Apps in Motion:

bringing your apps to life

UC Berkeley I School 11.08.2012

Photo by Cary Whitt

Lecture Plan

- Types of app motion
- Why incorporate motion? *(And why are we discussing now?)*
- Rules of motion
- Mobile motion patterns
- Notable platform differences
- Prototyping motion

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Types of App Motion

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Types of App Motion

Transitions: visual feedback given to users as they move from one view to another, anywhere in the UI. Transitions are triggered by user action.

Animations: visual feedback confined to a local element within a view, but not always as a result of user action. Google's & Windows' lock screens inform the user how to unlock the device.

From Windows Phone Dev Center:

http://msdn.microsoft.com/en-us/library/windowsphone/develop/hh202871(v=vs.92).aspx

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Why incorporate motion?

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Why incorporate motion?

To orient the user (e.g., ‘‘where’’ things live; where things start & end, often with a ‘‘bounce’’ or rubberband’’)

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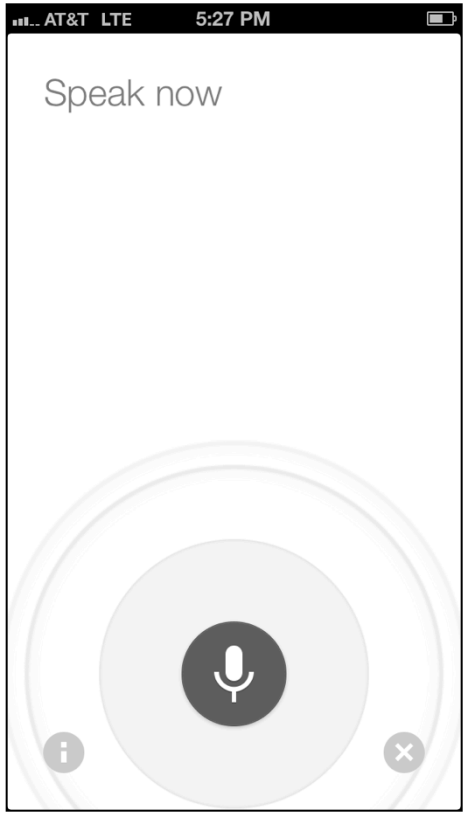
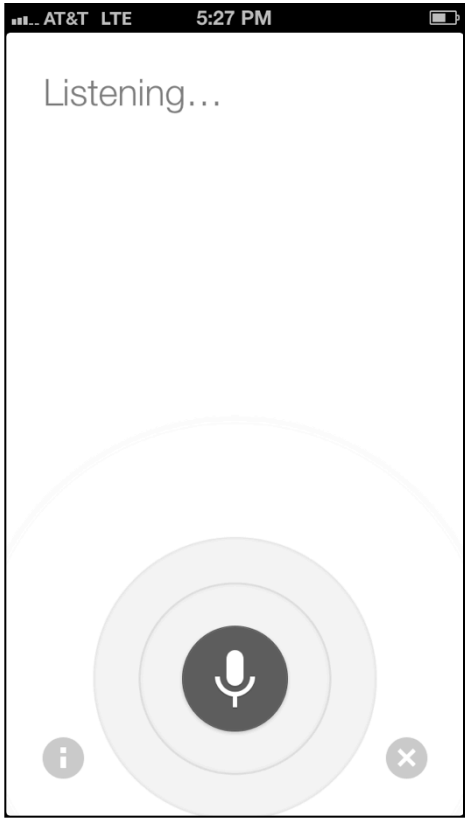
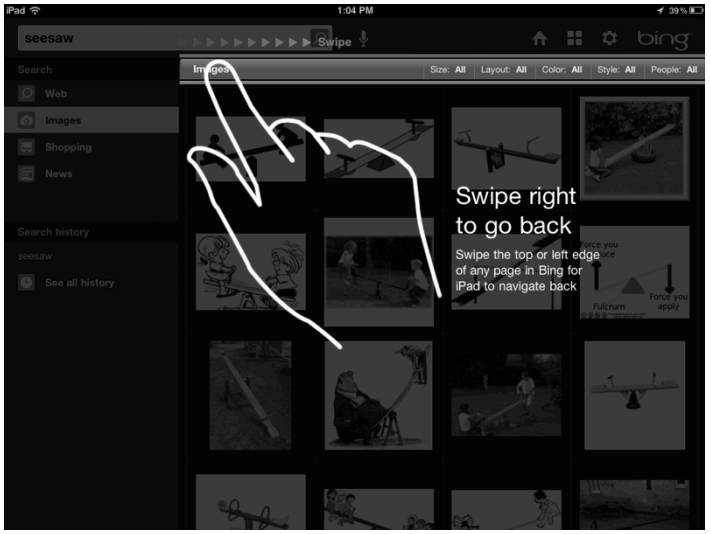
Why incorporate motion?

To explicitly teach user how to interact with your app (e.g., Google voice, Bing Search, Flipboard)







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Why incorporate motion?

To provide user with feedback on their actions (e.g., Delete on iOS Mail, shredder in Passbook)

http://www.youtube.com/watch?v=GOXGWO_j0i4

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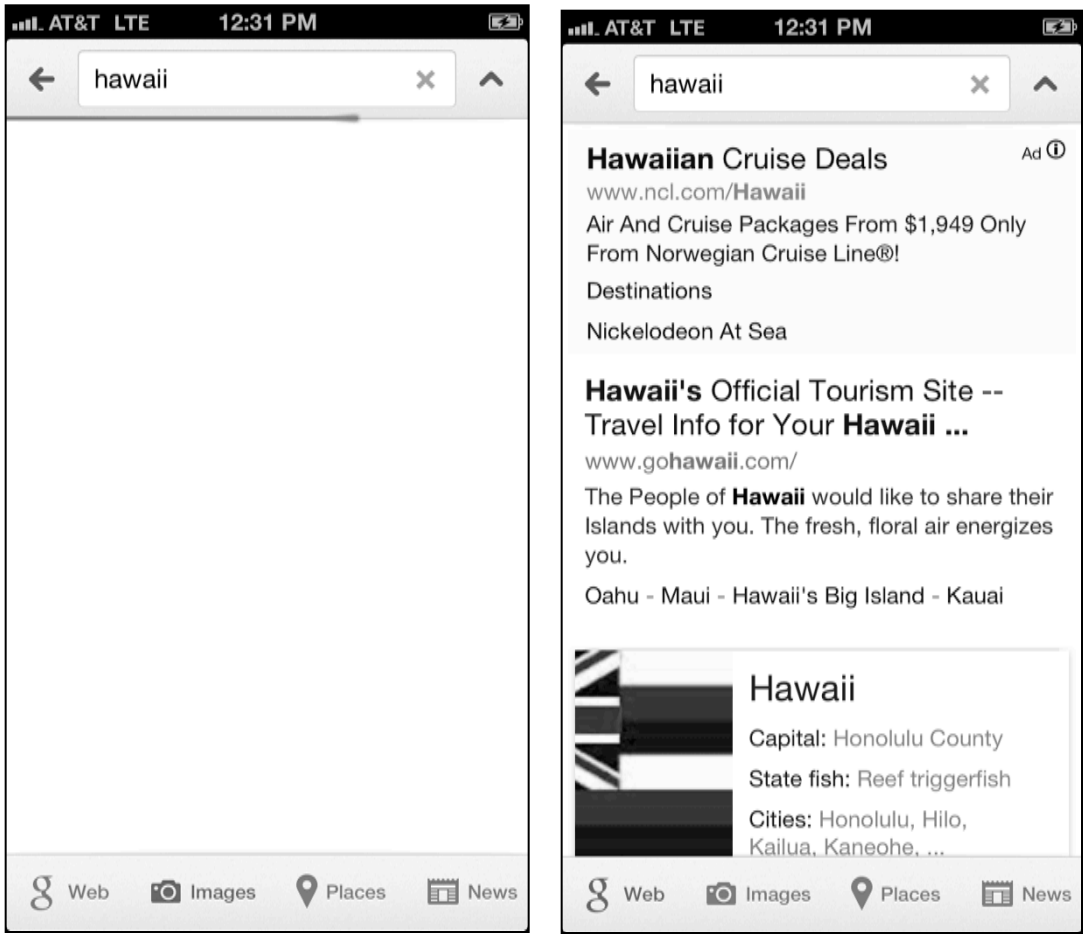
Why incorporate motion?

