

VOLUME 1
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

SMITH INTERFACE TECHNOLOGIES, LLC,
Patent Owner.

Case IPR2024-01087
Patent 10,656,755

DEPOSITION of ANDREW COCKBURN, PH.D.

- CONDUCTED BY VIDEOCONFERENCE -

Thursday, March 13, 2025

1:00 p.m. Eastern Daylight Time

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Lexitas video monitor

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I N D E X

Deposition of:	Page
ANDREW COCKBURN, PH.D.	
By Mr. Robinson	4

PREVIOUSLY MARKED EXHIBITS

Exhibit 1003	Declaration of Dr. Andrew Cockburn	115
Exhibit 1004	United States Patent Application Publication Pub. No.: US 2011/0119610 A1	115
Exhibit 1005	United States Patent Application Publication Pub No.: US 2008/0316183 A1	115

** Documents quoted on the record are
transcribed as read **

1 P R O C E E D I N G S

2 ANDREW COCKBURN, PH.D.,

3 having been satisfactorily identified and duly
4 sworn by the Notary Public, was examined and
5 testified as follows:

6 EXAMINATION BY COUNSEL FOR PATENT OWNER

7 BY MR. ROBINSON:

8 Q. Good morning, Dr. Cockburn. Thank you for
9 being here today.

10 A. Good morning.

11 Q. At least I think -- is it morning for you?

12 A. It is. It's 6:00 a.m.

13 Q. All right. Thanks.

14 Have you been deposed before today, sir?

15 A. Yes.

16 Q. And approximately how many times?

17 A. I think this is my 14th.

18 Q. Okay. I won't spend too much time on
19 ground rules, then.

20 Two things. Can we just agree to try not
21 to talk over each other? Let me finish a question
22 and then I'll keep my mouth shut and let you

1 answer?

2 A. Sure.

3 Q. And I will try to take a break about every
4 hour. If you get to a point where you'd like a
5 break, please feel free to say so, just not while
6 there's a question pending.

7 A. Understood.

8 Q. Great. What did you do to prepare for
9 today's deposition, sir?

10 A. I read my declaration closely, reread the
11 patents involved in the case several times, looked
12 at the materials referenced in my declaration, and
13 I talked to Apple counsel.

14 Q. Did you speak with anyone besides Apple
15 counsel about your testimony here today?

16 A. No.

17 Q. And do you have any applications open on
18 your computer right now other than Zoom, of
19 course?

20 A. I was closing the applications when I
21 accidentally closed Zoom.

22 I have Chrome open at the moment because I

1 understand you'll be allowing me access to certain
2 documents. The finder is open but I can quit that
3 if you want. There are no other windows open on
4 my display.

5 Q. Great. Thank you. And for exhibits, I
6 plan to just share through the chat feature on
7 Zoom, so hopefully that will make it easy. It
8 usually does.

9 A. Sure.

10 Q. Is there anyone else in the room with you?

11 A. No.

12 Q. Okay. Did you review any documents that
13 are not referenced in your declaration?

14 A. At what time?

15 Q. In preparation for today's deposition.

16 A. Over the last week, no. I guess you could
17 interpret preparing the declaration as preparation
18 for this deposition. There were certainly a lot
19 of documents I assessed during the preparation of
20 the declaration.

21 Q. And not all of those documents made it
22 into your declaration?

1 A. Yes. That's fair.

2 Q. Okay. Which documents did you review that
3 did not make it into your declaration?

4 A. I don't recall. This is over six months
5 ago. I don't recall.

6 Q. Let me ask that a little bit -- in a way
7 that may be a little bit easier to answer. And
8 that's, what were the reasons -- to the extent you
9 reviewed documents that didn't make it into your
10 declaration, what were the reasons they didn't
11 make it into the declaration?

12 A. Primarily because I found the materials in
13 my declaration provided a clear disclosure or
14 rendered obvious the claims of the '755 patent,
15 and I didn't need to refer to further documents.

16 Q. Okay. So the documents that you included
17 you felt were sufficient for your purposes here?

18 A. Correct.

19 Q. Have you reviewed the institution decision
20 from the board in this proceeding?

21 A. Yes.

22 Q. Did you review the patent owner

1 preliminary response that was filed in this
2 proceeding?

3 A. Yes.

4 Q. And just so it's clear for the record, by
5 "this proceeding" I'm referring to IPR2024-01087
6 involving U.S. Patent 10,656,755.

