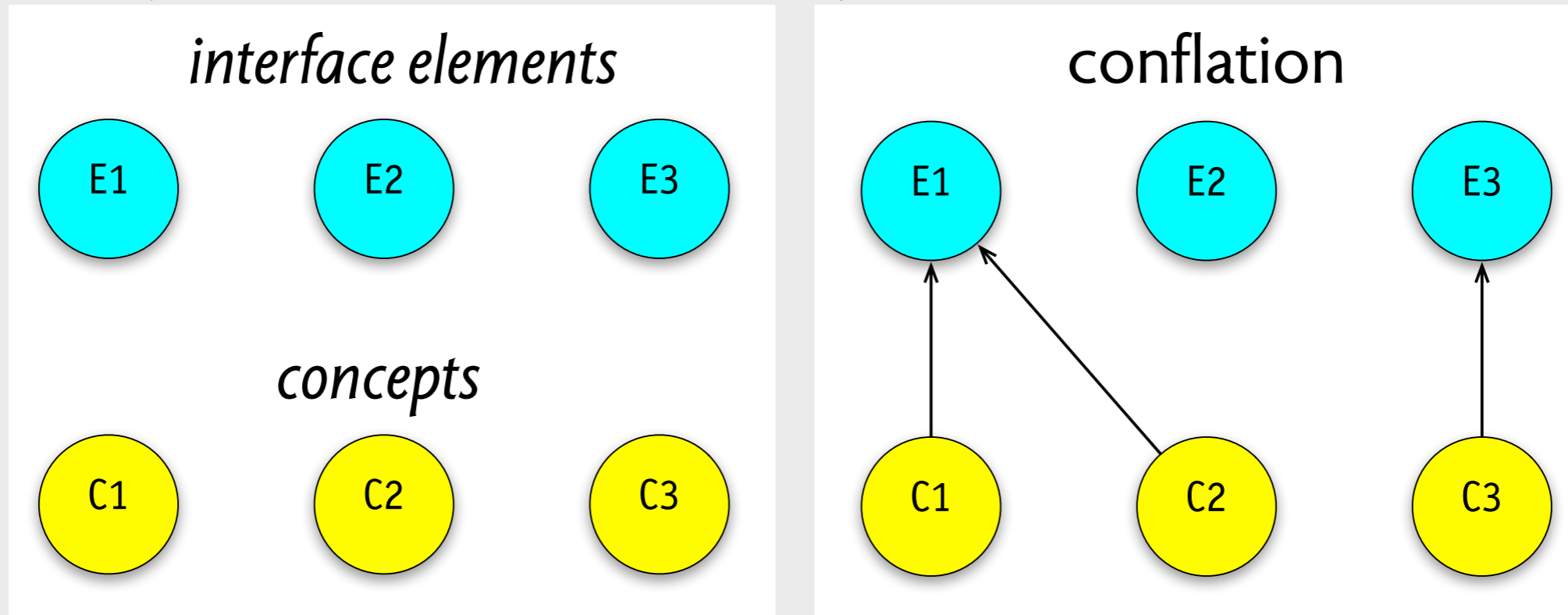
The X100's Custom Settings memories are useless.

1.) The X100's Custom Settings memories are useless. Unlike [Canon's brilliant C1, C2 and C3 Total Recall modes](#), the X100's EDIT/SAVE CUSTOM SETTINGS function only stores and recalls a few of the image parameters like sharpness and white balance, but not Auto ISO, image size, AF mode, flash or anything else. For these to be useful, they need to save *everything*, as Canon does. Even the LCD brightness needs to be saved and recalled, for instance, on my Canons, I use different presets for shooting outdoors or indoors.

from <http://www.kenrockwell.com/fuji/x100.htm>

consistent

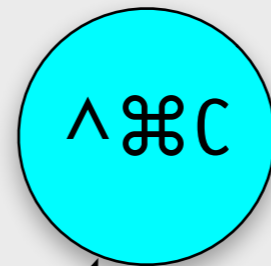
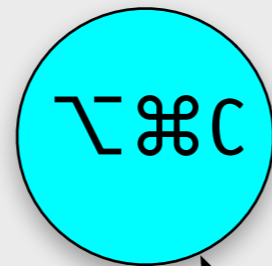
represented consistently in the user interface



deviation in OS X apps

*OmniGraffle:
control key*

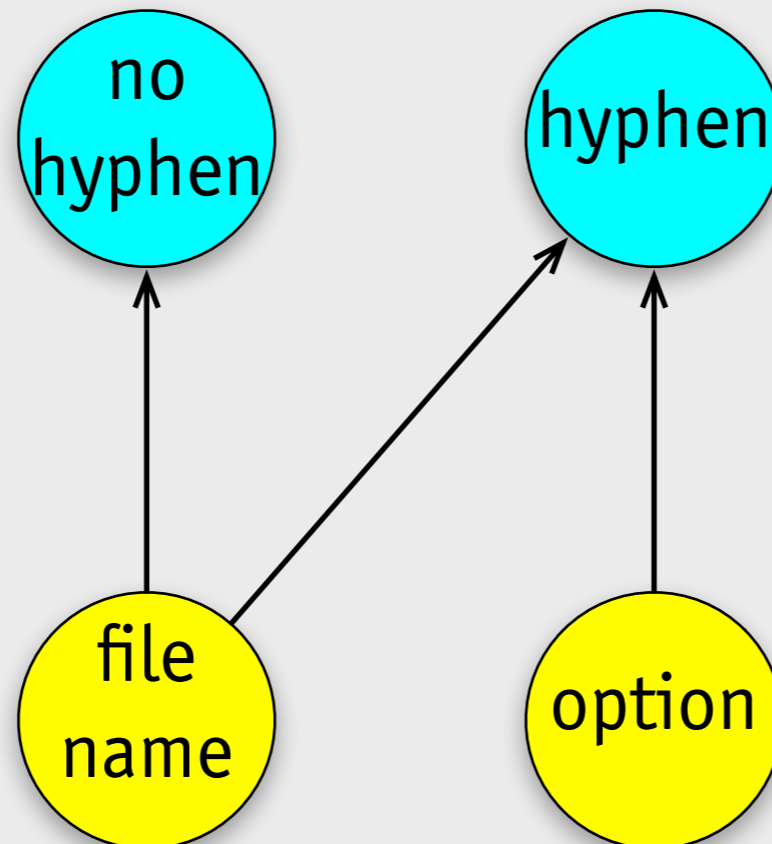
*Apple apps:
option key*



conflation in unix

from the Unix Hater's Handbook

```
[chim:~] dnj% mv readme -README
[chim:~] dnj% mv -README readme
mv: illegal option -- R
usage: mv [-f | -i | -n] [-v] source target
        mv [-f | -i | -n] [-v] source ... directory
```



a sad dropbox tale

Quora

🔍 Search



Dropbox: [Edit](#)

Someone accidentally deleted thousands of files in my company Dropbox: how can I quickly undelete them? [Edit](#)

[Add Question Details](#)

[Comment](#) · [Share](#) · [Report](#) · [Options](#)

Friends don't let friends delete shared Dropbox items



Christopher Breen
@BodyofBreen

Sep 9, 2013 5:00 AM



Reader Paul Cramblett has a problem with others who just don't know how to share. He writes:

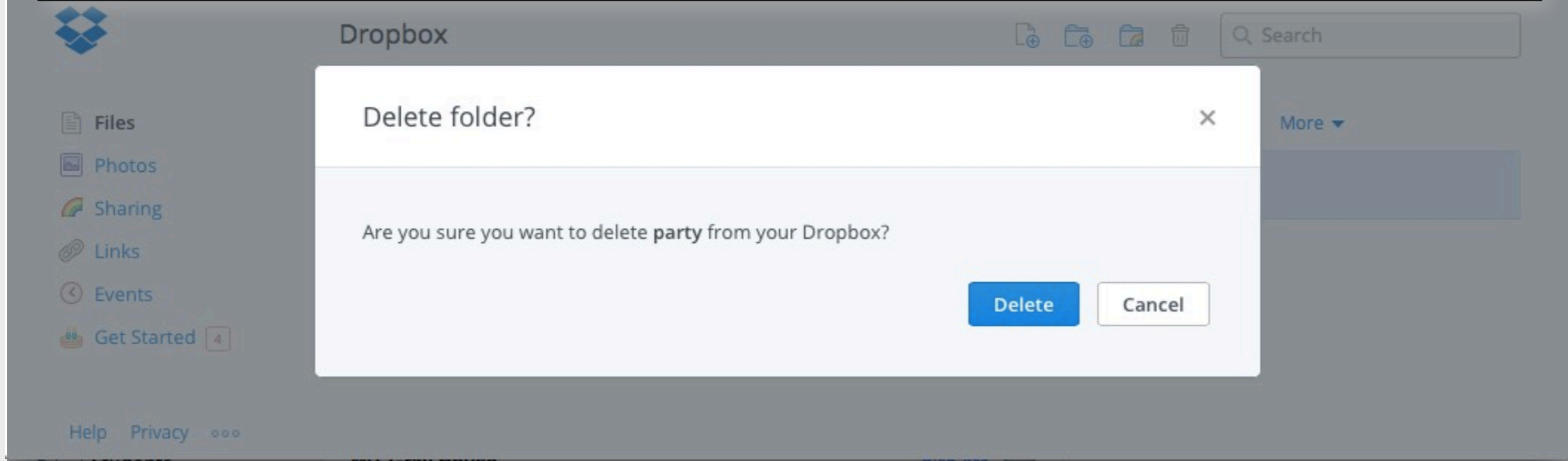
I maintain a Dropbox folder that I use to share files with a select group of friends. I've tried to explain how Dropbox works to these people but someone invariably drags all the files out of the folder, which means they're no longer available to the rest of us. Is there some way to prevent files from being removed by someone who doesn't understand the difference between "copy" and "move"?

alyssa & ben plan a party

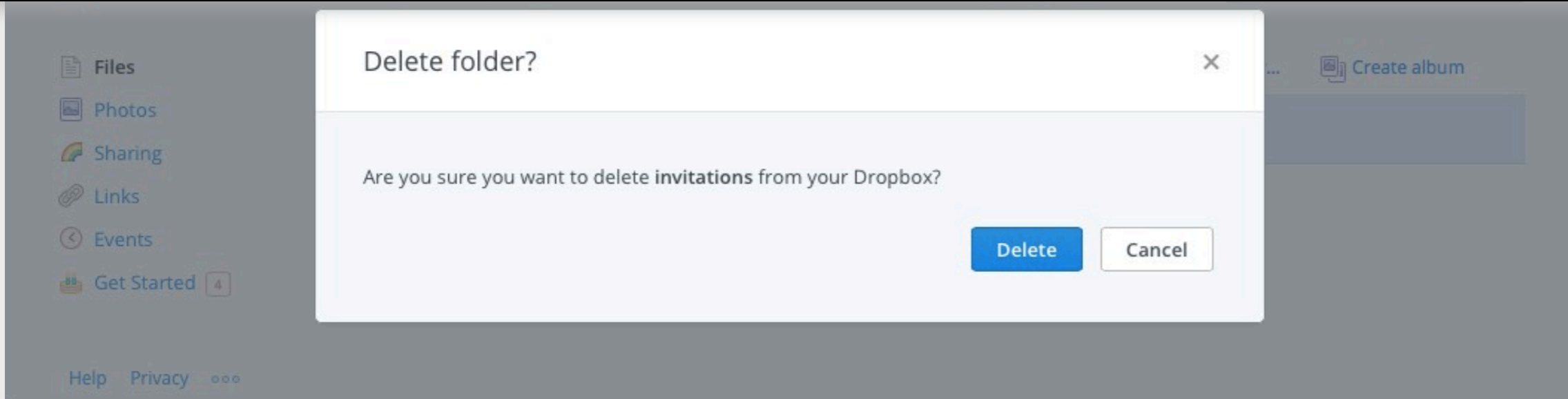
The screenshot shows the Dropbox web interface with a 'Share' dialog box open. The dialog is titled 'Share 'party' with others' and has a close button (X) in the top right corner. At the top right of the dialog, there is a checked checkbox labeled 'Allow members to invite others'. Below this, there is a search bar containing the text 'alyssa' and a blue link 'Import contacts' on the right. A search result is displayed in a light blue row, featuring an envelope icon, the name 'Alyssa P. Hacker', and the email address 'dnj+alice@csail.mit.edu'. At the bottom of the dialog, there are two buttons: a blue 'Share folder' button and a white 'Cancel' button with a grey border. The background shows the Dropbox sidebar with 'Files', 'Photos', 'Sharing', 'Links', 'Events', and 'Get Started' (with a '2' notification badge). The top right of the interface shows 'Get free space!', a notification bell, and the user name 'Ben Bitdiddle'.

alyssa spoils everything

Are you sure you want to delete party from your Dropbox?



Are you sure you want to delete invitations from your Dropbox?

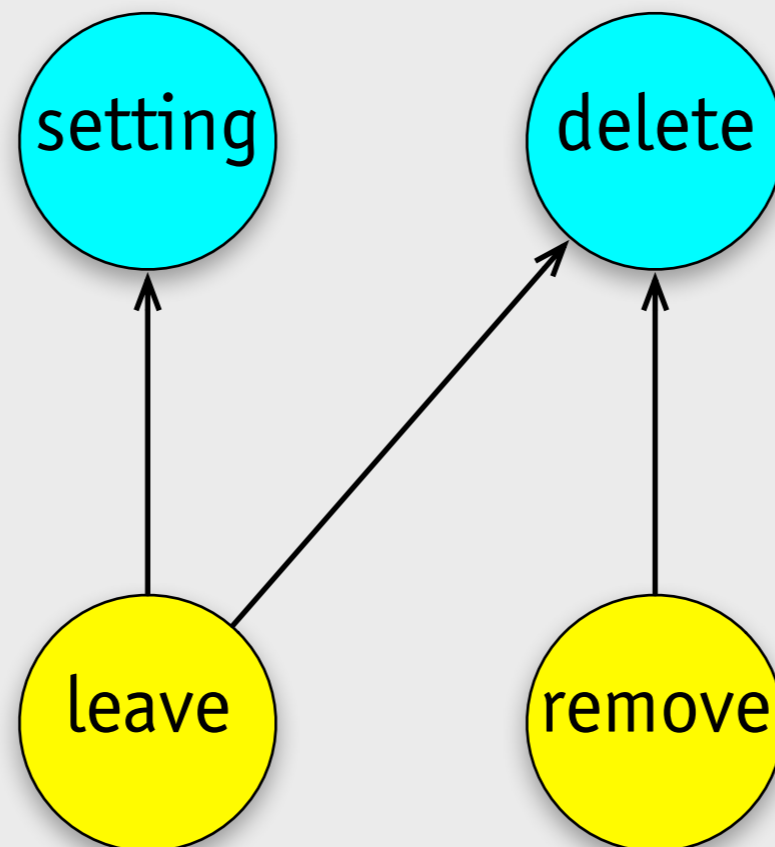


conflation in dropbox

How do I leave a shared folder?