To mask slow performance (e.g., Google search views)



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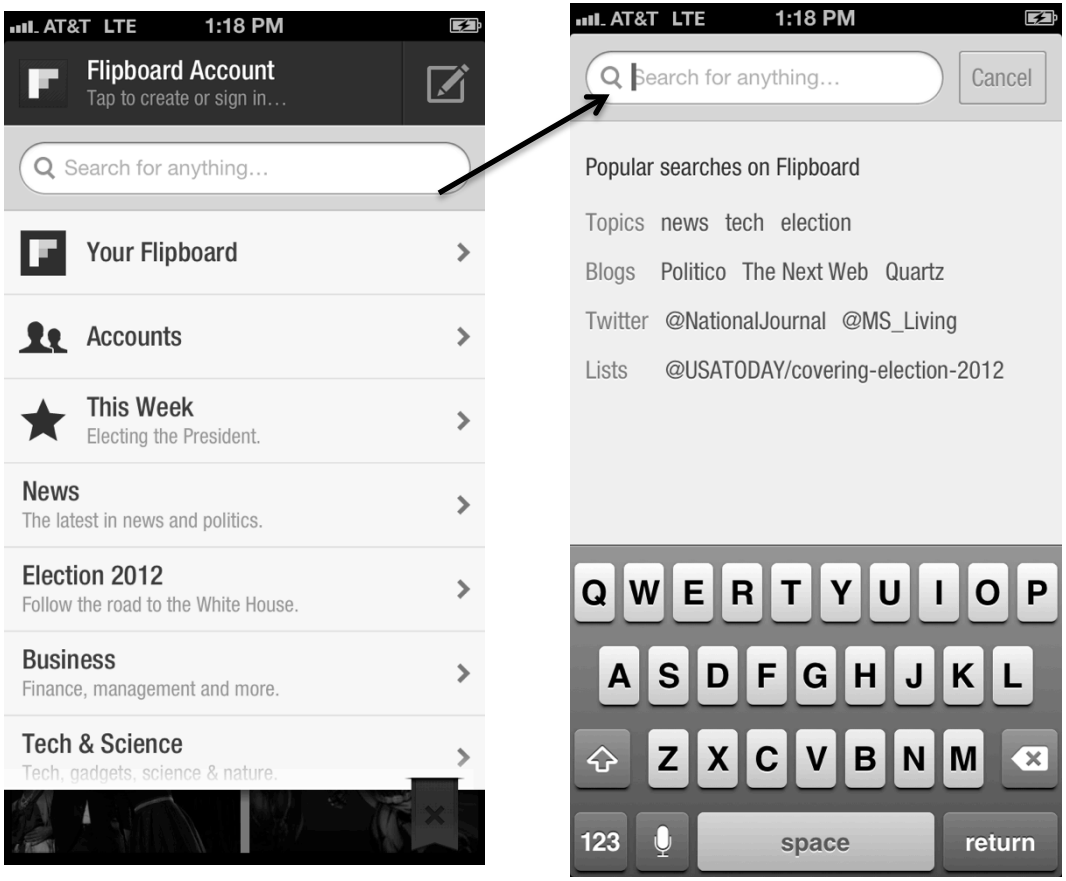
Why incorporate motion?

To ease transition between states (e.g., search field)



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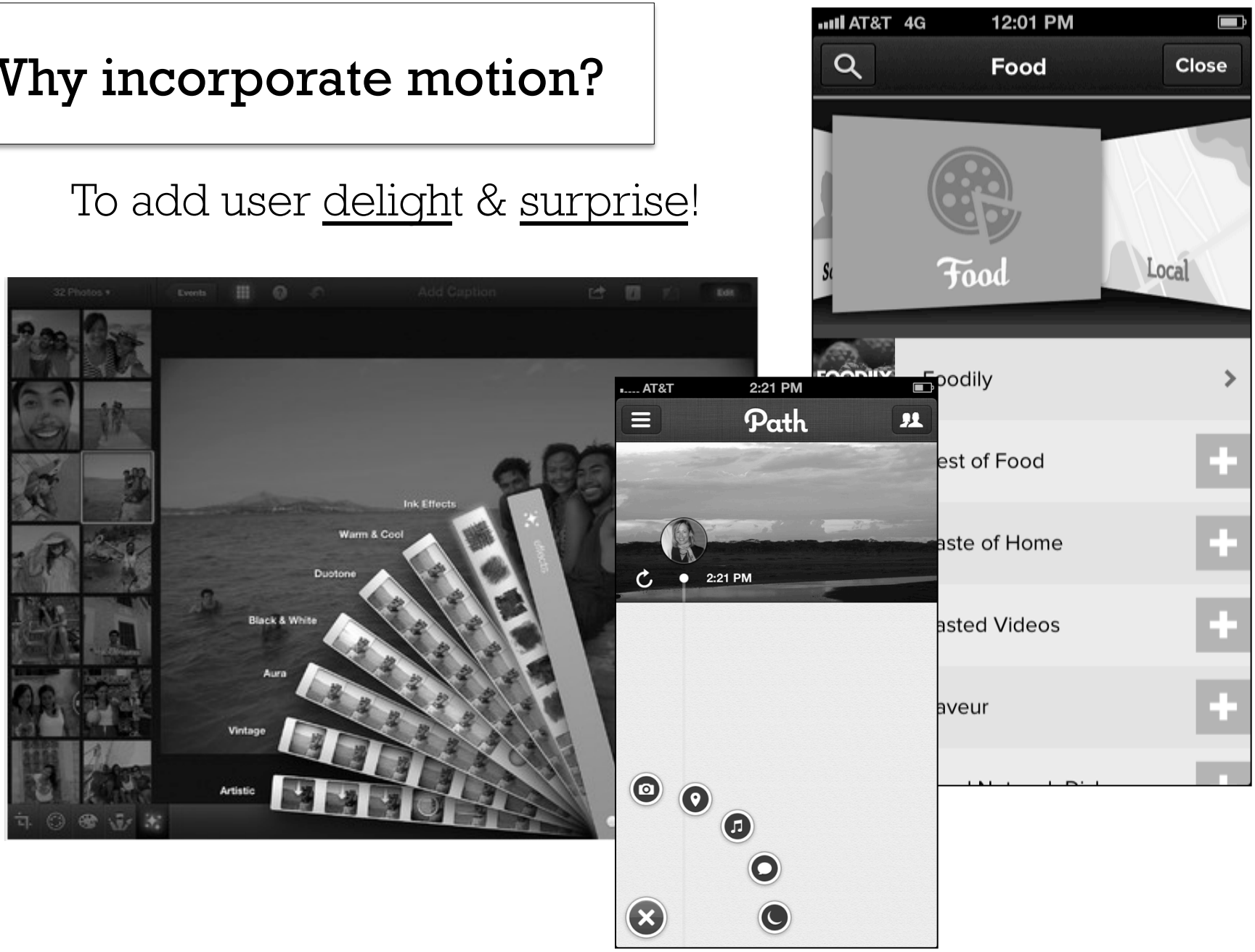
Why incorporate motion?