7 Is that your understanding?

8 A. I don't have access to my declaration or
9 the patents. I haven't memorized the numbers.
10 But certainly it is -- I'll be referring to it as
11 "the '755 report" and the associated IPR.

12 Q. Okay. I will go ahead and put your
13 declaration into the chat so you have it and can
14 confirm the full patent number.

15 It should be coming through now. Would
16 you let me know if you're able to open that
17 successfully.

18 A. It's open. Thanks.

19 Q. Okay. And just to confirm, that's -- the
20 '755 patent is U.S. Patent Number 10,656,755?

21 A. Correct.

22 Q. All right. Thank you. And that document

1 that you have open labeled in the lower right-hand
2 corner "APPLE 1003," is that your declaration for
3 this proceeding involving the '755 patent?

4 A. The front page is certainly the front page
5 of my declaration. I can quickly scroll through
6 the document and confirm that the remainder looks
7 like it too. And it is, yes.

8 Q. Great. Thank you. And does this document
9 accurately reflect all of your opinions involving
10 the '755 patent?

11 A. Yes.

12 Q. At Paragraph 25 on page 15 of that
13 declaration, it summarizes your conclusions with
14 respect to the '755 patent. Correct?

15 A. That's correct.

16 Q. Are there any opinions other than those
17 summarized here that you wish to add?

18 A. There are three typos I've identified.
19 I'm not sure that this is answering your question,
20 but there are three typos in the declaration that
21 I should identify.

22 Q. Typos in this paragraph or elsewhere in

1 the declaration?

2 A. Elsewhere.

3 Q. Oh, okay. Why don't we go ahead and
4 address those now.

5 What are those typos?

6 A. Sure. I have one Post-it note to help me
7 remember this. Paragraph 62, immediately prior to
8 that, there is a heading that says "one or more
9 foreground objections." That should be "one or
10 more foreground objects."

11 The same typo is present at the end of
12 Paragraph 125. Let me just find it. Yes. The
13 second line of page 92, "behavior for application
14 objections" should be "application objects."

15 And the third typo is at the end of
16 Paragraph 149, on the second-to-last line of that
17 paragraph. "Used 'in construction with
18 scrolling,'" should be "conjunction with
19 scrolling."

20 Q. Okay. Anything else that you want to
21 supplement or correct in your declaration, sir?

22 A. No.

1 Q. All right. So I'd like to spend a few
2 minutes on your educational background, sir.

3 You've got a bachelor of science, computer
4 science from the University of York in England.
5 Correct?

6 A. Yes.

7 Q. And a Ph.D. from the University of
8 Stirling in Scotland?

9 A. That's correct.

10 Q. All right. And your doctoral thesis was
11 related to computer-supported cooperative work.
12 Correct?

13 A. Yes.

14 Q. Could you briefly describe what that
15 involves.

16 A. Computer-supported cooperative work is a
17 field of research that examines ways to make users
18 more readily more useful and more efficient for
19 collaborative work.

20 Q. I want to make sure I understand that.
21 Examines ways to make users more useful or
22 efficient?

12

1 A. It sounds like I must have misspoken.

2 It seeks ways to make user interfaces more
3 efficient for collaborative work.

4 Q. Interfaces. Okay. Thank you.

5 And in what ways -- well, can you give me
6 some examples of ways that user interfaces are
7 made more useful or efficient for collaborative
8 work?

9 A. Sure. At the time I was doing my Ph.D.,
10 much of the focus of computing at the time was on
11 personal computers. And they were directed --
12 applications for personal computers were
13 substantially directed at supporting individuals
14 completing their work more efficiently and
15 effectively, so tools like Microsoft Word or Excel
16 were substantially directed at individual -- an
17 individual's work.

18 Now, the real work in the workplace is
19 intensely collaborative, and software systems
20 provided limited support for collaboration.

21 So at the time, myself, my colleagues, and
22 the field were seeking ways to make computer

1 systems more effective in supporting the true
2 nature of collaborative work.

3 Q. So when you say "collaborative work,"
4 that's in a traditional sense of multiple people
5 being able to collaborate in a software
6 environment?

7 A. Sure. Rather than a single-user system
8 such as Microsoft Word as it was at the time, we
9 were envisioning and trying to build systems that
10 you might be aware of now such as Google Docs
11 where people can collaborate on the production of
12 documents more effectively.