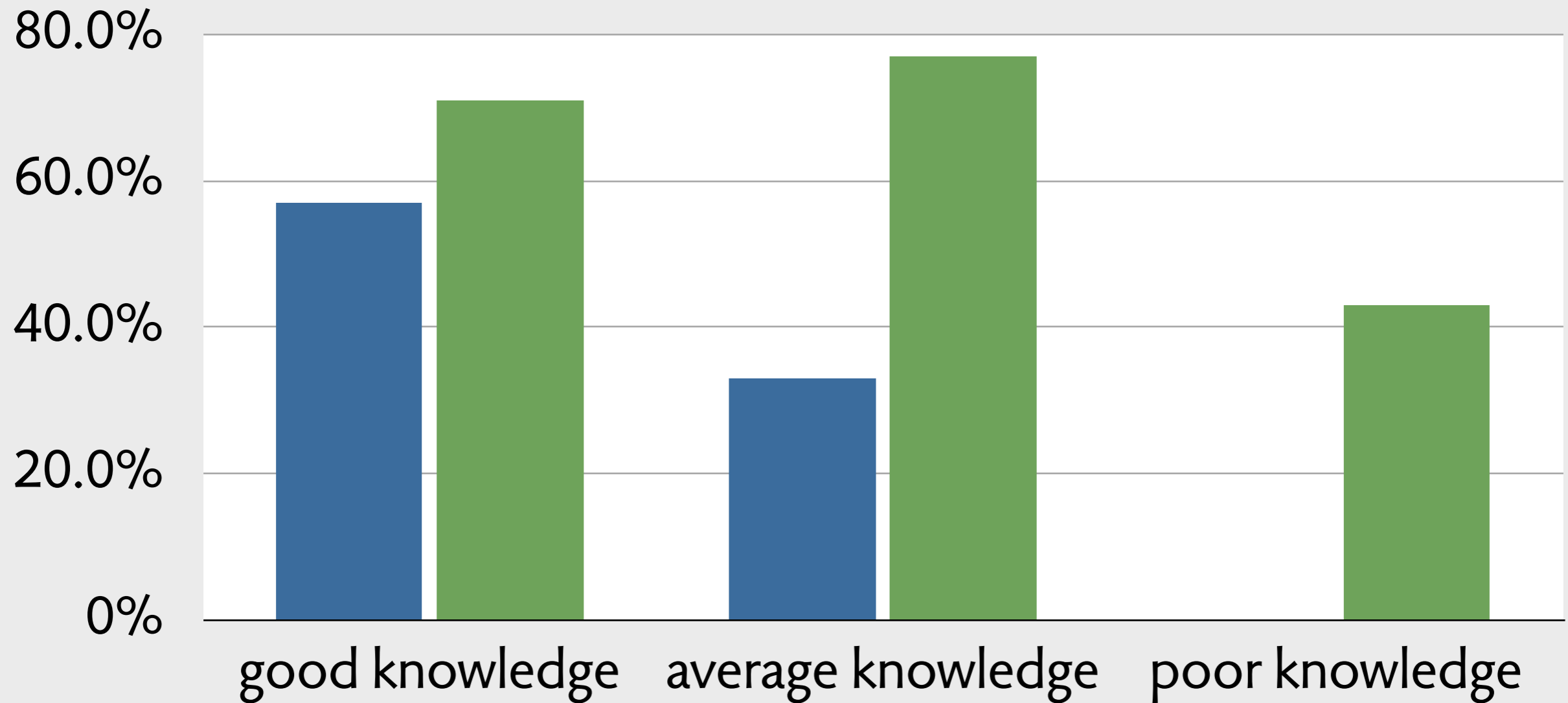
“by changing the folder’s settings or by deleting it”

You can leave a [shared folder](#) at any time by changing the folder's settings on the Dropbox website or deleting it. If you change your mind or leave a folder accidentally, you can [rejoin it](#) later.



small survey of MIT dropbox users

correctly predicting behavior



- delete shared folder results in leaving
- delete shared subfolder removes it

conventional

reuses existing concepts when applicable

concept idioms: across apps

style: separate formatting from element

selection: select objects to apply action to set

subtle issues & their solution

reapply in different context

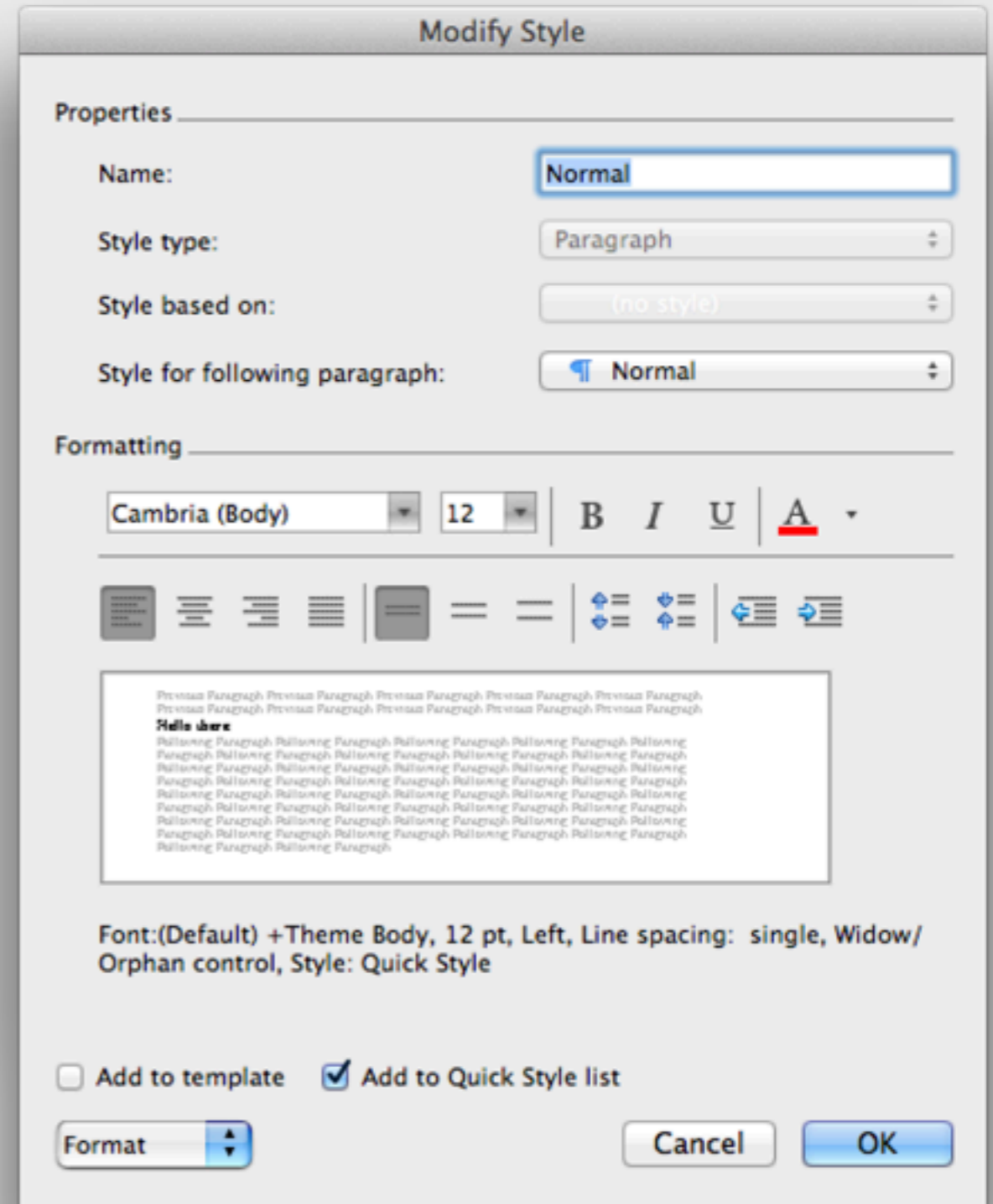
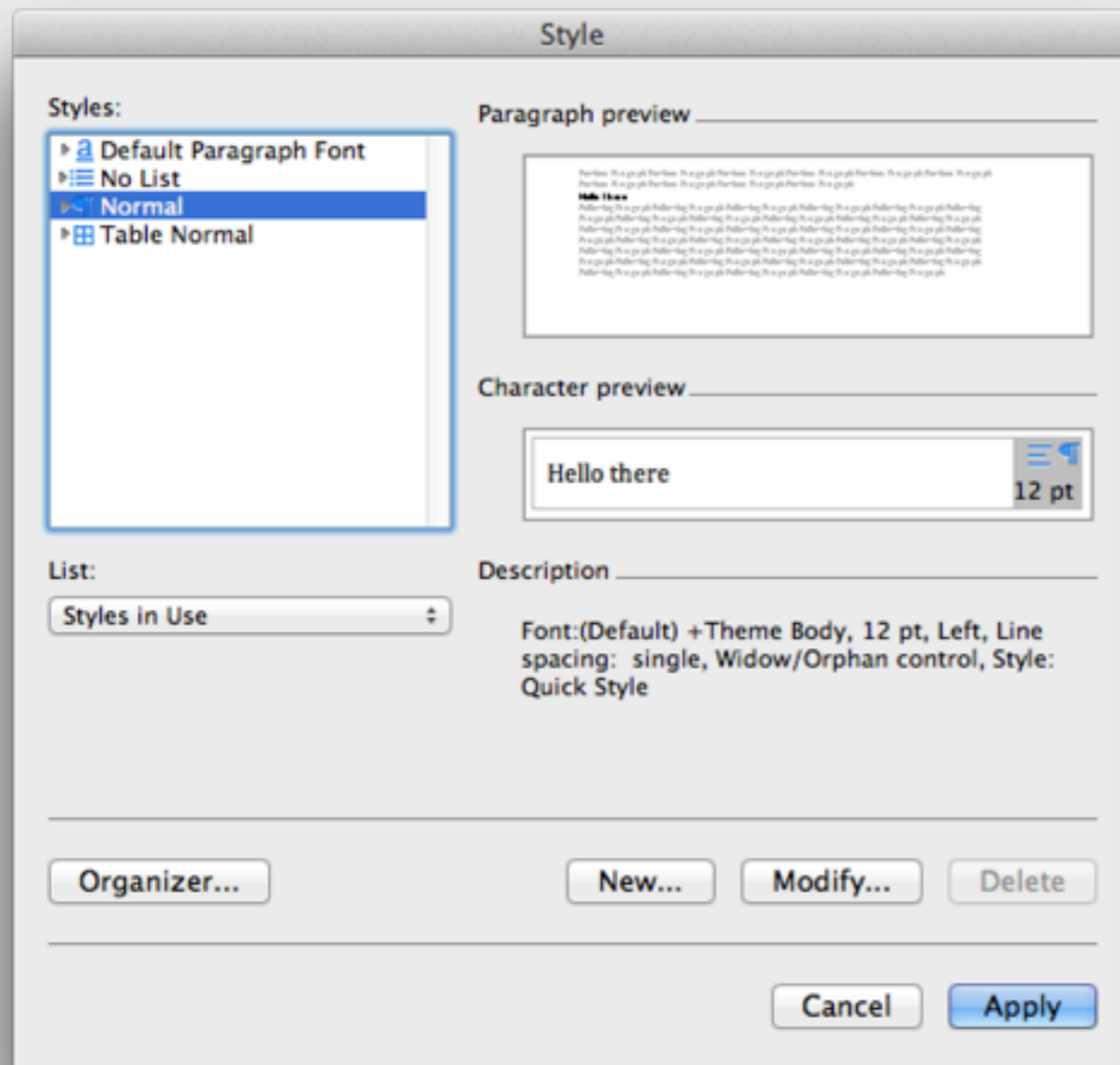
eg, partial styles