To add user delight & surprise!



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Rules of Motion

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Rules of Motion

- Each animation is part of a system and shouldn't conflict with other animations. The ''system'' includes the app as well as the OS.
- Each animation serves a purpose, and should get out of the way quickly.
- UI elements should respond to other UI elements' motion. For example: if an object expands on a page, it should expand the content downward in an animated way.
- Games are a whole different ball game -- no rules!
- Don't overdo animation!

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12 Principles of Animation in Film

Rachel Hinman's book, "The Mobile Frontier" looks at the **Twelve Basic Principles of Animation** authored by Johnston and Thomas, animators at Disney which were included in their book, "The Illusion of Life: Disney Animation."

1. Squash & Stretch
2. Anticipation
3. Staging
4. Straight Ahead & Pose to Pose
5. Follow-Thru & Overlapping Action
6. Slow In and Out
7. Arcs
8. Secondary Action
9. Timing
10. Exaggeration
11. Solid Drawing
12. Appeal

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12 Principles of Motion - *<reframed>*

Solid Drawing, Appeal & Timing

Squash & Stretch	Staging	Anticipation	• Arcs • Slow In/Out • Exaggeration • Straight Ahead • Pose to Pose • Secondary action	Follow Through
What feeling do you want your experience to invoke? (e.g., rigid or organic)	How is the motion grounded in the overall user experience?	How will user know what is about to happen next?	What animation approaches are most suited to the problem at hand?	How will your action end? Actions rarely come to a sudden & complete stop.

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Mobile Motion Patterns

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Top 5 Mobile Motion Patterns

1. Slide
2. Flip
3. Zoom
4. Curl
5. Fade

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SLIDE: voted most versatile

- Helps user orient themselves within your app
- Tablet or Phone
- Aspects that you may vary:
  - Direction – up/down, right/left
  - What moves – UI element(s), view, partial view, nudge
  - Speed – Though I'd stick with defaults
  - How initiated – user or system
  - Termination (e.g., bounce for a element or partial view)

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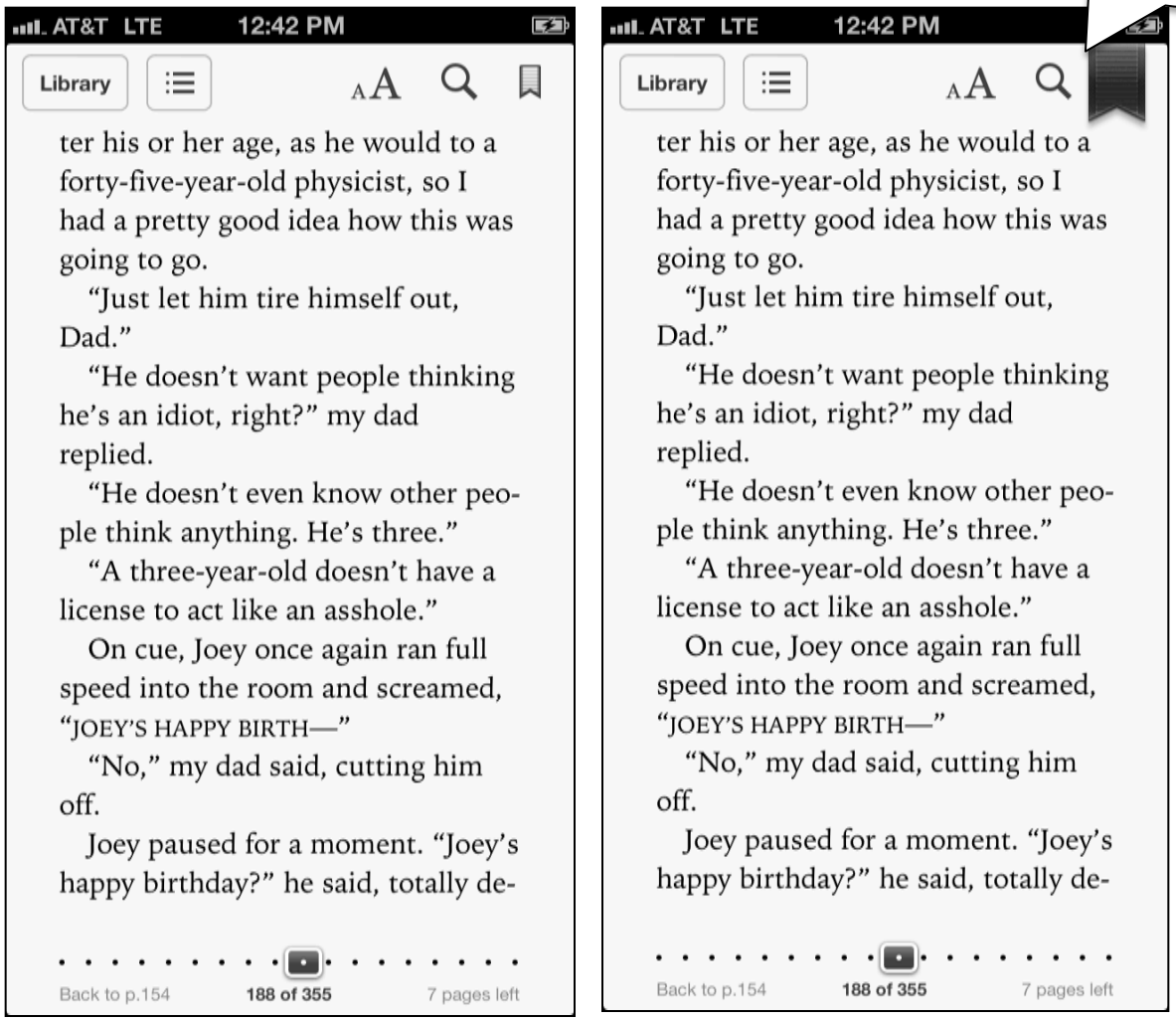
SLIDE: voted most versatile