13 Q. All right. Thank you. Is it fair to
14 characterize that work as focused more on the
15 software of those applications versus the physical
16 interfaces?

17 A. I don't understand the question.

18 Q. In enabling collaboration between multiple
19 users, were you looking at physical aspects of
20 user interfaces -- for example, touch screens and
21 keyboards -- or were you focused more on the
22 software side of being able to process inputs from

1 different places?

2 A. I don't understand the dichotomy in the
3 question. Software is responsible for the
4 interaction between users and computers
5 substantially in conjunction with the associated
6 hardware.

7 Q. Okay. Let me see if I can ask that
8 better. I'm not trying to force a dichotomy where
9 there isn't one.

10 Was your work focused on the hardware user
11 interfaces?

12 A. Hardware is required for many forms of
13 input, and input is fundamental to interaction.
14 So the connection between hardware and software is
15 elemental to interaction.

16 Q. Did your work in connection with your
17 Ph.D. involve looking for ways to improve the
18 hardware aspects of that interaction?

19 A. I don't recall directly working on
20 improving the hardware. However, the software was
21 certainly dependent on the elements of the
22 hardware.

1 Q. I think I follow that. What types of
2 things -- what types of changes did you look at
3 making in the software to improve the
4 collaborative functionality?

5 A. Two of the systems that I worked on. One
6 was an email client that provided a graphical
7 representation of the conversations that users
8 were engaged in, where that graphical
9 representation was inferred -- inferred the
10 conversational context from the content of the
11 email messages.

12 And another system that I built examined
13 the online status of colleagues and presented a
14 graphical user interface showing the online status
15 of colleagues and inferred or suggested to the
16 user modes of communication that might be used to
17 contact them.

18 A little bit like what you see in early
19 versions of Skype or instant messaging
20 applications, although this was well before their
21 introduction.

22 Q. Things like a green light when somebody is

1 online?

2 A. That's not what I used. But yeah, the
3 idea is pretty much there.

4 Q. And you were working on those in the early
5 '90s time frame?

6 A. Yes. Started in the late '80s.

7 Q. Wow. Okay. Your CV lists a number of
8 publications and papers and presentations. Are
9 there any of those publications that you believe
10 are directly pertinent to your opinions in your
11 declaration?

12 A. My declaration states that I rely on
13 certain materials that are identified explicitly
14 in the exhibits. I believe it also says I rely on
15 my experience in the field. And many of those
16 papers are part of my experience in the field.

17 Q. And your experience in the field spans --

18 A. Sorry. Was that a question?

19 Q. Not quite. Not yet.

20 When you say "the field" -- let's start
21 there. When you say "the field," do you mean the
22 field of human-computer interaction?

1 A. That is my field. Yes.

2 Q. Okay. And at what point in time do you
3 consider your experience in that field
4 specifically to have begun?

5 A. That's an interesting question. I guess
6 my experience in the field began when I first
7 started using computers, which would be in fact
8 even prior to that, probably, first using devices.

9 I can't put a starting date on the
10 question. Any device that has ever frustrated you
11 or injected joy into your experience of technology
12 is part of your experience in human-computer
13 interaction. And I guess that began in the mid
14 1970s.

15 Q. So let me ask it little more specifically.

16 When do you consider your professional
17 experience in the field of human-computer
18 interaction to have begun?

19 A. Again, it's a difficult question to
20 answer. I'll answer it in two parts.

21 First off, professional experience, I
22 would include my undergraduate experiences in

1 that. I took a course in 1986, I believe,
2 entitled "Man-Machine Interface." It was a very
3 different time.

4 And that engendered my passion for
5 human-computer interaction and encouraged me to
6 start a Ph.D.

7 The second part of the response is I guess
8 my professional experience would be -- would stem
9 from early in my Ph.D., so around about 1989.

10 Q. Okay. So whichever way you count it, at
11 least 35 approaching 40 years?

12 A. Yes. I mean, if you're going to take a
13 more conservative response to professional
14 experience, then I guess I satisfy the skills of a
15 person skilled in the art by probably 1991,
16 thereabout. And yes, that's over 30 years of
17 experience.

18 Q. Okay. And in the -- so satisfying the
19 skills of a person skilled in the art, your
20 declaration provides a -- let me find the
21 paragraph to point you to.