some apps are just cliches

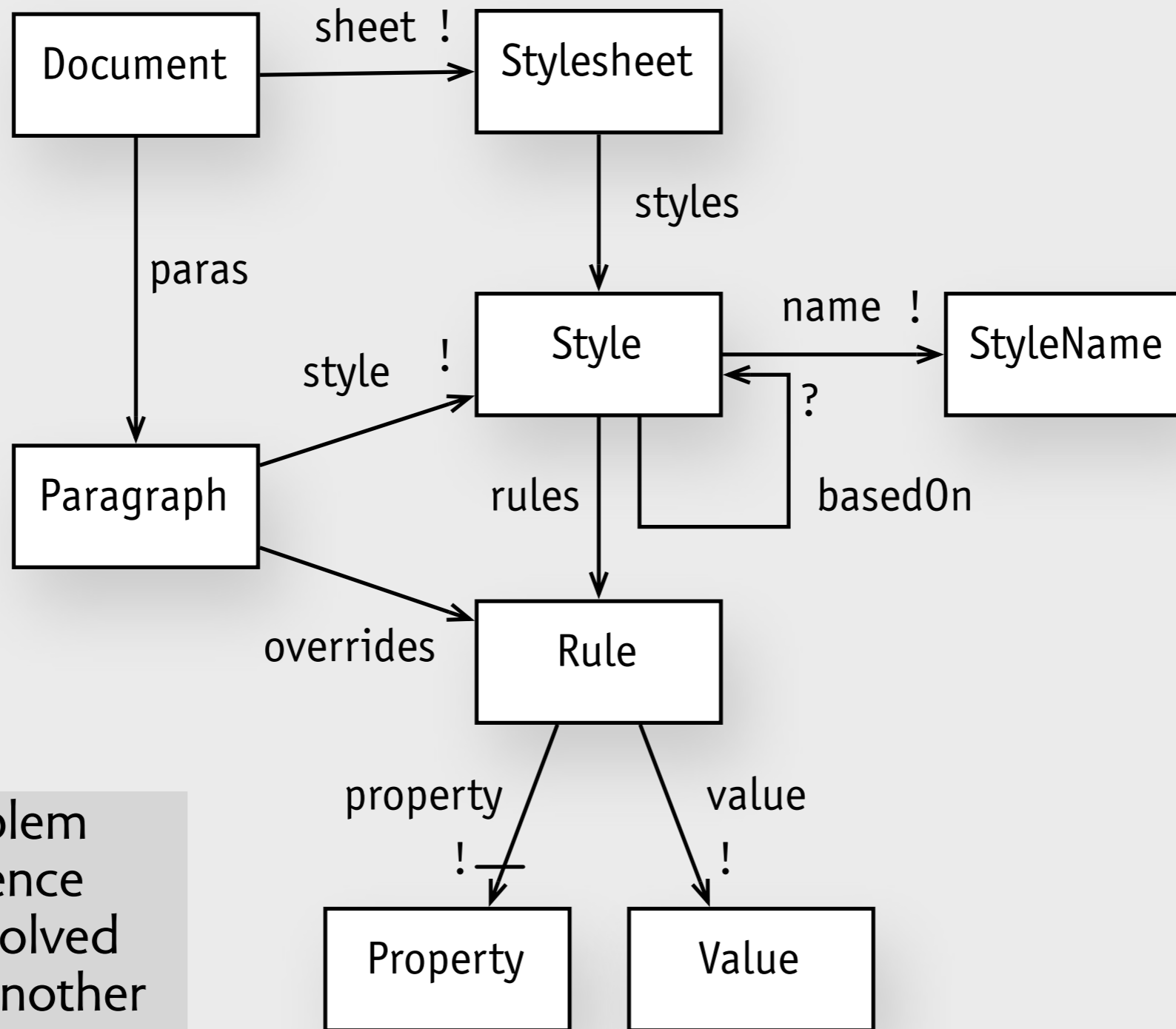
collection of idiomatic concepts

social app = {profile, post, friend, notify}

example word styles

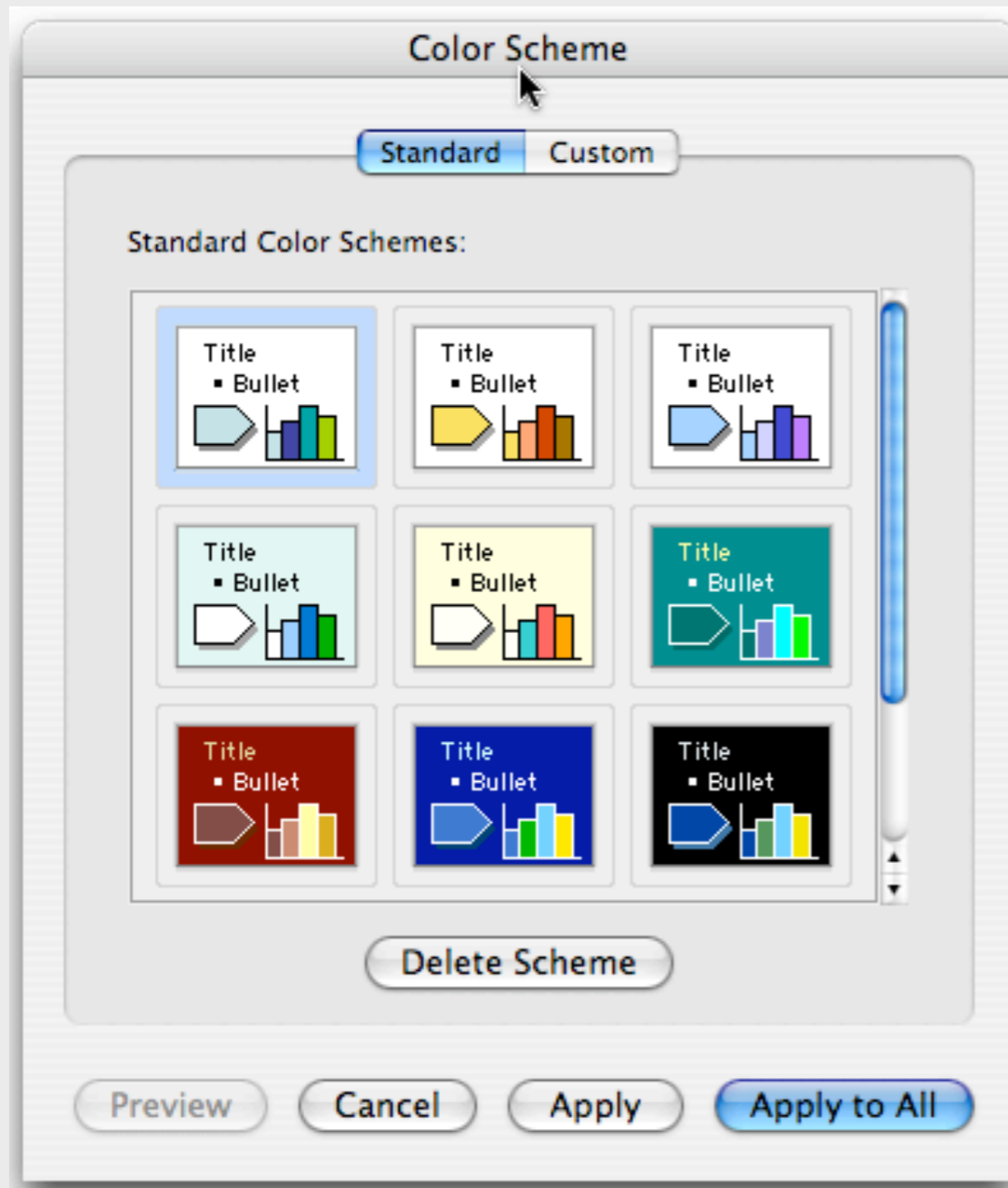


concept model word styles

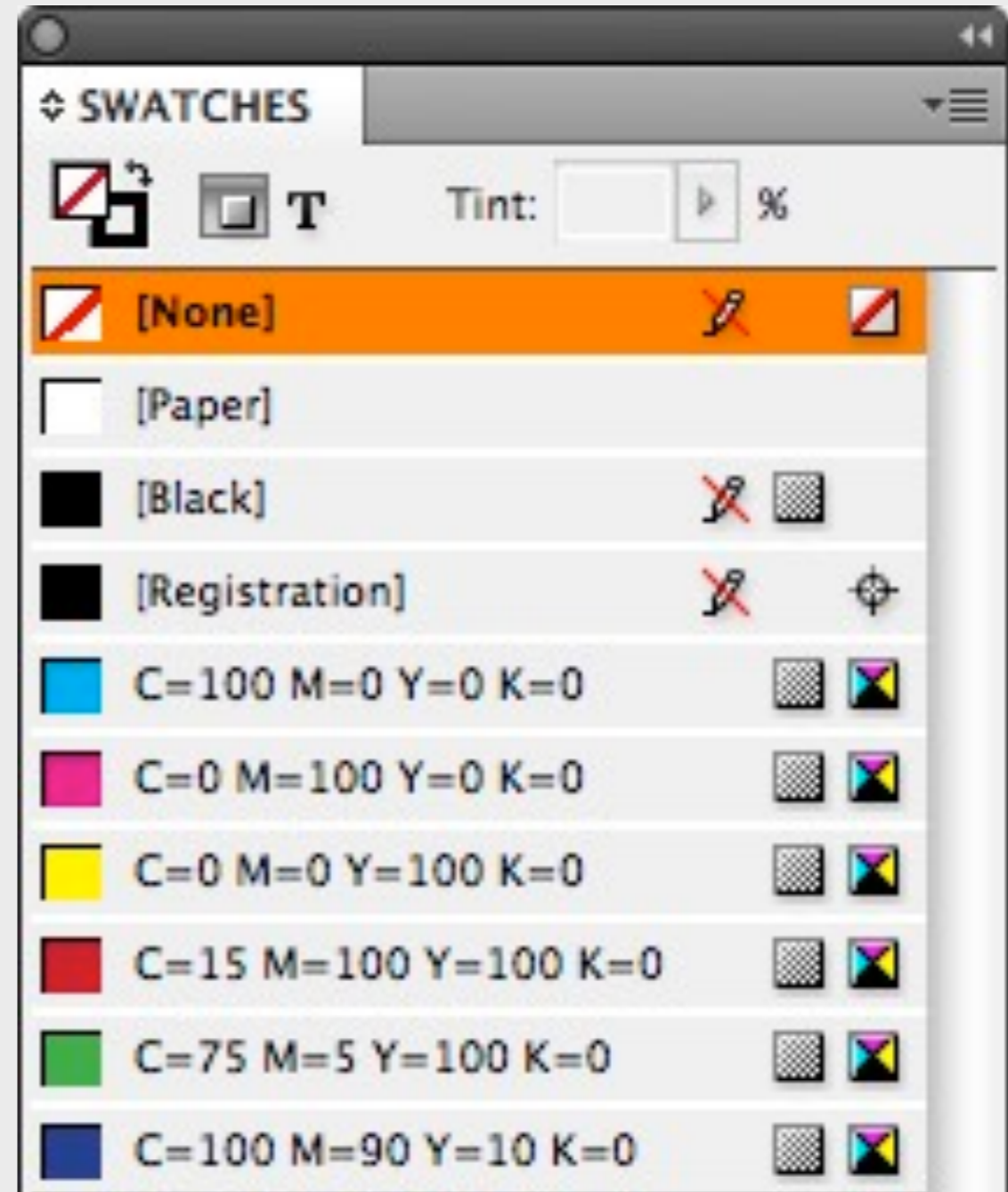


There is no problem
in computer science
that cannot be solved
by introducing another
level of indirection.
David Wheeler