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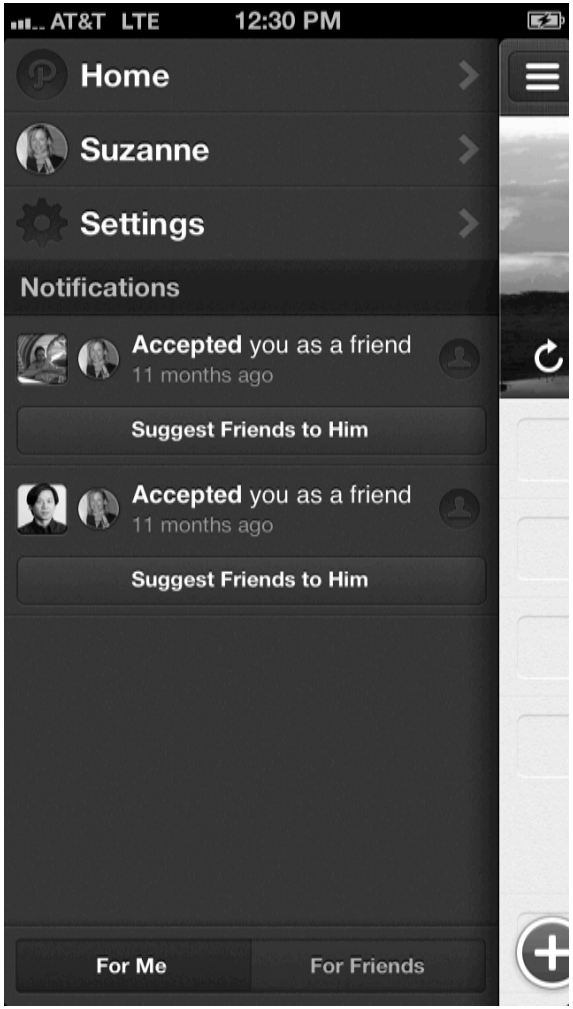
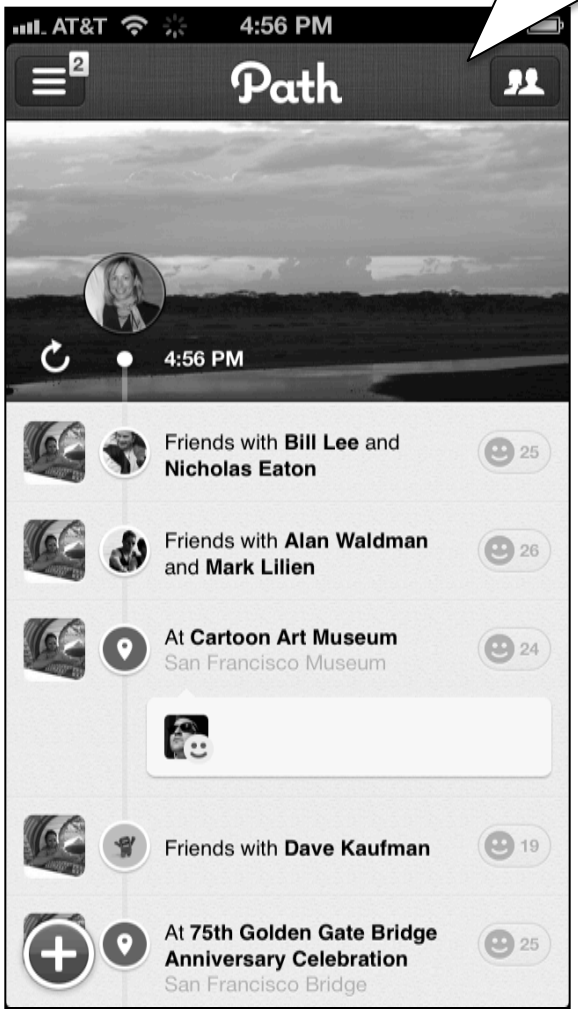
SLIDE: voted most versatile





Partial View Slide

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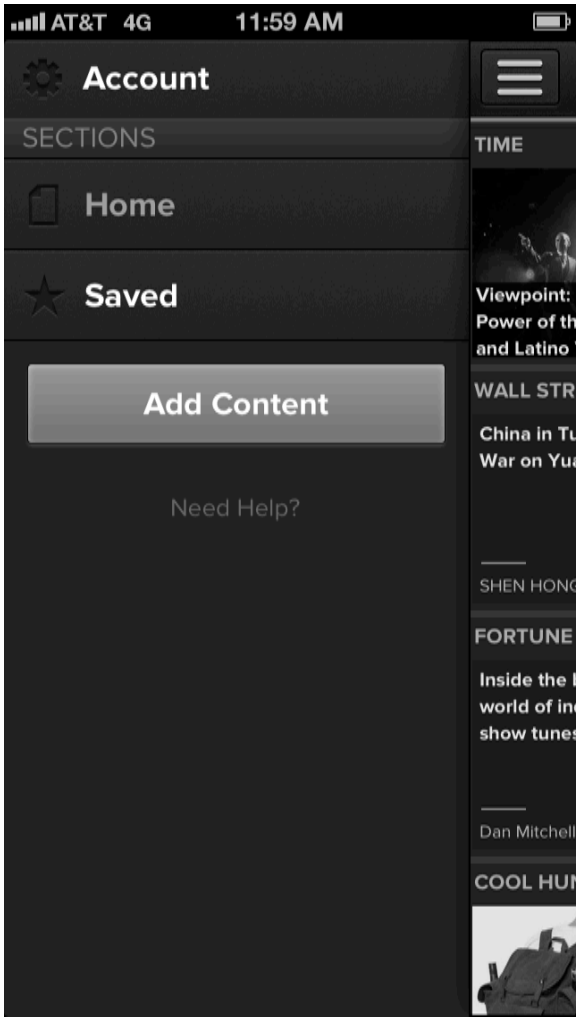
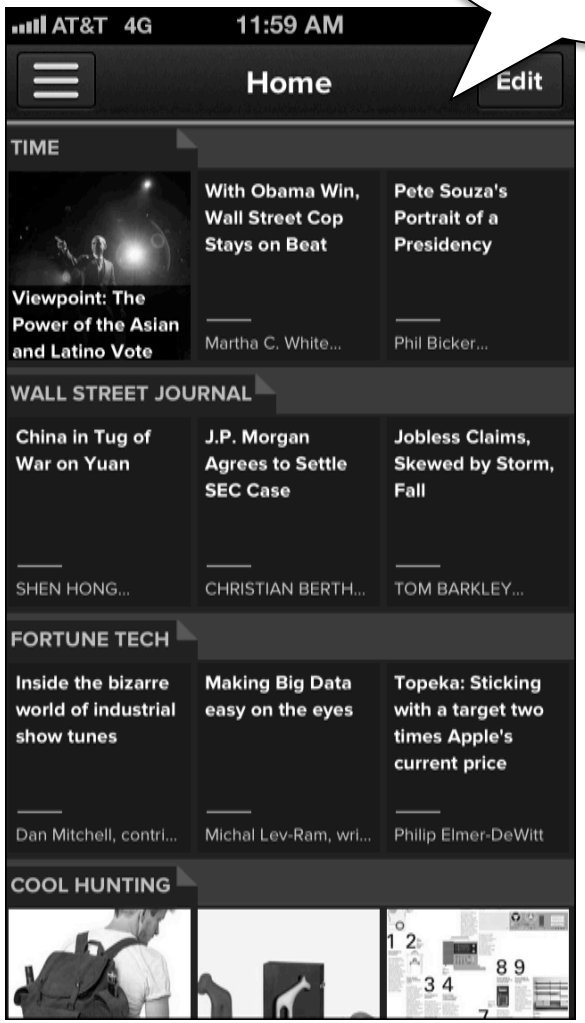
SLIDE: voted most versatile





Partial View Slide

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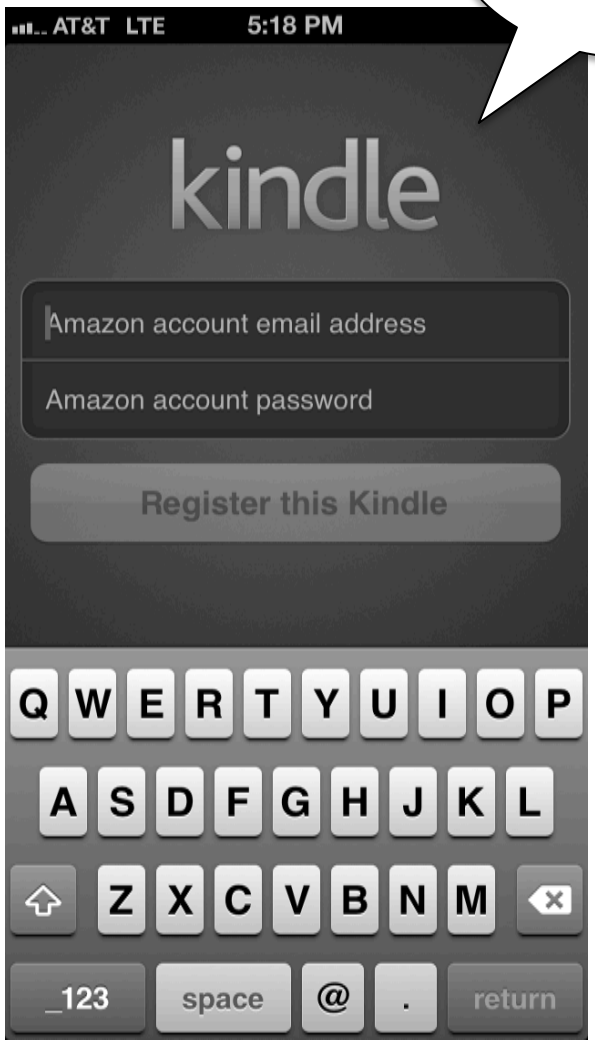
SLIDE: voted most versatile