22 At Paragraph 26, it describes the

1 qualifications -- your opinion at least of the
2 qualifications of a person of ordinary skill in
3 the art.

4 Is that the definition to which you
5 referred a moment ago?

6 A. Yes.

7 Q. And so that list -- that Paragraph 26 of
8 your declaration says that a POSITA "would have
9 had at least a bachelor's degree in computer
10 science, computer engineering, electrical
11 engineering, human-computer interaction, or a
12 related field, and would have had at least two
13 years of relevant work experience in the design
14 and development of graphical user
15 interfaces" . . . "human computer interfaces, or
16 equivalents thereof." And that "less work
17 experience may be compensated by a higher level of
18 education and vice versa."

19 You stated that you would have met that
20 definition by, I believe you said, 1991.

21 What changed between 1988 and 1991 or what
22 occurred in that time period that, I guess, took

1 you from not a POSITA to a POSITA? An inartful
2 way of saying it, but . . .

3 A. Well, the definition you just read says a
4 bachelor's degree in computer science. I had that
5 in 1988. That would not quite satisfy the
6 requirements for this POSITA.

7 There also needs -- and would have had at
8 least two years of relevant work experience in the
9 design, development, and graphical user
10 interfaces.

11 I gained that experience and I gained the
12 high-level education during the first two years of
13 my Ph.D.

14 Q. What did that experience designing those
15 interfaces involve in that time period?

16 A. It involved designing and implementing
17 user interfaces for my Ph.D. I earlier described
18 two systems that I built. I was building those
19 systems in that time period.

20 Q. Okay. Thanks. So the user interfaces
21 for, I think you said, visualizing email
22 conversations and for visualizing or displaying

1 the availability of colleagues?

2 A. The summary you provide is a little bit
3 incomplete. It was essentially an email client
4 that I constructed that provided a visualization
5 of conversational context. And the other system
6 that I built had a substantial back end to monitor
7 the network and keep track of the status of online
8 users and then present that information through
9 the user interface to the user.

10 Q. Okay. So let's start with the email
11 client. How did users interact with that system
12 and that interface?

13 A. I would refer you to my Ph.D. thesis,
14 which has chapters in it that describe the user
15 manual and the extensive interactions that are
16 available.

17 Q. That's not unfair. Let me ask it a little
18 more precisely.

19 What types of hardware did a user use to
20 interact with that email client?

21 A. At least during my interaction with it and
22 my associates' interaction with it, they used a

1 computer, network computer, and the hardware
2 therein, a mouse input device, and a computer
3 display.

4 If other input devices had been connected
5 to the device, then those would have been
6 seamlessly available, at least for the pointing
7 component of the interactions.

8 Q. Was there -- so how about a keyboard?

9 A. Yes, there was a keyboard.

10 Q. Okay. And I hesitate a little bit because
11 I suspect that may have even been sort of integral
12 to the computer at that time. Perhaps not.

13 So keyboard, mouse. No touch screen at
14 that time. Right?

15 A. In Stirling, I did not use it with a touch
16 screen. I brought the system with me to
17 New Zealand when I started work as an academic.
18 And very early on in my academic work at the
19 University of Canterbury, I was working with touch
20 screens.

21 I don't recall connecting a touch screen
22 to -- and using that for input to my email client;

1 however, it certainly could have been used that
2 way.

3 Touch screen is -- at the time was treated
4 as a human input device for pointing. And I
5 believe my system would have been perfectly usable
6 with a touch screen input device instead of or in
7 addition to a mouse.

8 Q. When you say "touch screen," at this stage
9 of your career did that include track pads or is
10 that a touch screen in what we now know as sort of
11 a conventional sense of something that both
12 displays and receives touch input?

13 A. The device that I'm recalling was a touch
14 screen.

15 Q. So would display and receive input?

16 A. That's my recollection.

17 Q. For the second of the interface systems
18 that you described for your Ph.D. work,
19 paraphrasing and summarizing, the system that
20 allowed you to view colleague availability and
21 that would suggest means of communication, was
22 there anything different about the hardware that

1 was available to interact with that system?

2 A. It relied on different information over
3 the network and different protocols over the
4 network. So in terms of the network hardware,
5 there was a difference.