other instantiations of style idiom

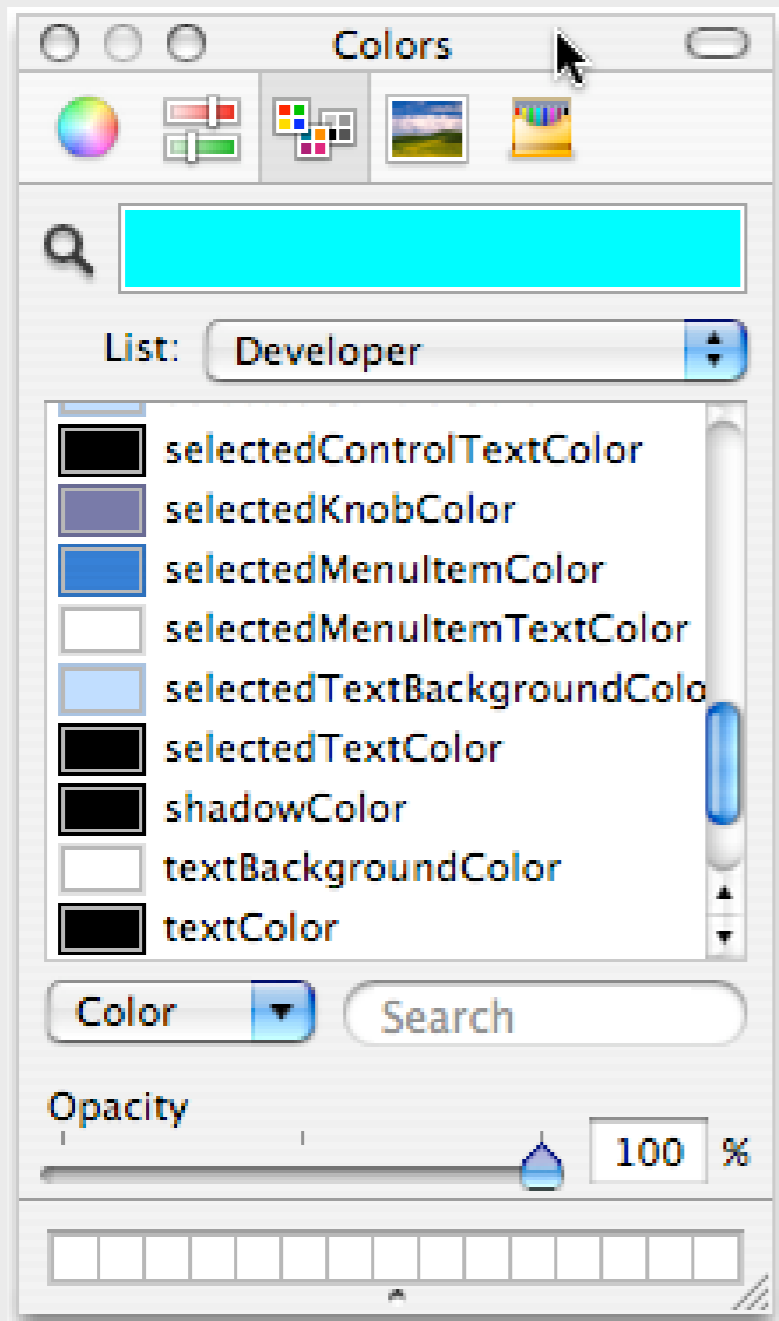


Powerpoint schemes

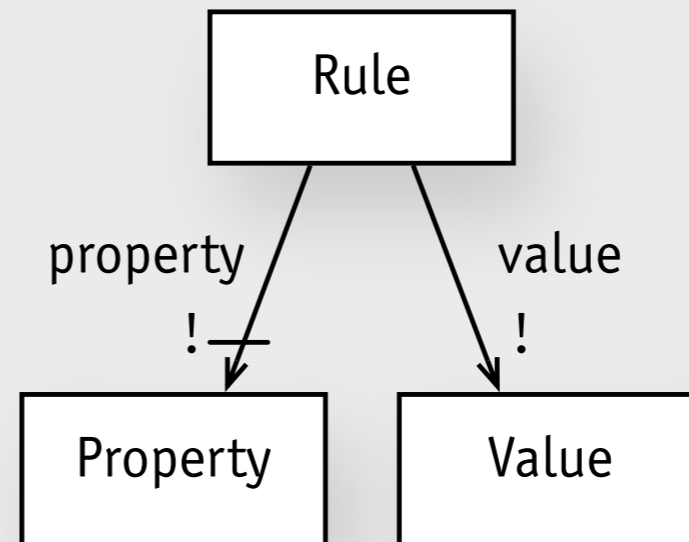


Indesign swatches

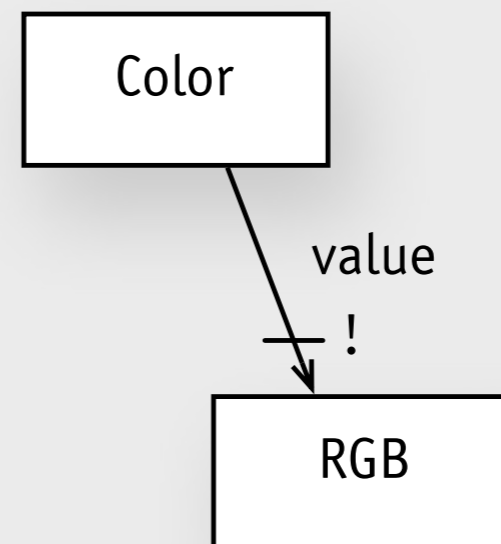
non-instantiations of style idiom



Apple color picker

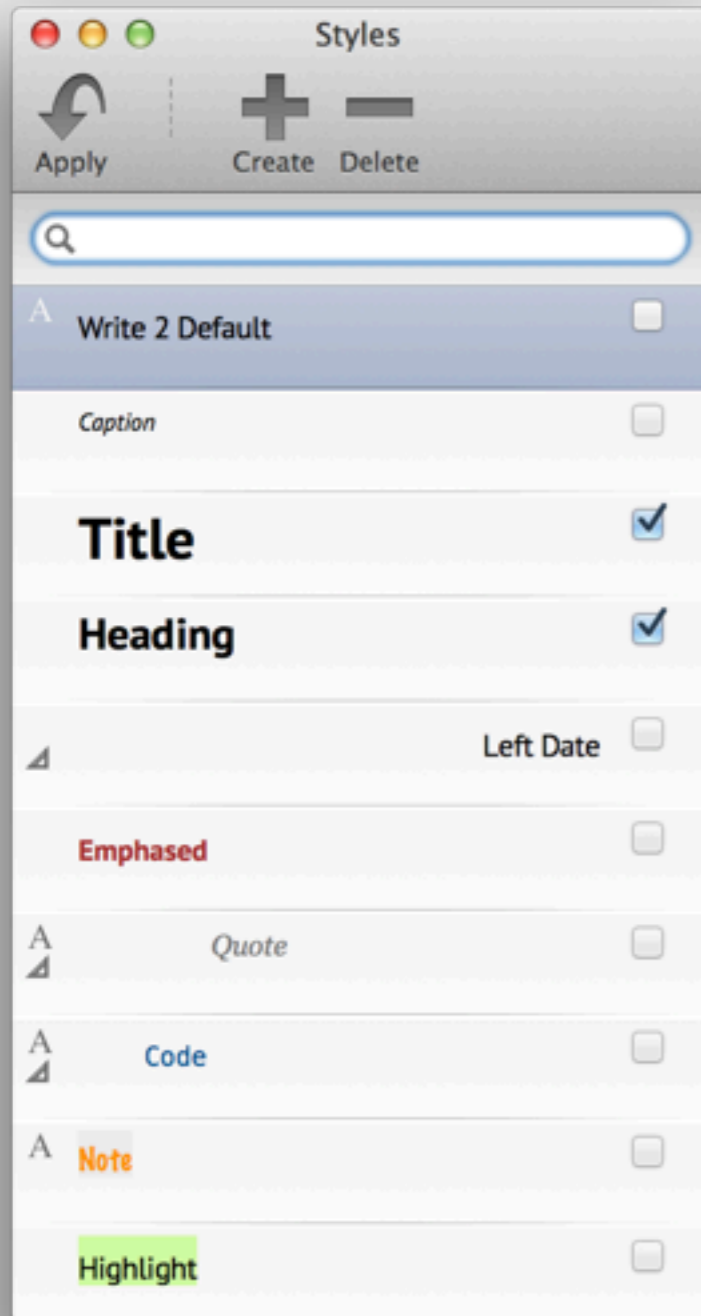


style concept:
value is *mutable*

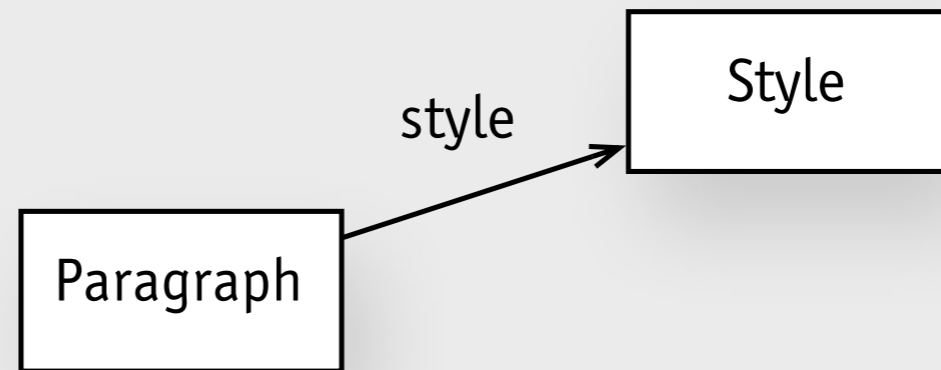


Apple color picker
value is *immutable*

non-instantiations of style idiom



Write 2 text editor

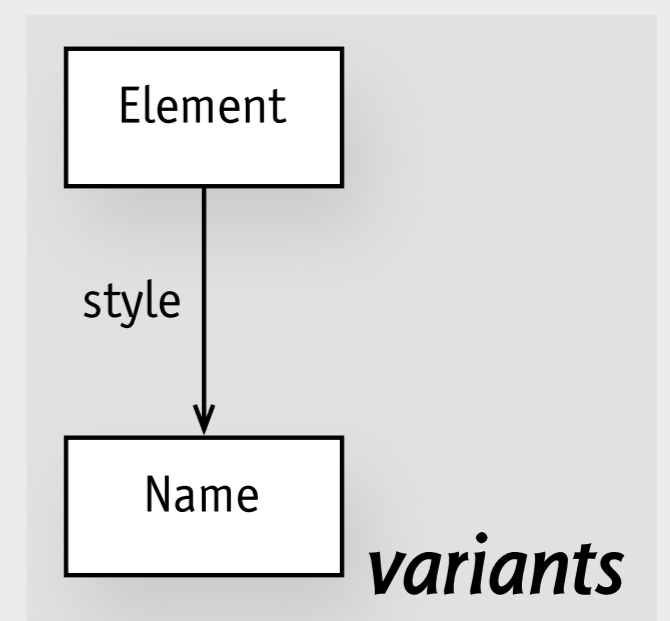
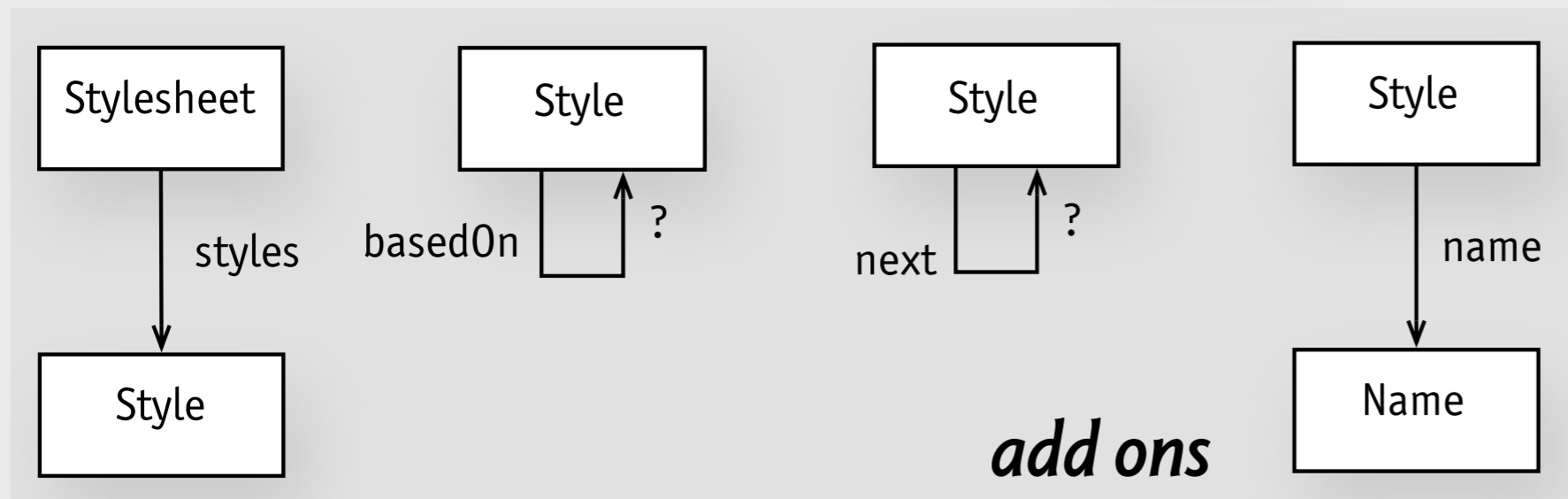
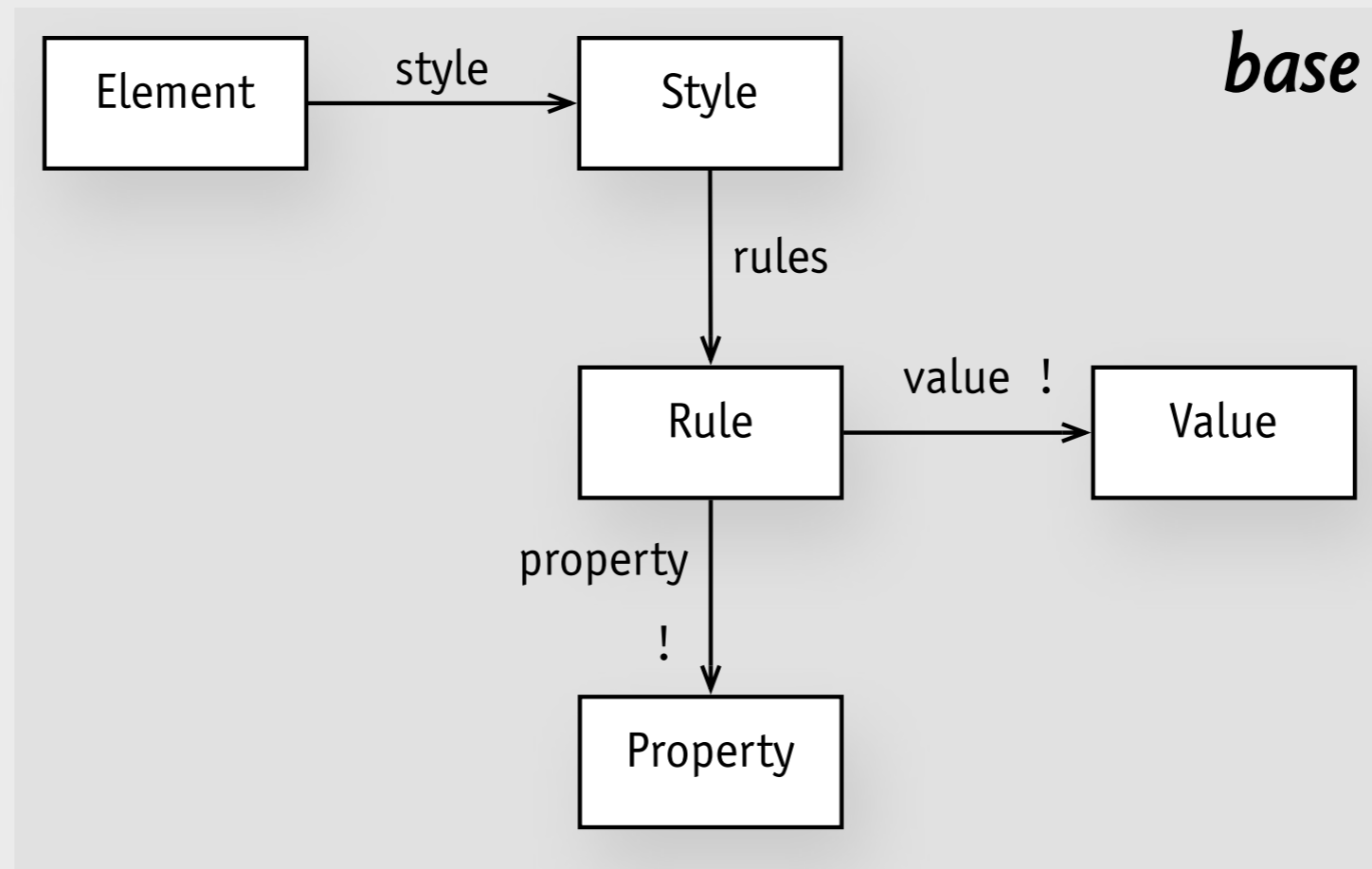


style concept:
paragraphs *related* to styles



Write 2 (and TextEdit)
no relation: style just for
formatting command

concept idiom style



Purpose: make it easy to maintain consistent format across set of elements

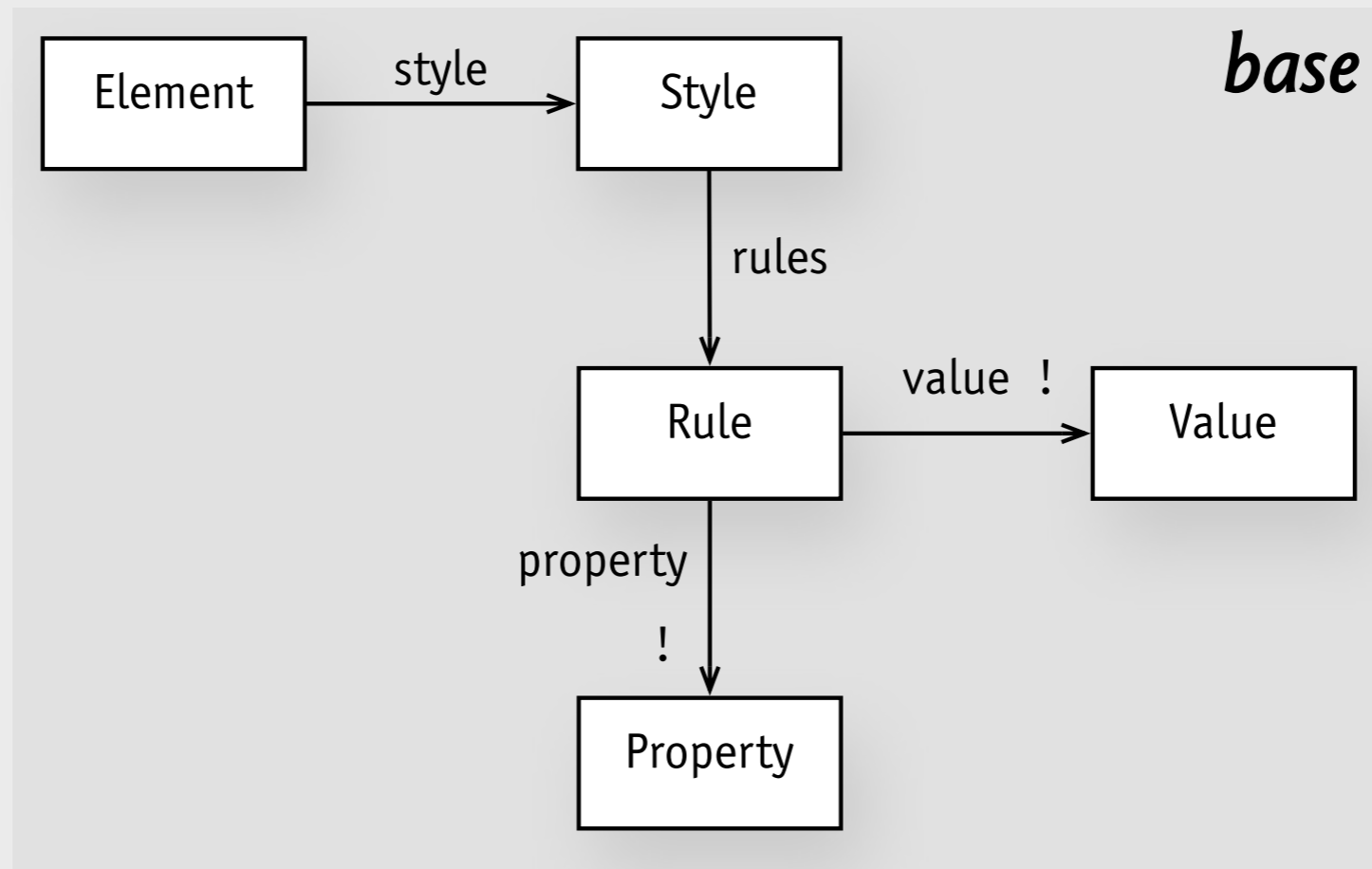
idiom parts

part	example
name	Style
purpose	make it easy to maintain consistent format across set of elements
sample uses	Text formatting in word processors/layout apps (Word, Indesign, Pages, etc); rules in CSS; color themes in Powerpoint.
model	<i>base, add-ons, variants</i>
actions	update style from element, reapply style to element,...
related to	StyleBuffer, Stencil, Master
issues	optional rules problem

idiom catalog (so far)

<i>instantiate</i>	<i>organize</i>	<i>relate</i>	<i>resource</i>	<i>save</i>	<i>communicate</i>	<i>personalize</i>
stylesheet	selection	friend	access token	history	message	account
master	folder	clique	notification	buffer	posting	karma
stencil	group	invitation	reservation	cursor		OOBA
style buffer	label		REST	sync		rating
	layer		cart	export		status
	stack		subscription			
	alias		purchase order			
	preset		RMA			
	cursor		coupon			
	filter		catalog			
	property					
	metadata					

idiom subtlety style



does this invariant hold?

all s: Style, p: Property | some r: s.rules | r.prop = p

creating a style microsoft word

A plain paragraph.

A paragraph in Futura.

Modify Style

Properties

Name:

Style type: Paragraph

Style based on: Normal

Style for following paragraph: Funky

Formatting

Futura 12 B I U A

Font:(Default) Futura, Based on: Normal

Add to template Add to Quick Style list Automatically update

Format Cancel OK

Modify Style

Properties

Name:

Style type: Paragraph

Style based on: Normal

Style for following paragraph: Funky

Formatting

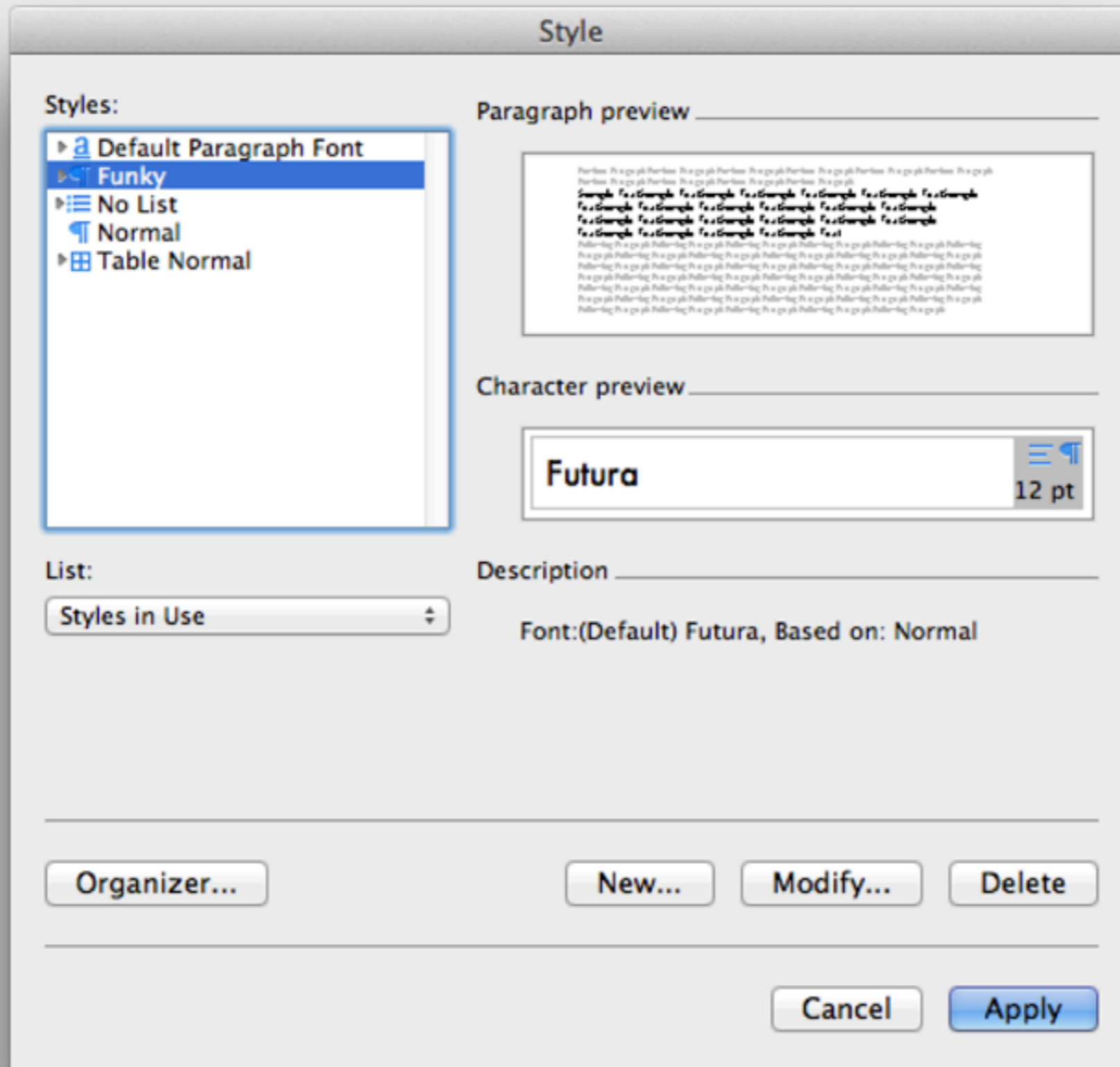
Futura 12 B I U A

Font:(Default) Futura, Based on: Normal

Add to template Add to Quick Style list Automatically update

Format Cancel OK

does the style set to 12pt or not?



applying a style microsoft word

A plain paragraph.