Nudge
Full View

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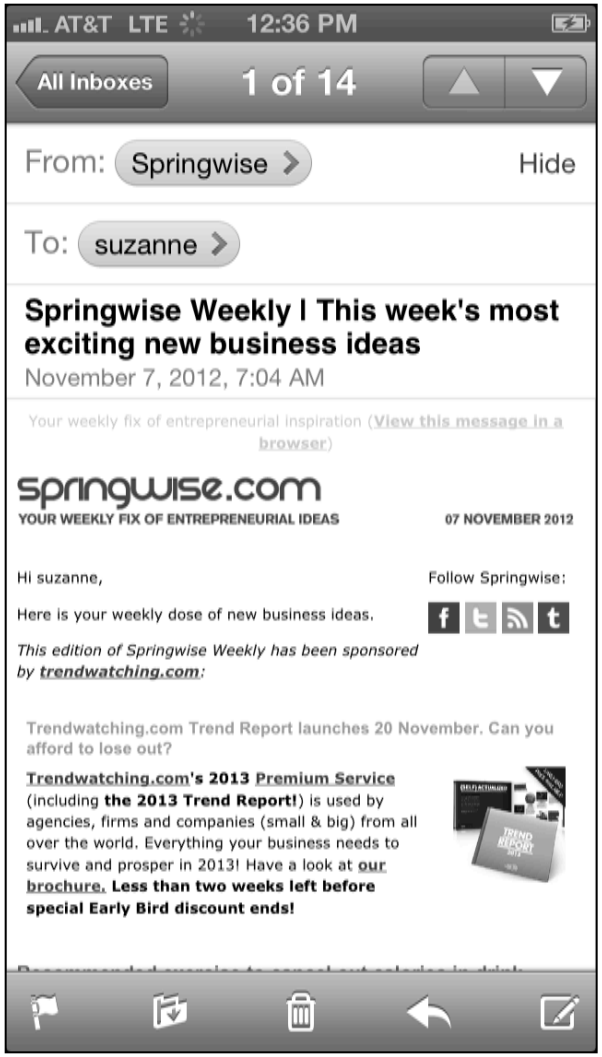
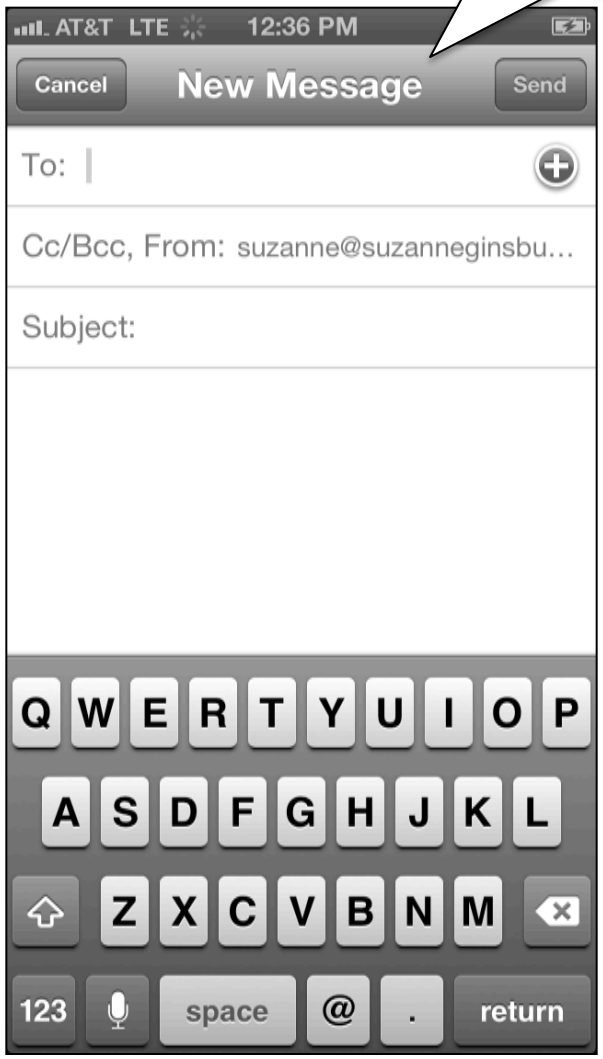
SLIDE: voted most versatile





Full View Slide (from bottom)

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FLIP: settings, related view, nav

- Usually for quick access to settings, e.g., Weather, or accessing related view, e.g., Yelp, but became navigation approach when Flipboard came onto scene
- Can work on phone or tablet, though "full-flip" less successful on tablet
- Aspects that you may vary:
  - Direction – up/down, right/left
  - What flips – typically a "view" but UI elements possible on tablet (e.g., iPhoto)
  - How initiated – almost always user

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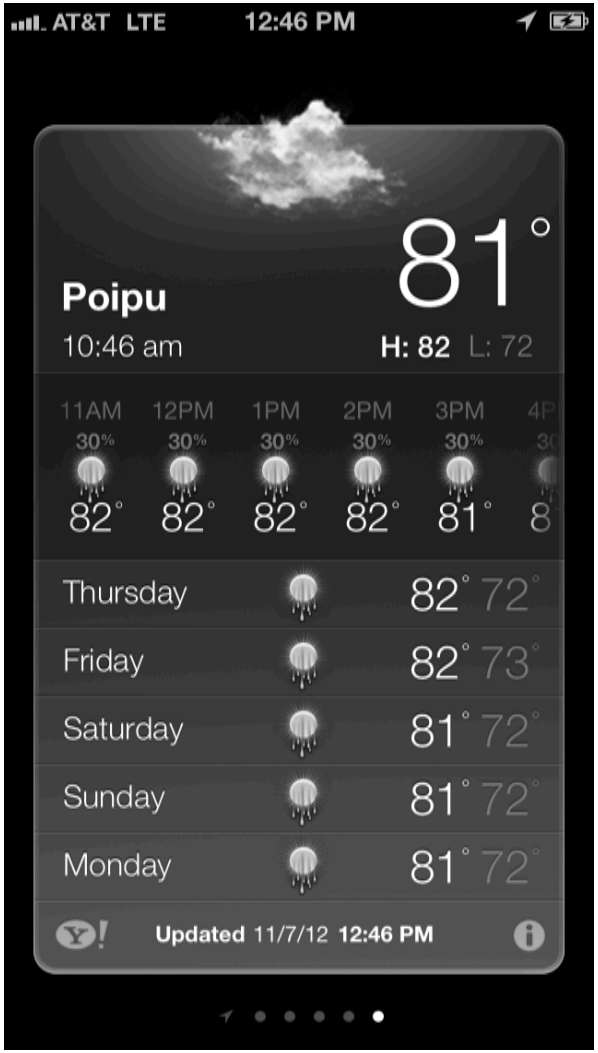
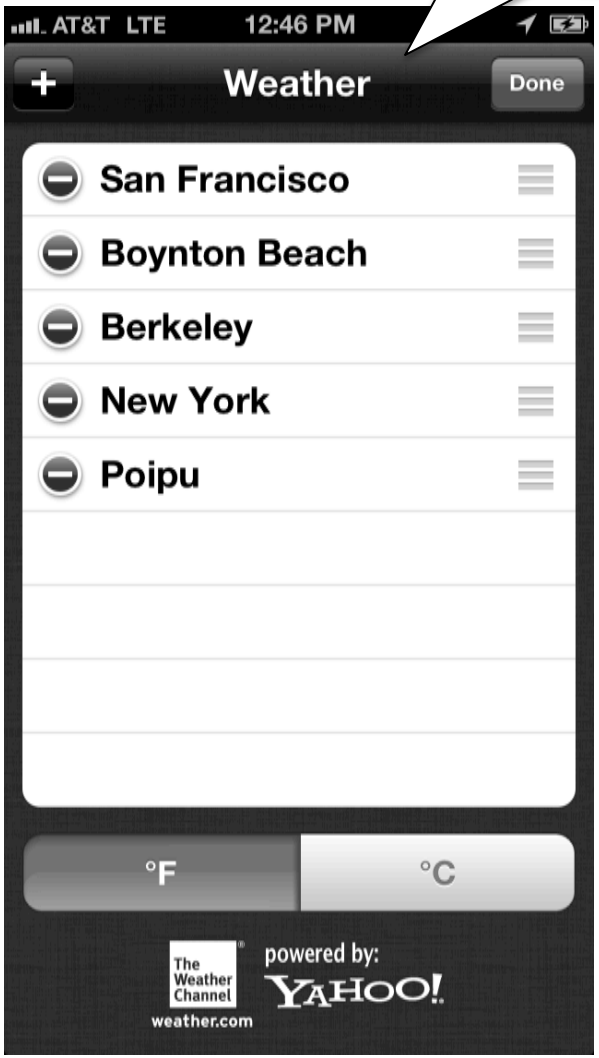
FLIP: settings, related view, nav



Full View (settings)



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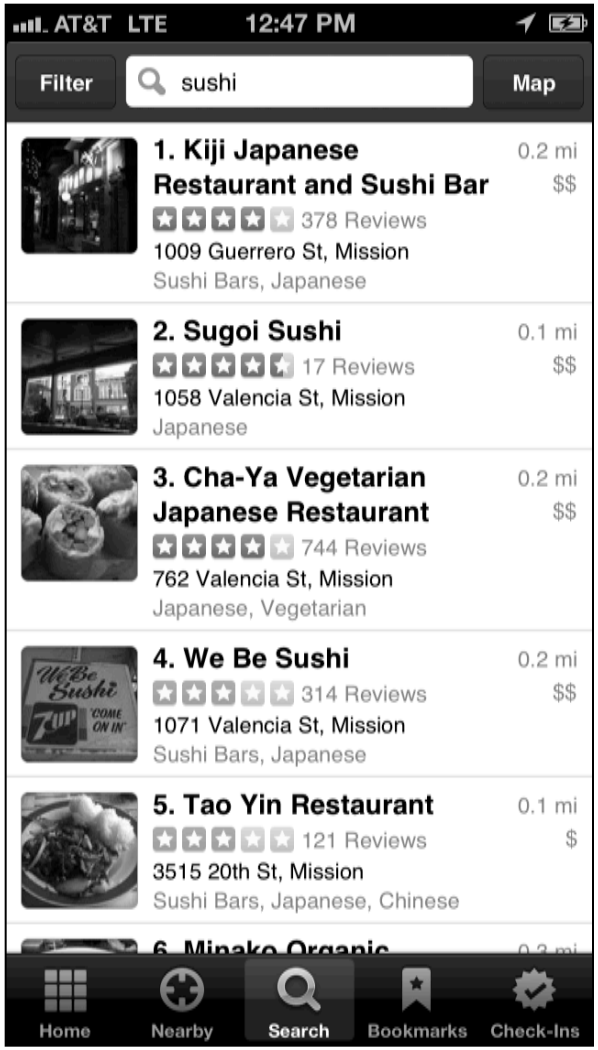
FLIP: settings, related view, nav



Full View (related view)

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FLIP: settings, related view, nav

Navigation

http://www.youtube.com/watch?v=My2RVT64Rlg&feature=results_video

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ZOOM: navigation, context

- Most often for less jarring navigation, e.g., iOS, bookshelf, Paper, LinkedIn (Note: not done on Kindle)
- Can work on phone or tablet
- Aspects that you may vary:
  - Direction – centered or gradually zoom in at angle
  - What grows – state A to B or does state A just get bigger. Compare iOS start to LinkedIn & iBooks shelf.
  - How initiated – user

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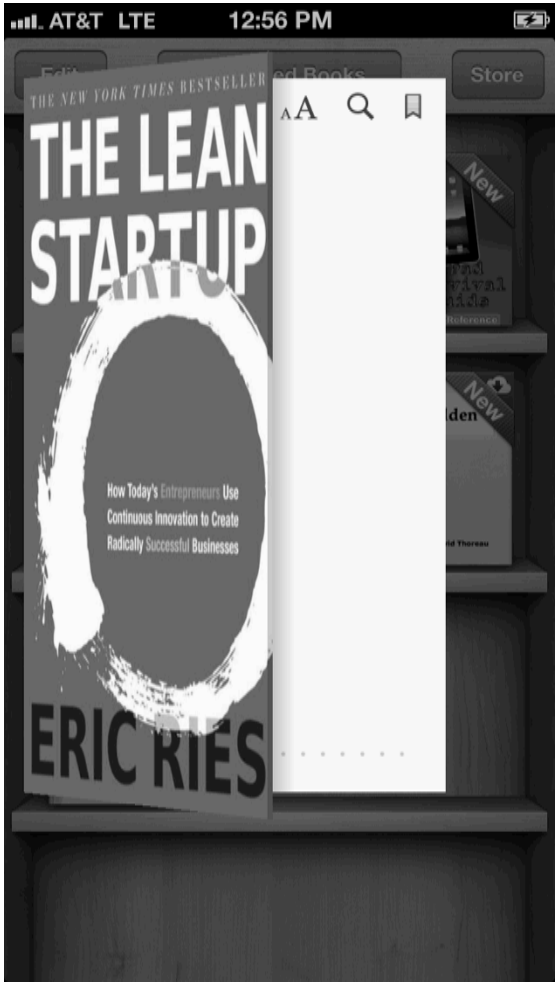
ZOOM: navigation/context

Navigation (item grows)



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ZOOM: navigation/context

Navigation (item grows)

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CURL: navigation, settings

- Full-curl for page turning; partial-curl for settings access
- Can work on either but may feel very slow if not timed well.
- Aspects that you may vary:
  - What curls – ‘‘corner’’ or entire page
  - For full-page: Can you see through? How much of page curls? Angles supported? Pauses supported?
  - Speed
  - How initiated – user