A paragraph in Futura.

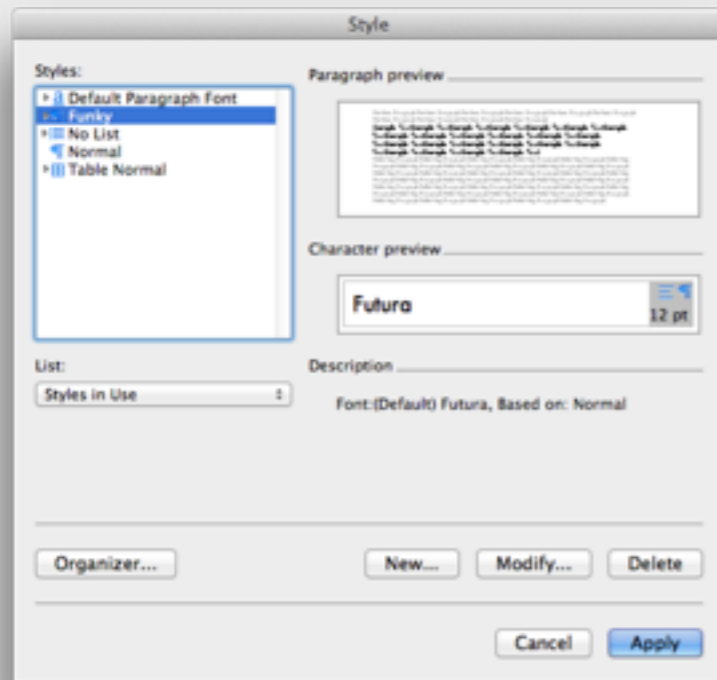
A paragraph in a larger size.

A plain paragraph.

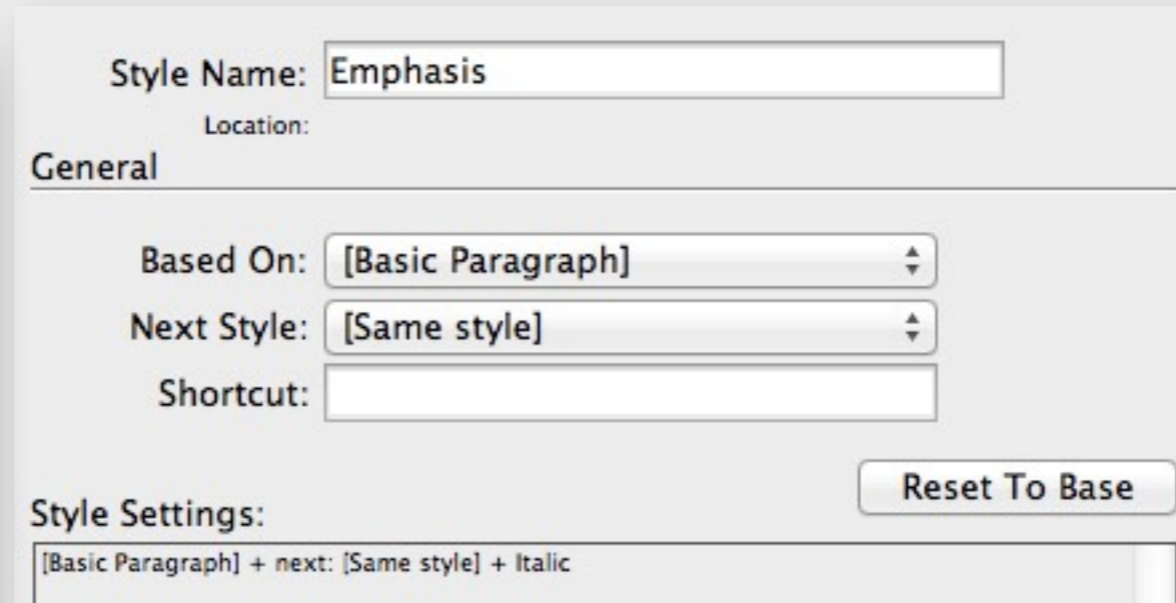
A paragraph in Futura.

A paragraph in a larger size.

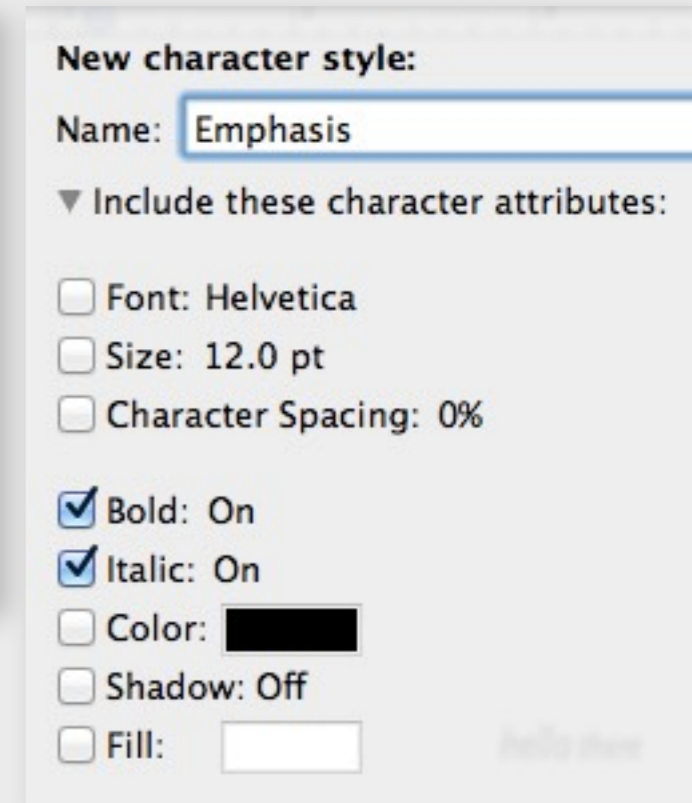
idiom misfit style



Word: property sometimes absent until entered; remove only in Visual Basic!



Indesign: property absent until entered; then remove only with "Reset to Base" (since 2007)