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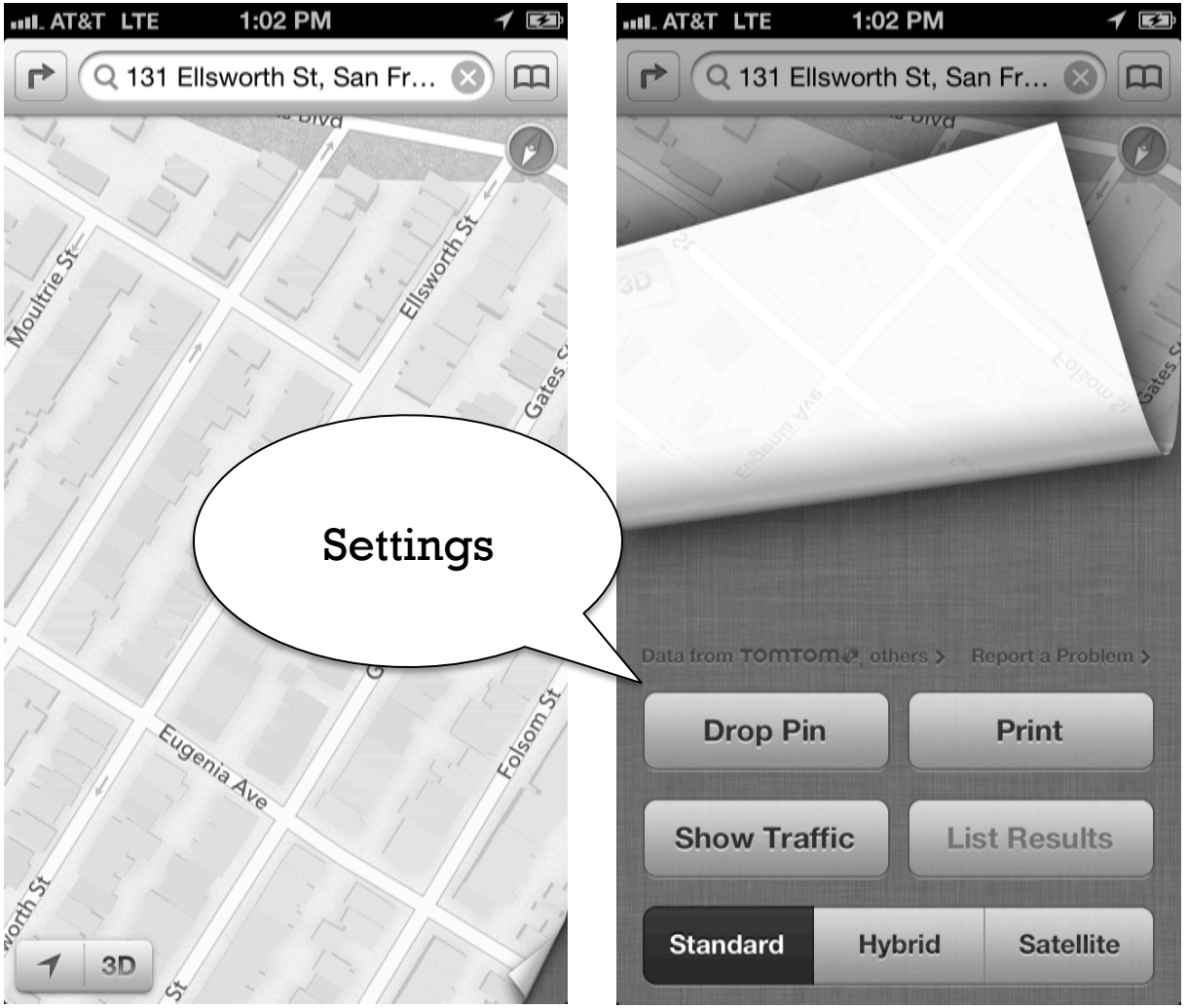
CURL: navigation, settings



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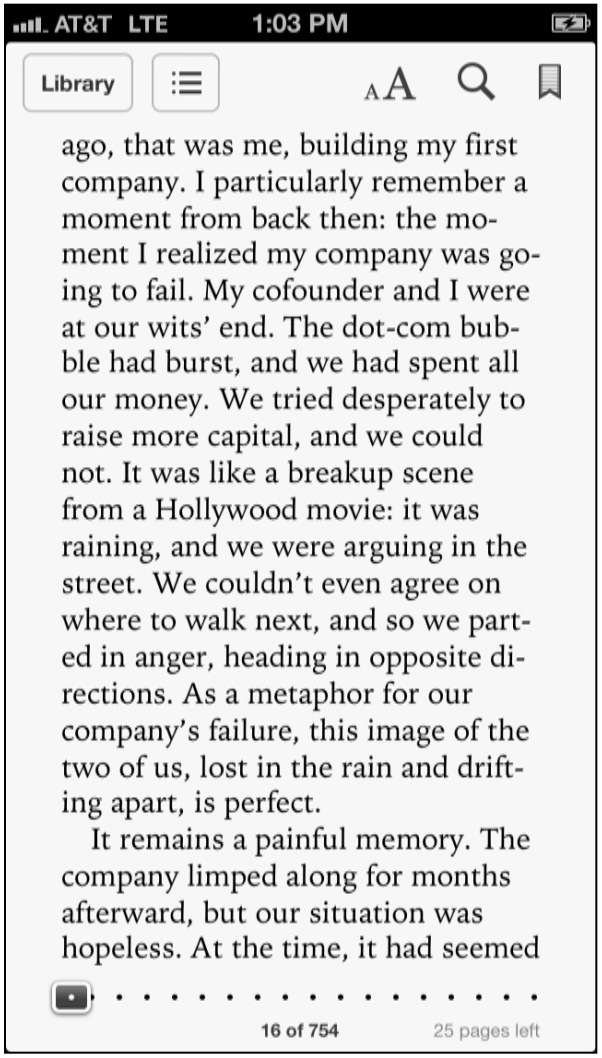
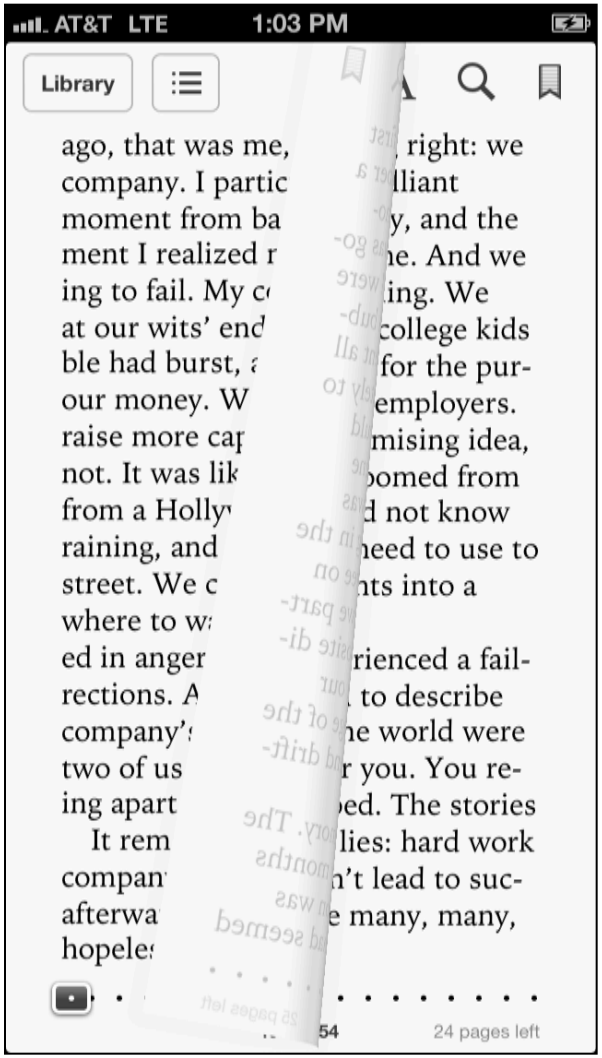
CURL: navigation, settings