Pages: aaah! properties are optional

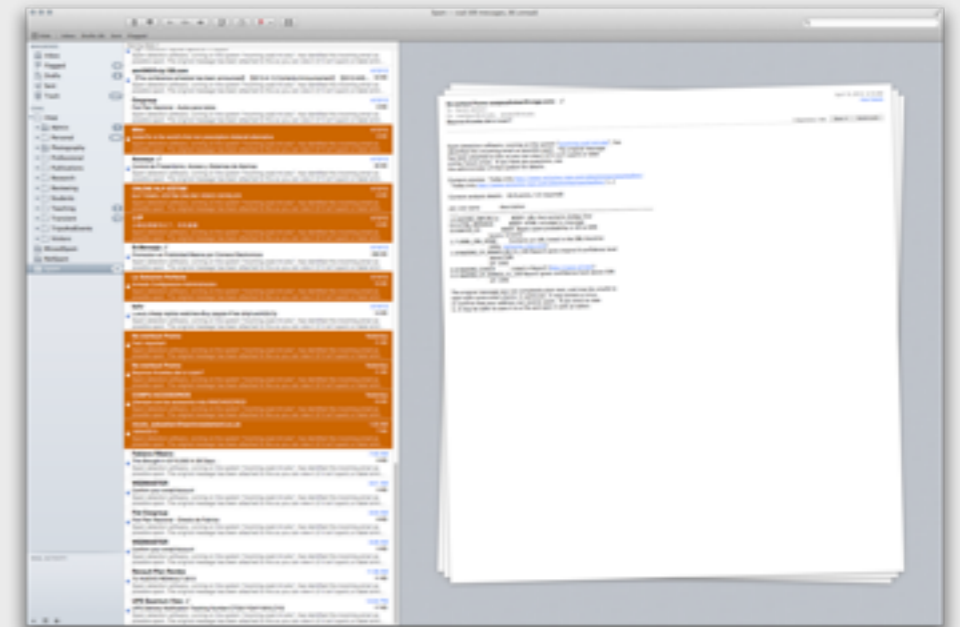
concept idiom selection



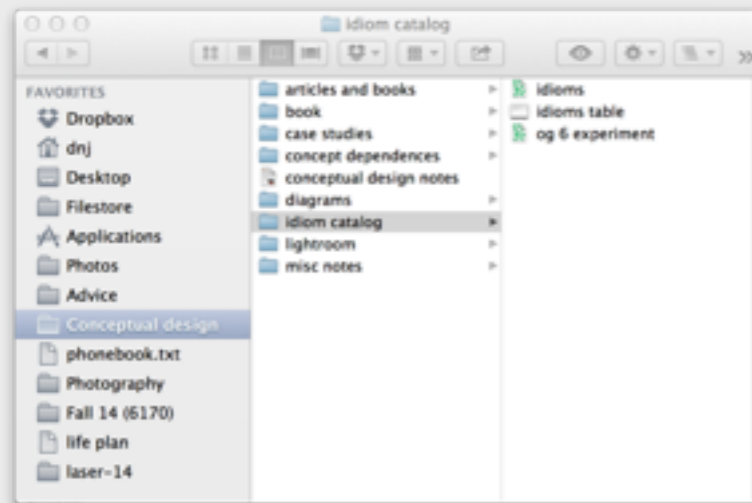
slides in Keynote



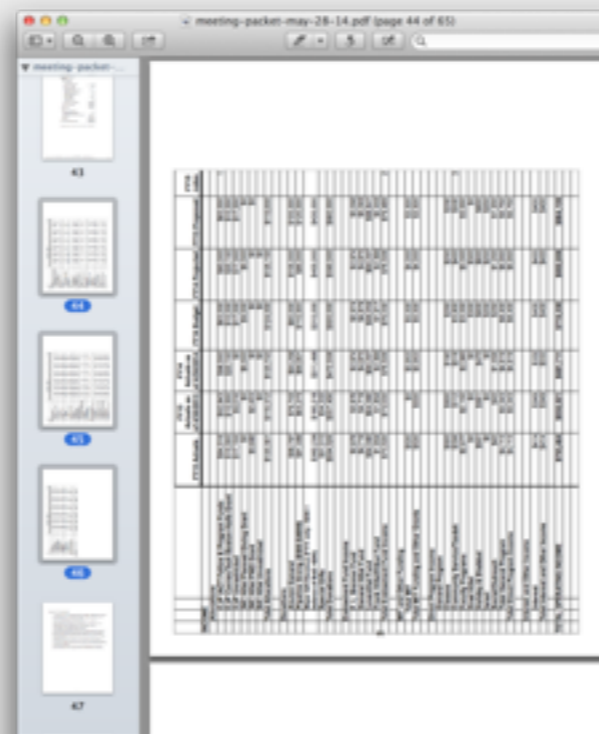
photos in Adobe Lightroom



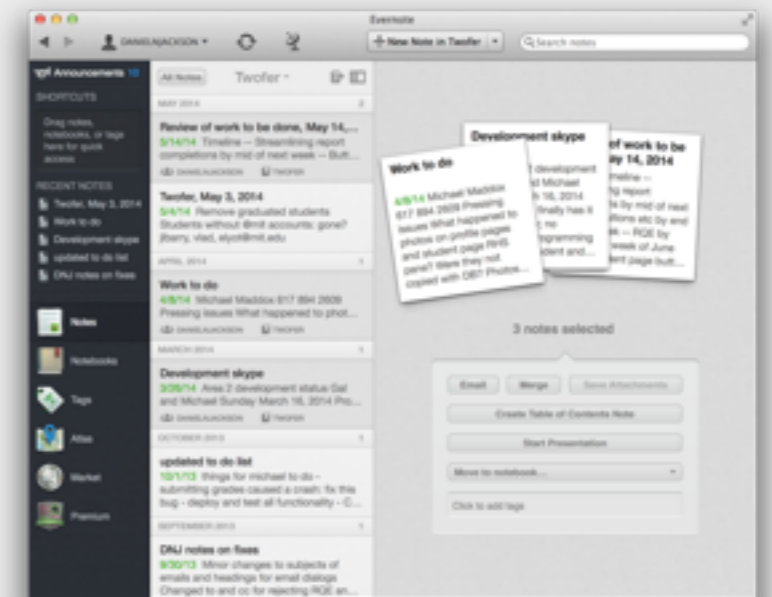
messages in Apple Mail



objects in OS X Finder

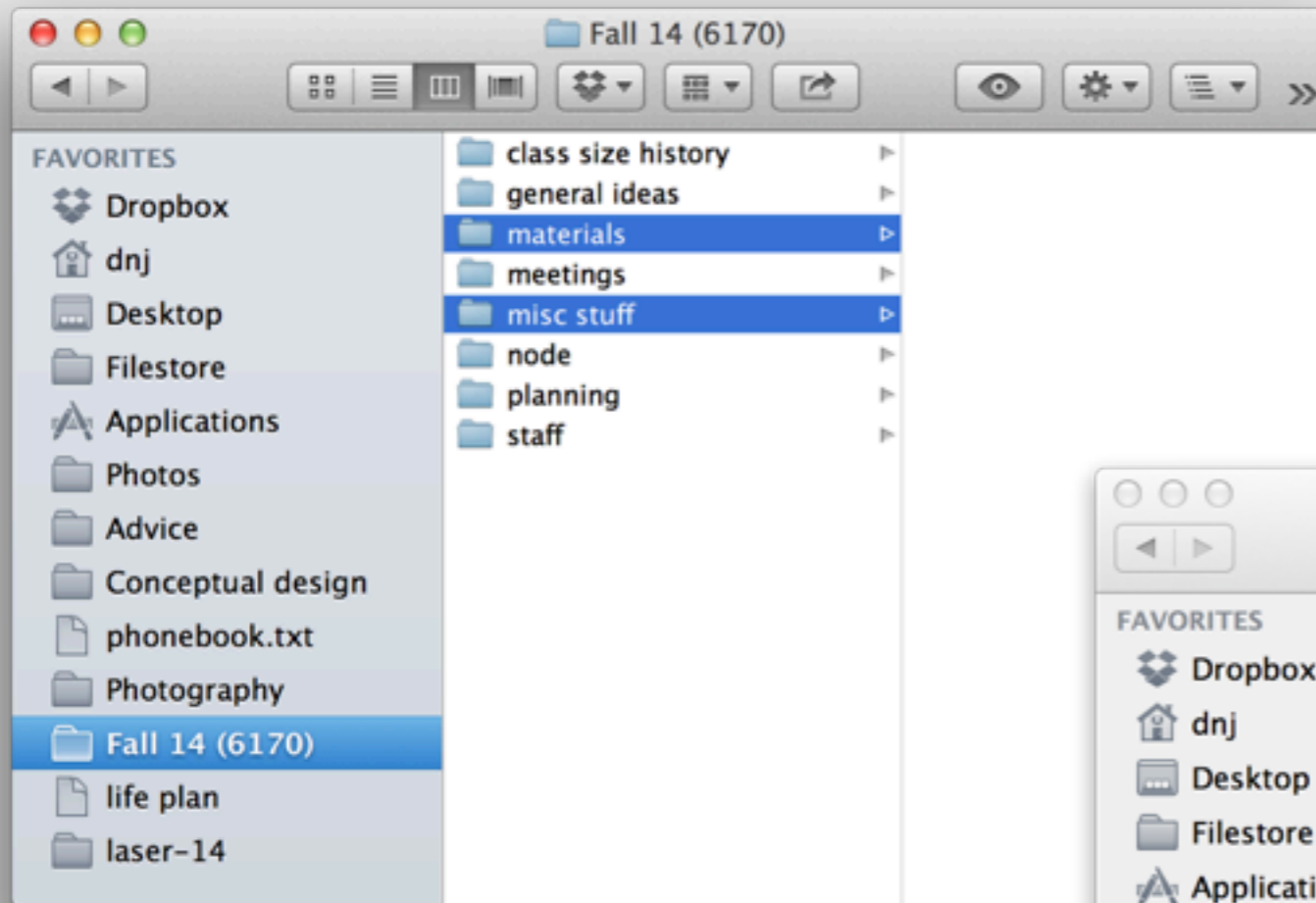


thumbnails in Preview

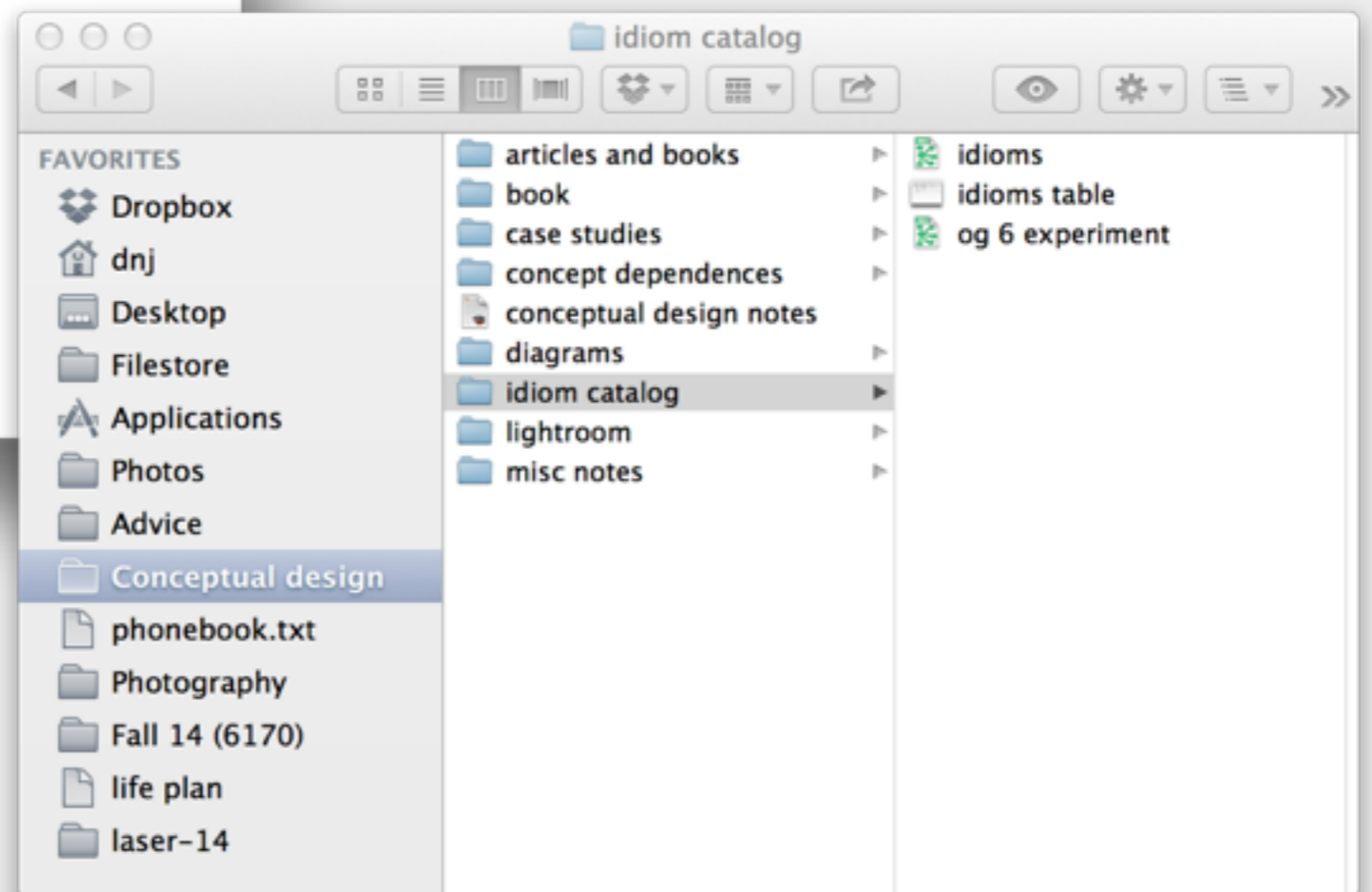


notes in Evernote

subtlety selection scope

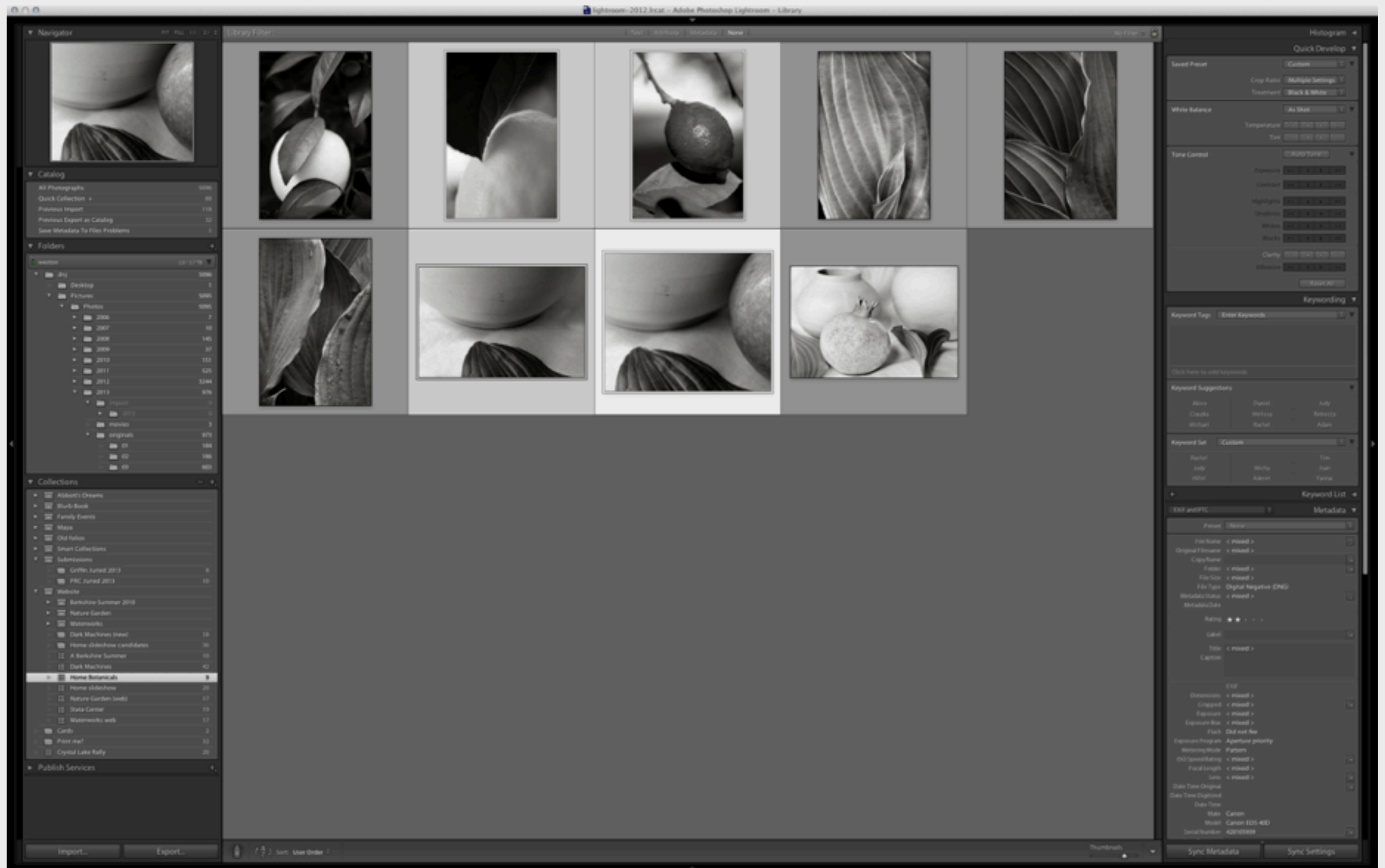


subset of selection in scope



subset of selection out of scope

subtlety active element



Adobe Lightroom: brightest thumbnail is the “active photo”

subtlety continuous selection

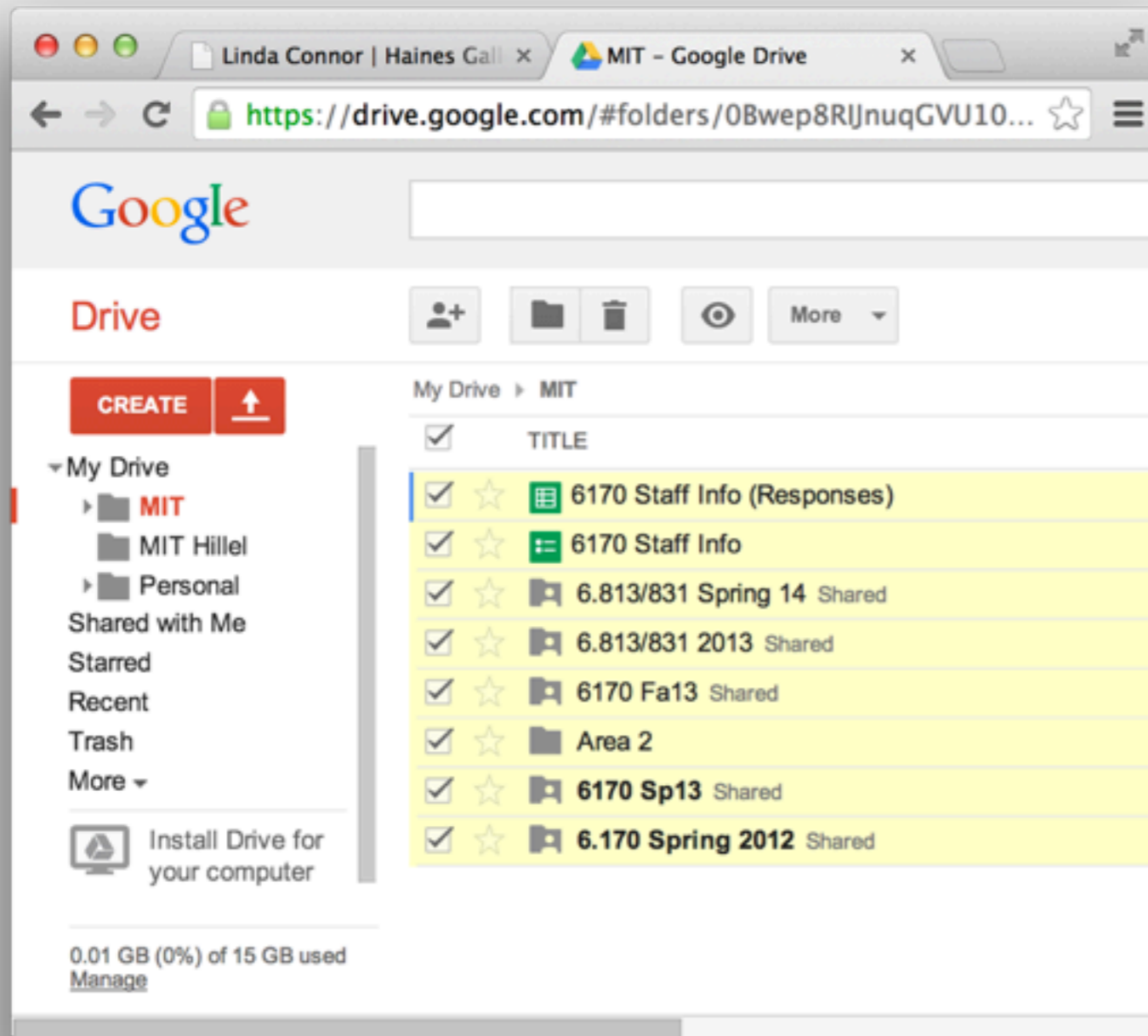


Photoshop: outline shown with "marching ants"

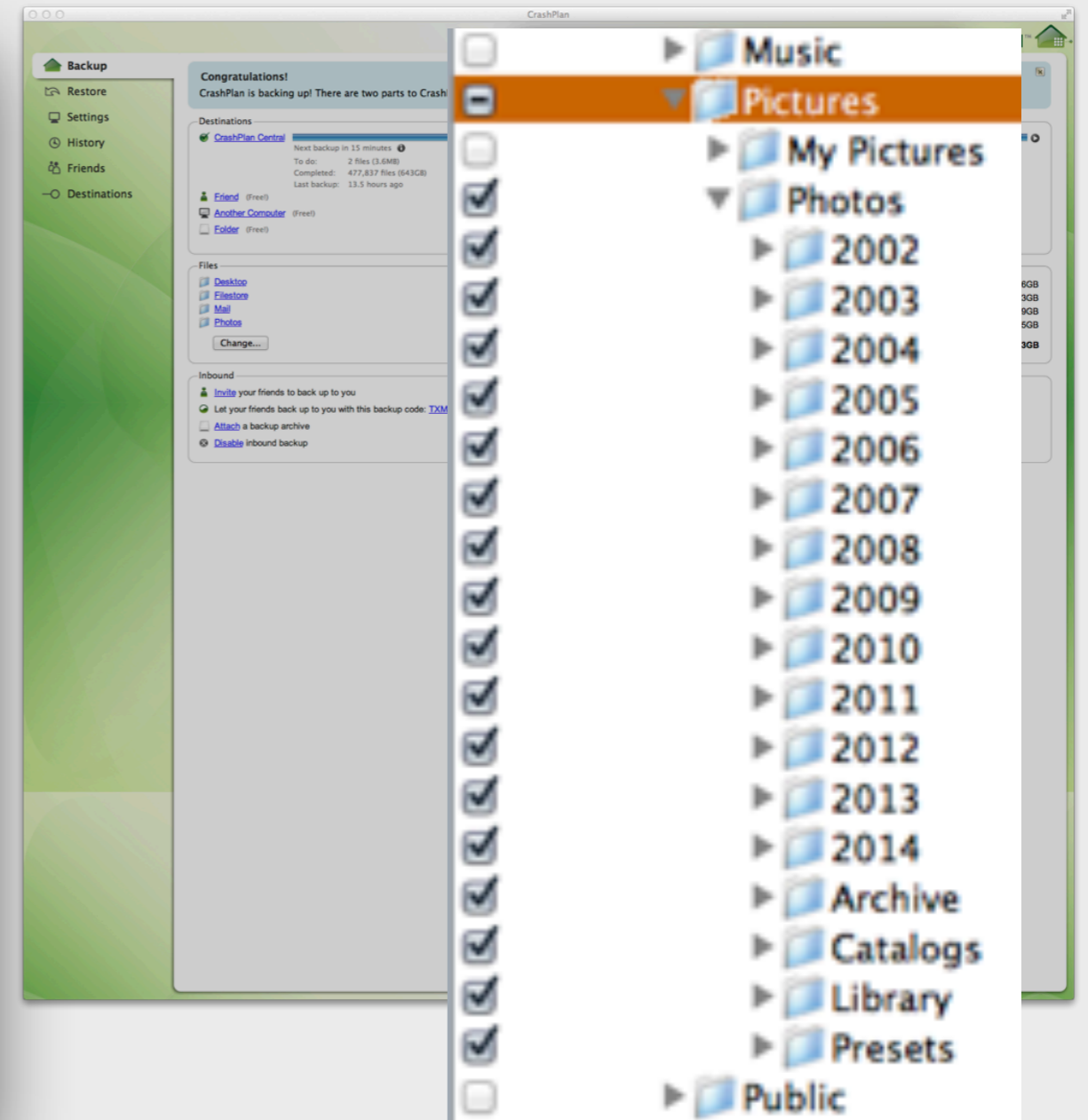


Photoshop: selection shown in Quick Mask mode

subtlety folder selection

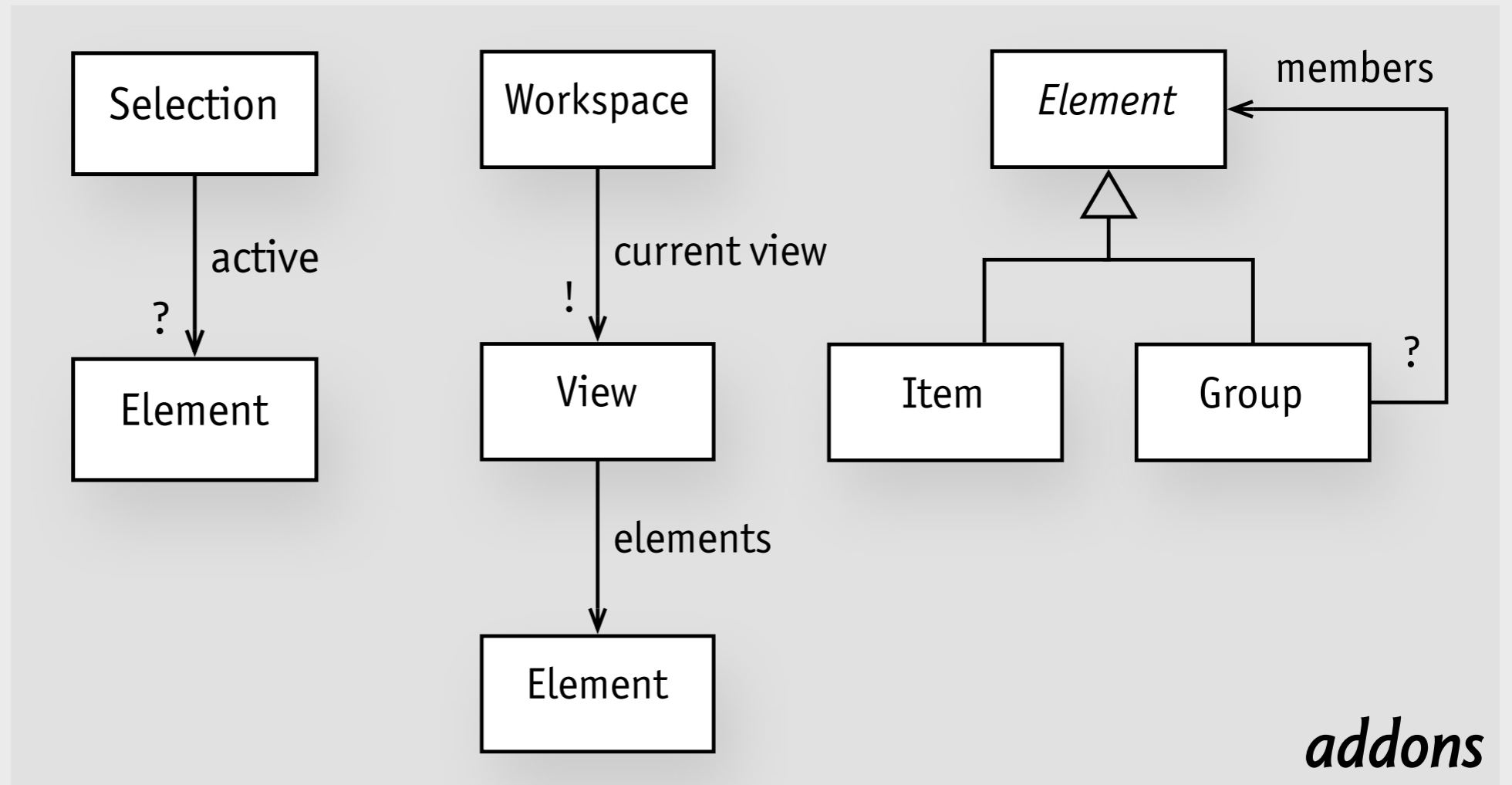
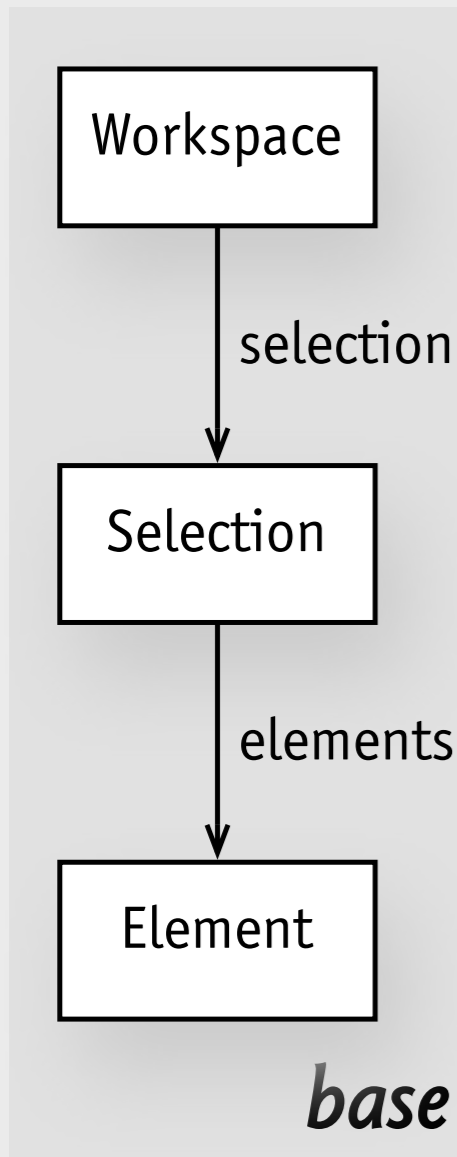


Google Drive: selecting folder = selecting children



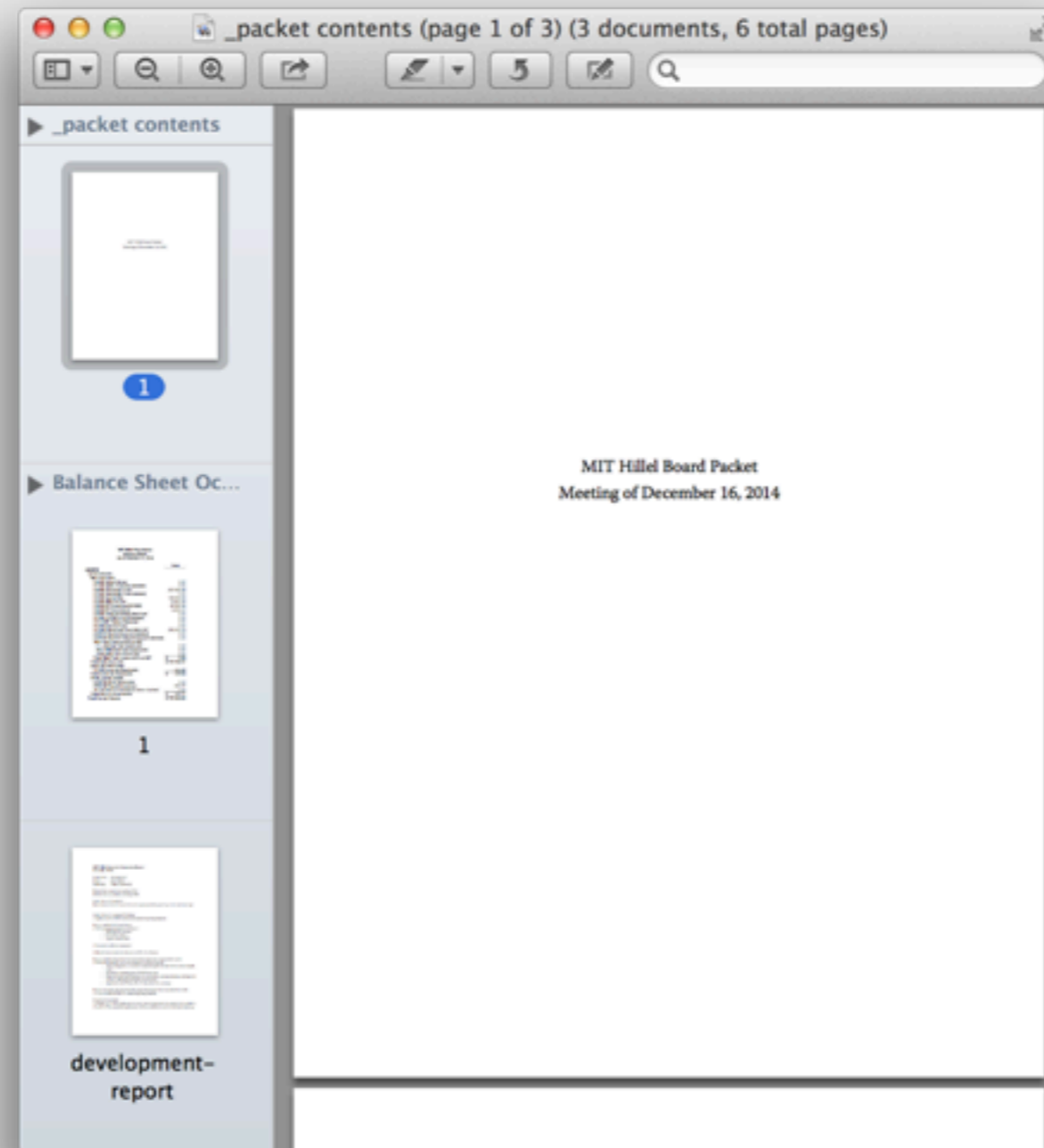
CrashPlan: selecting folder = selecting all future children

concept idiom selection



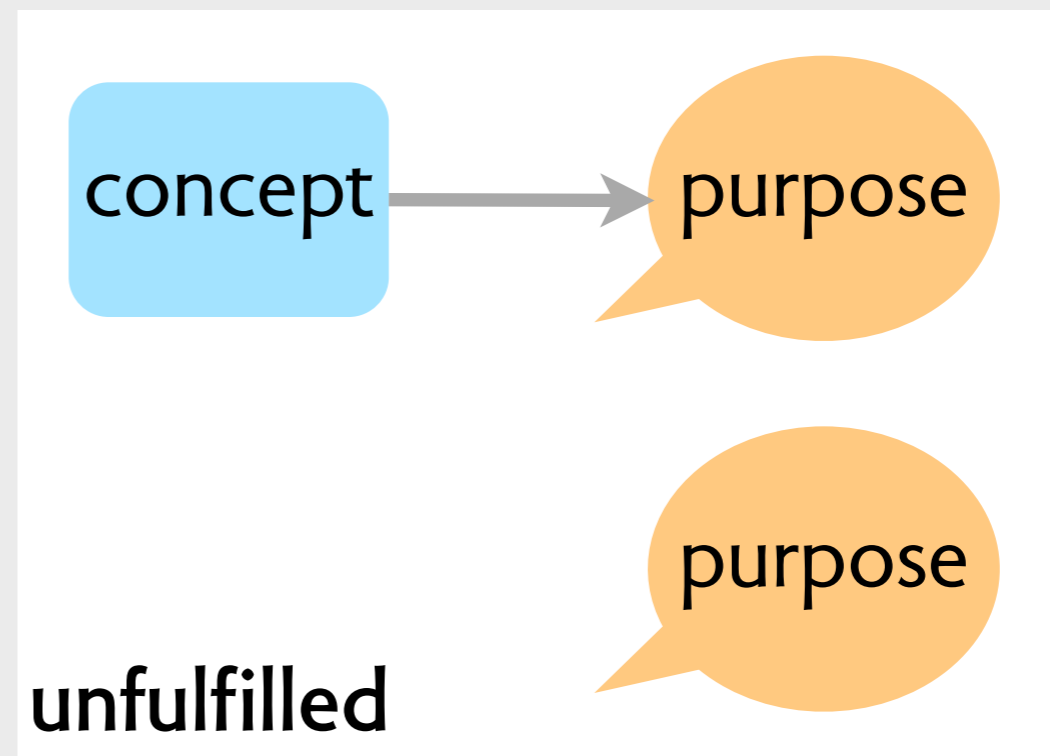
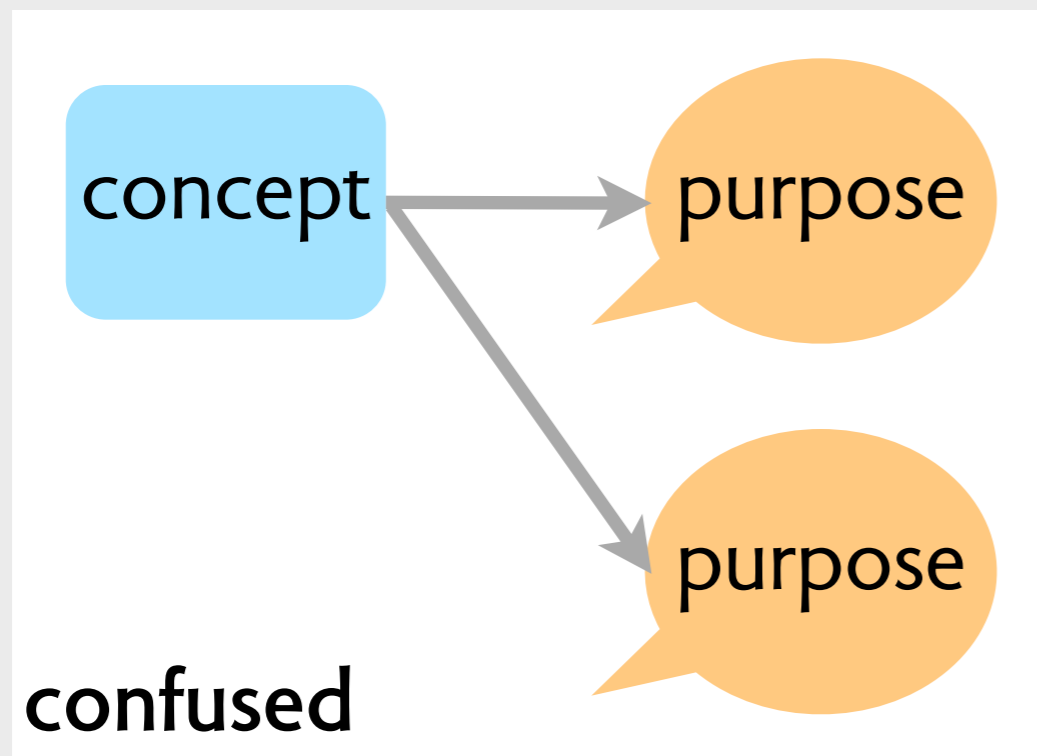
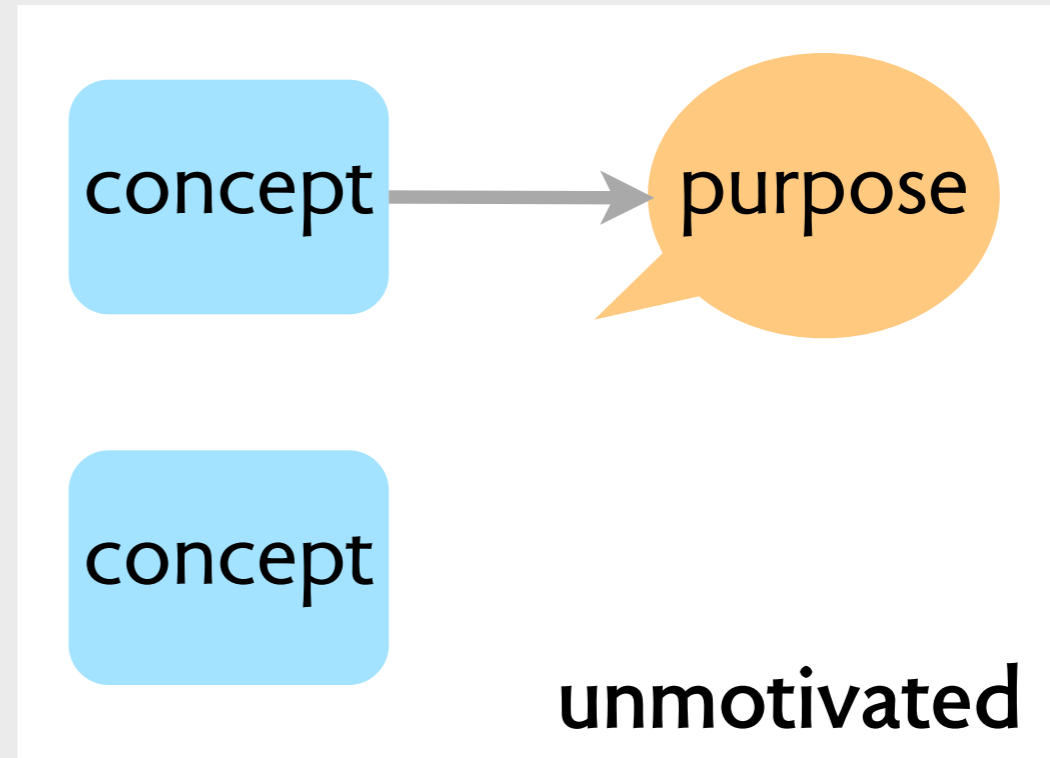
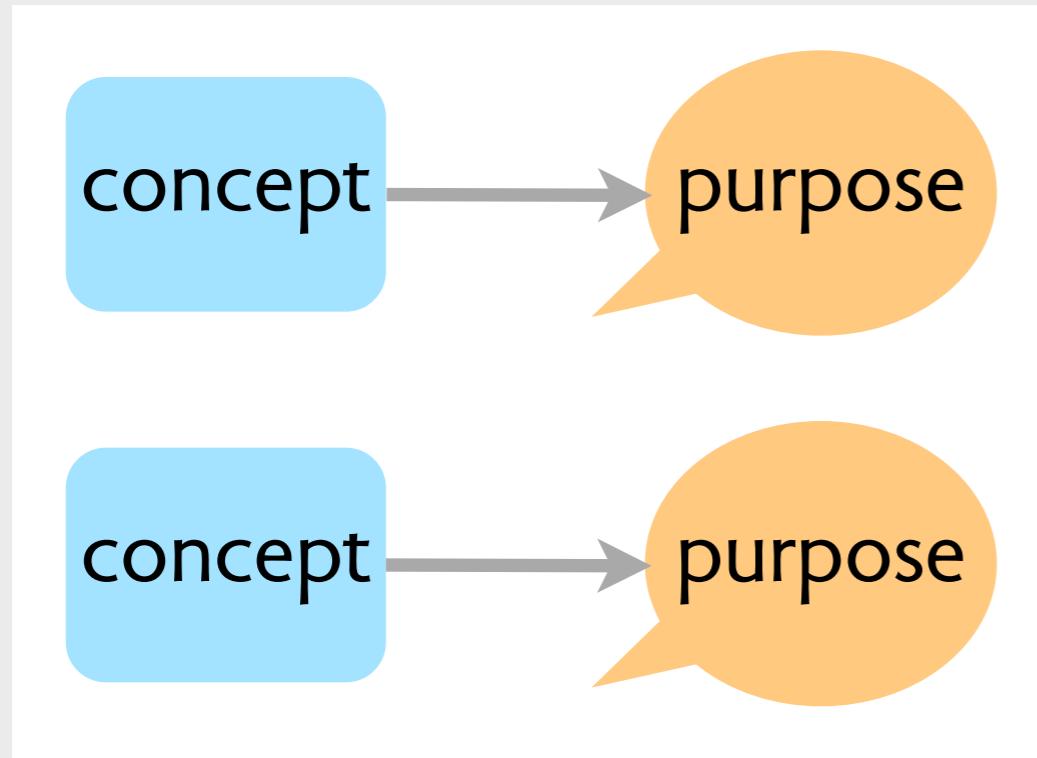
Purposes: apply action in aggregate to many items at once