Navigation





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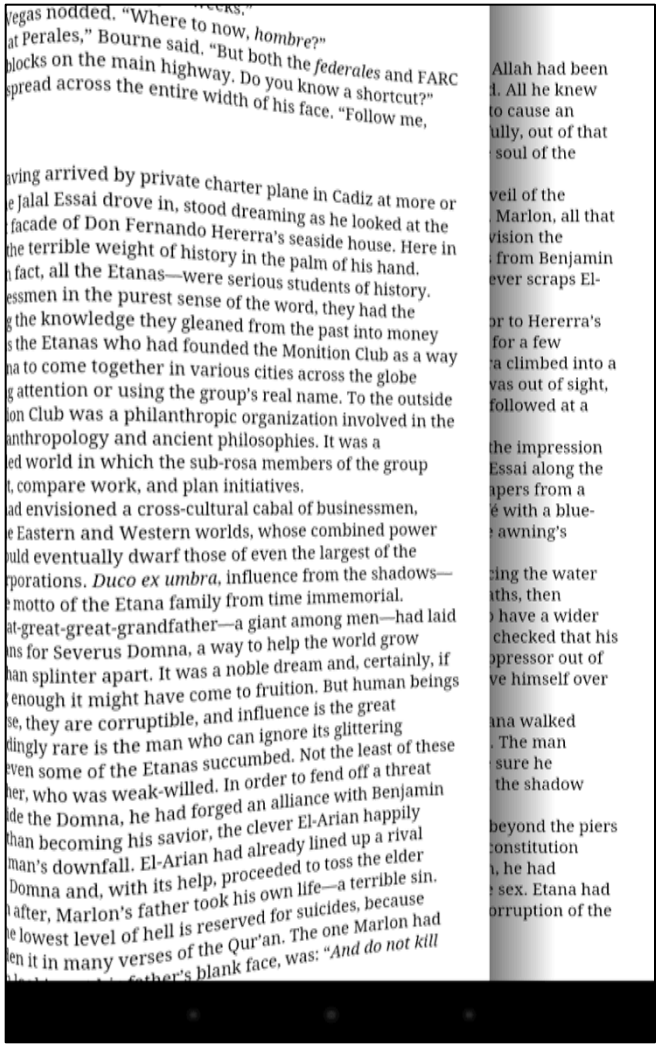
CURL: navigation, settings

Navigation (Google Books)



Vegas nodded. "Where to now, *hombre*?"
at Perales," Bourne said. "But both the *federales* and FARC
blocks on the main highway. Do you know a shortcut?"
spread across the entire width of his face. "Follow me,

aving arrived by private charter plane in Cadiz at more or
e Jalal Essai drove in, stood dreaming as he looked at the
facade of Don Fernando Hererra's seaside house. Here in
the terrible weight of history in the palm of his hand.
fact, all the Etanas—were serious students of history.
essmen in the purest sense of the word, they had the
g the knowledge they gleaned from the past into money
s the Etanas who had founded the Monition Club as a way
na to come together in various cities across the globe
g attention or using the group's real name. To the outside
ion Club was a philanthropic organization involved in the
anthropology and ancient philosophies. It was a
ed world in which the sub-rosa members of the group
t, compare work, and plan initiatives.
ad envisioned a cross-cultural cabal of businessmen,
e Eastern and Western worlds, whose combined power
uld eventually dwarf those of even the largest of the
rporations. *Duco ex umbra*, influence from the shadows—
motto of the Etana family from time immemorial.
at-great-great-grandfather—a giant among men—had laid
ns for Severus Domna, a way to help the world grow
han splinter apart. It was a noble dream and, certainly, if
enough it might have come to fruition. But human beings
se, they are corruptible, and influence is the great
dingly rare is the man who can ignore its glittering
even some of the Etanas succumbed. Not the least of these
her, who was weak-willed. In order to fend off a threat
de the Domna, he had forged an alliance with Benjamin
than becoming his savior, the clever El-Arian happily
man's downfall. El-Arian had already lined up a rival
Domna and, with its help, proceeded to toss the elder
after, Marlon's father took his own life—a terrible sin.
e lowest level of hell is reserved for suicides, because
en it in many verses of the Qur'an. The one Marlon had
father's blank face, was: "*And do not kill*

Allah had been
d. All he knew
to cause an
ully, out of that
soul of the

veil of the
Marlon, all that
vision the
from Benjamin
ever scraps El-

or to Hererra's
for a few
a climbed into a
vas out of sight,
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apers from a
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ve himself over

ana walked
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sure he
the shadow

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sex. Etana had
orruption of the

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FADE: transitions, status messages

- Helps transition user between different views, e.g., from a video list view to actually watching the video.
- Can also be useful for fading out new user tips or status messages that don't need user action, e.g., Gmail message sent.
- Do not use when navigating between views in a utility or productivity app
- Tablet or Phone
- Aspects that you may vary: unless it's a game, often best to stick with defaults.

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FADE: transitions, status messages

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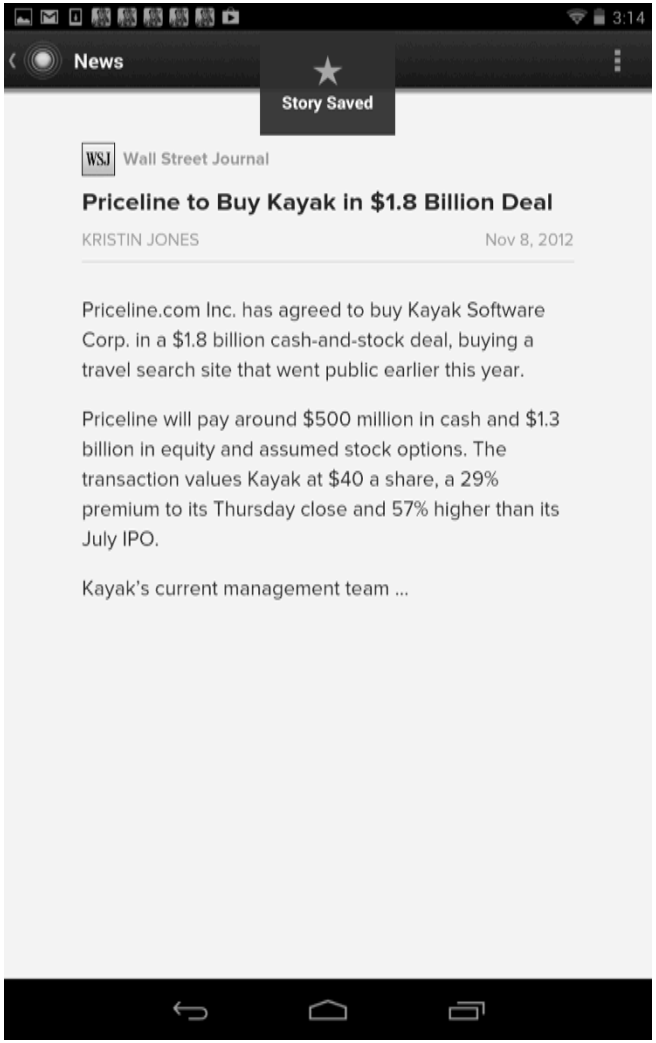
FADE: transitions, status messages



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Prototyping Motion

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When to start prototyping motion?

- Can start as early as the sketch phase by introducing arrows to indicate motion.
- You can also try to simulate transitions when testing a paper prototype of your app.
- But ultimately you'll have to use an interactive prototyping tool to really see your ideas action on the device and iterate as needed.

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Tools for Prototyping Motion

- Flash used to be the go-to tool for animation but issues with Apple make Flash less ideal. Great for showing on the desktop but that's it.
- Keynote is a great first step for introducing motion since it's easy to use and can mimic many iOS transitions, e.g., fade, slide. But it's not possible (today) to view these transitions once they are converted to PDF for phone viewing.
- Axure can do all of the above and much more, thus it's a great motion prototyping tool for mobile. HTML/CSS can also be effective though it can require a lot of code for simple animations & have less than ideal performance.

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Notable Platform Differences

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Notable Platform Differences

- **iOS** public API includes several ‘‘canned’’ transitions that developers can easily incorporate into your app, e.g., slide, fade, flip, curl. Almost any other type of motion is possible using Core Animation.
- **Android** has fewer (e.g., Poof!) canned transitions but you can create almost any kind of motion using their Animation Framework.
- **Microsoft** developers can also mimic almost any animation out there with with Silverlight or XNA Framework.

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