missing concept
no concept fulfilling implied purpose



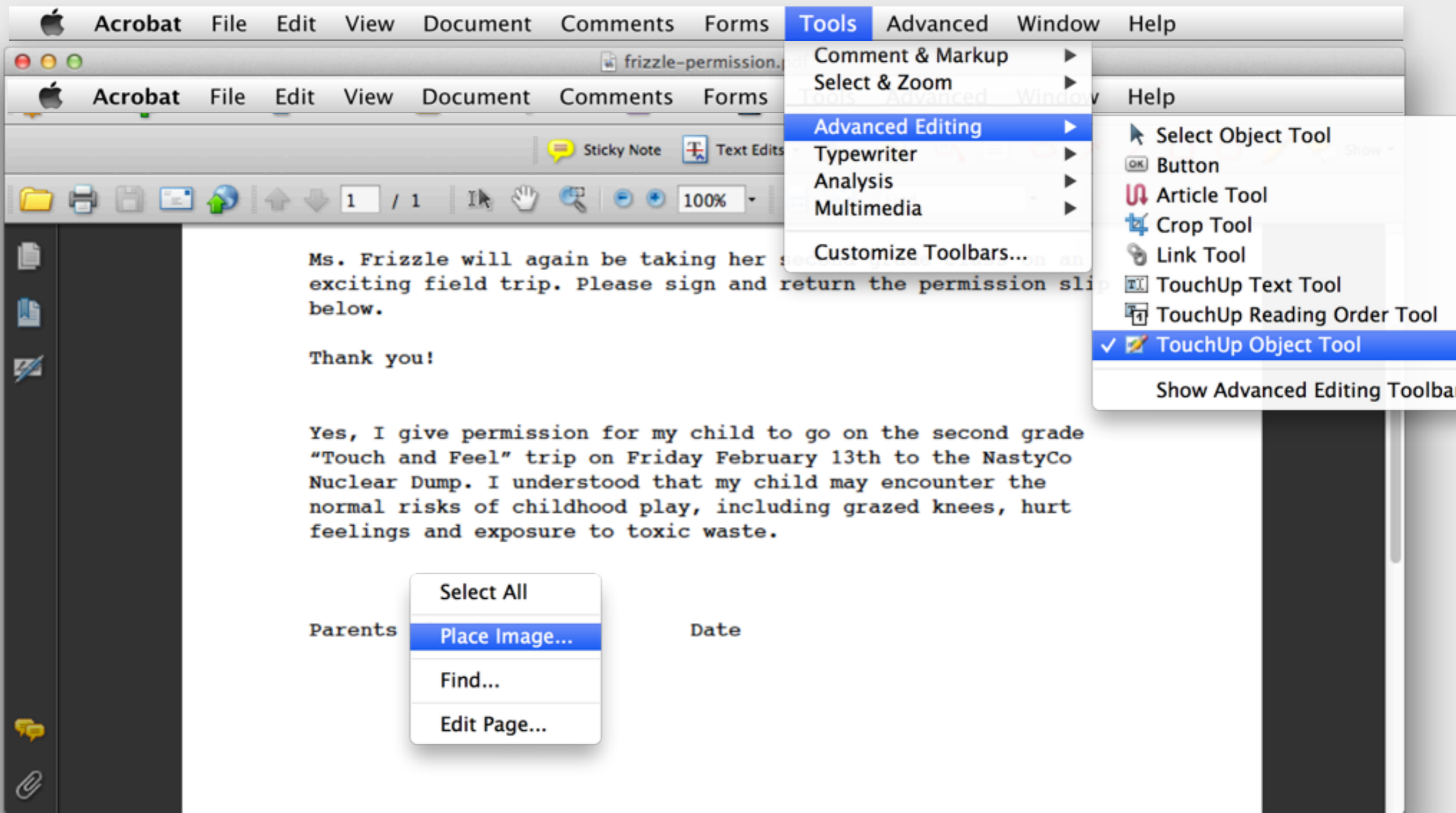
Apple Preview: assemble PDF from multiple files but can't save

concept-purpose map



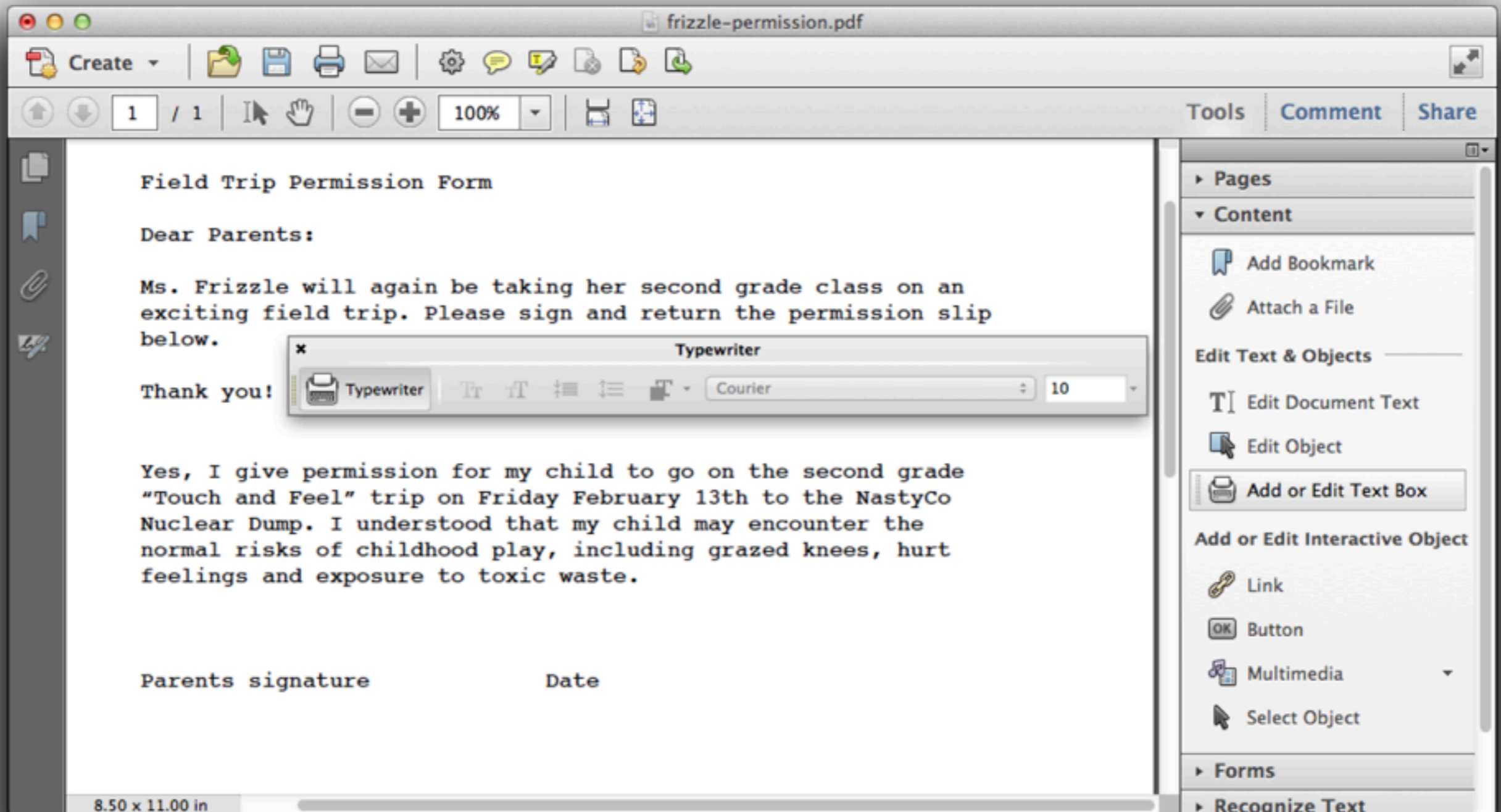
a happy end
to a sad story?

acrobat (version 09)



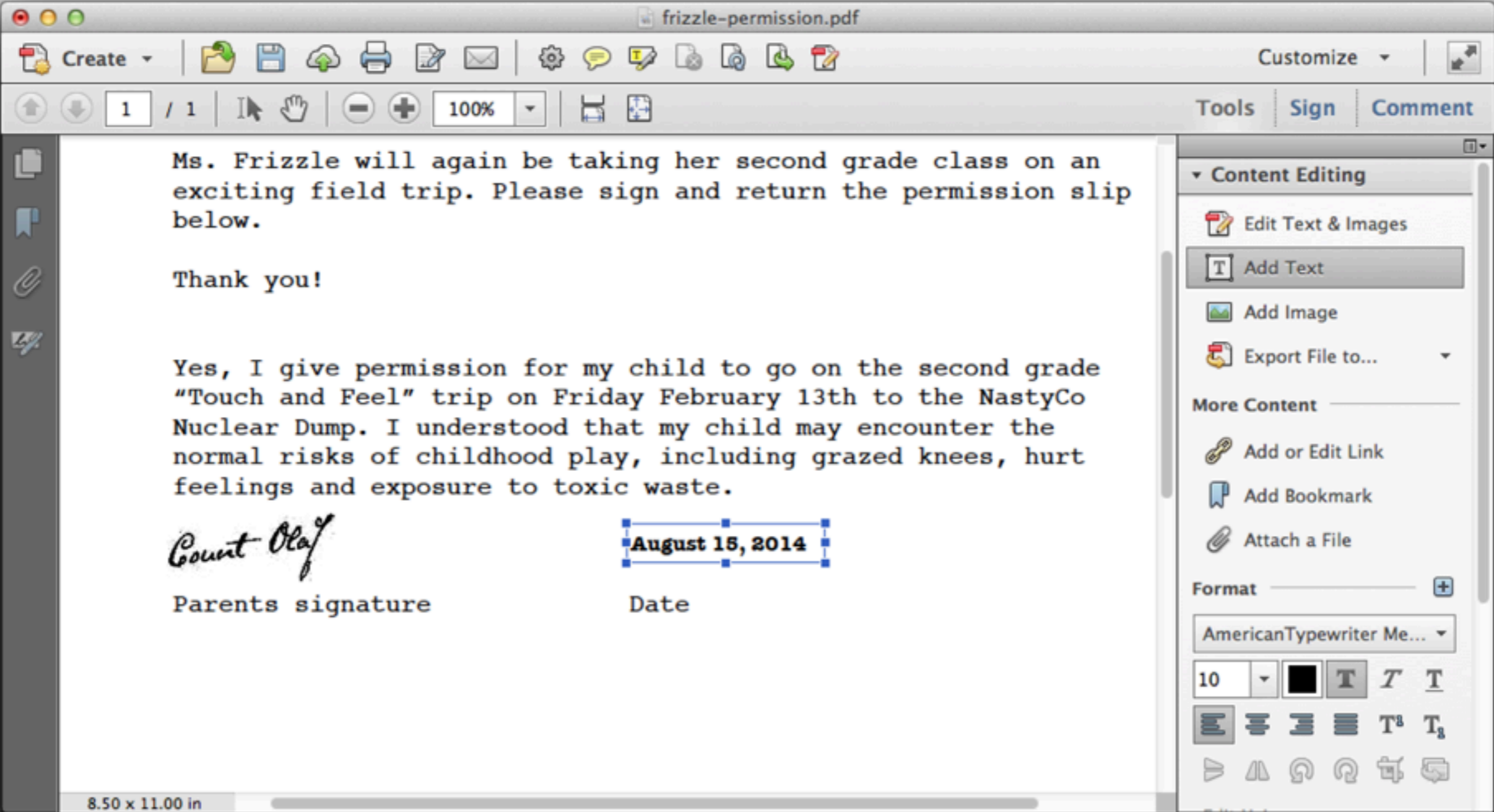
hard to discern any compelling concepts

acrobat (version 10)



user interface has been reworked but still *text*, *text box*, *object*

acrobat (version 11)



conceptual reworking: now just *text*

related work

other approaches

“design thinking”

eg: David Kelley, Bill Moggridge

empathy for user, incrementality, brainstorming

ethos of simplicity

eg: Dijkstra, Hoare, Perlis

good design comes from minimality & generality

user interface heuristics

eg: Don Norman, Jakob Nielsen, Bruce Tognazzini

undoability, visibility of state, anticipation

influences

Nam Suh: axiomatic design

Aristotle: telos

Christopher Alexander: misfits

Michael Polanyi: the operational principle

David Parnas: dependencies as feature subsets

Martin Fowler: analysis patterns

Michael Jackson: preformal design

reflections

on software as math

The choice of functional specifications — and of notation to write them down in— may be far from obvious, but their rôle is clear: it is to act as a logical firewall between two different concerns. The one is the “**pleasantness problem**”, i.e., the question of whether an engine meeting the specification is the engine we would like to have; the other one is the “**correctness problem**”, i.e., the question of how to design an engine meeting the specification.

Dijkstra, EWD952

A very large program is, by necessity, composed of a large number, say N , individual components and the fact that N is large implies that the individual program components must be produced with a very high confidence level. If for each individual component the probability of being right equals p , for the whole program the probability P of being right will satisfy

$$P \leq p^N$$

and if we want P to differ appreciably from zero, p must be very close to one, because N is so large.

Dijkstra, EWD303

Fortunately, the problem of program correctness has turned out to be far less serious than predicted.

Hoare, 1996

sources of reliability

interfaces

concepts

localization

bad concepts
confuse user *and* developer
and lead to unreliable code

limits of formalism

engineering science

mathematical models of behavior

engineering as application of science

but

physics cannot understand a clock

purposes cannot be formalized

essence of design is intent, not behavior