6 In terms of the users' interaction with
7 the system, I think the differences would have
8 been small.

9 When I was talking about the hardware used
10 for the email client, I'm pretty sure I should
11 have also mentioned acoustic output, so the use of
12 a speaker, and the online status system similarly
13 used acoustic output --

14 Q. Okay.

15 A. -- and a microphone.

16 Q. Okay. Has your professional work evolved
17 to include mobile device user interfaces?

18 A. Yes.

19 Q. And approximately at what point during
20 your career did it begin to involve mobile
21 devices?

22 A. I'll just quickly refer to my CV, if I

1 may.

2 Q. Certainly.

3 A. Which is at the end of the declaration
4 you've given me.

5 My recollection is that it was around
6 2001. To give you a proper answer, mobile
7 devices, as I understand them, would include
8 laptop computers. I certainly had a laptop
9 computer from the very early days of my research
10 work. Probably received my first one around about
11 1995.

12 So when I was designing user interfaces, I
13 was certainly designing them for what's commonly
14 referred to as the desktop platform. That desktop
15 platform could be deployed on a mobile device.
16 The first time I started looking at smaller mobile
17 devices, that's probably about 2001.

18 Q. So when you say "smaller mobile devices,"
19 would that be things like cell phones, tablets,
20 PDAs or personal digital assistants?

21 A. Yes.

22 Q. Any other types of smaller mobile devices

1 that you've worked with besides those three?

2 A. Well, working with mobile devices,
3 actually, the 2001 date I gave you is too late.
4 That's when I was actively conducting research
5 publishing on those topics.

6 I do recall using an Apple Newton
7 MessagePad and incorporating its teachings or the
8 interactions it disclosed from around about 1995,
9 possibly 1994.

10 Q. Do you recall the first touch screen
11 mobile phone that you worked with in your
12 research?

13 A. Specifically mobile phone?

14 Q. Yes.

15 A. I don't. Sorry. I would need to check
16 several of my publications to give you a -- to be
17 sure of an accurate response.

18 Q. So to broaden it up a bit, you asked the
19 question if it was specific to mobile phones.
20 Let's broaden it up to smaller mobile devices,
21 smaller touch screen mobile devices.

22 Is there another -- what's the first touch

1 screen mobile device that you recall working with
2 in your research?

3 A. I'm worried this is much later than a
4 correct response. But around about 2005, I was
5 working with I'm pretty sure it was a Compaq iPAQ
6 PDA device to implement a technique called speed
7 dependent automatic zooming on mobile devices.

8 There could easily be prior examples,
9 earlier examples in that.

10 Q. And briefly, what is speed dependent
11 automatic zooming?

12 A. The idea is the faster you scroll, the
13 more the document zooms out. So this allows you
14 to traverse at higher velocities through the
15 document without succumbing to excessive motion
16 blur at the eyes.

17 Q. In addition to your consulting work in
18 relation to litigation and patent disputes, do you
19 also consult with companies on technical projects?

20 A. Yes. Details of those are in my CV.

21 Q. And have any of those projects been for or
22 with Apple?

1 A. Not that I recall.

2 Q. Has Apple sponsored any of your research?

3 A. No.

4 Q. Does Apple sponsor any research at your
5 institution?

6 A. Not that I'm aware of.

7 Q. Do you have any relationship with Apple
8 outside of your consulting listed on your CV?

9 A. No. Well, I have a relationship with
10 Apple as a customer. I'm speaking to you through
11 an Apple computer. I have various Apple devices.

12 So just to be clear, I have a
13 customer-client relationship.

14 Q. Fair enough. Would you turn to
15 Paragraph 32 of your declaration, please.

16 A. I'm there. Thanks.

17 Q. Do you see the -- I'm sorry. Paragraph 31
18 and 32. You quote some of the language from
19 Claim 1 of the '755 patent. Do you see that, sir?

20 A. Yes.

21 Q. And you bold certain language and
22 italicize it. In Paragraph 31, it's a phrase

1 specifically bolded and italicized, it says
2 "dynamically changing the appearance of the
3 background of the first user interface without
4 changing an appearance of the one or more
5 foreground objects in the first user interface."

6 Why is that language in particular
7 emphasized in Paragraph 31?

8 A. I think that's explained substantially in
9 Paragraph 32, which says that "claim 1 provides
10 for a user interface that includes both a
11 background and foreground objects and a dynamic
12 change in appearance of only the background in
13 response to detecting a first touch input," and I
14 carry on.

15 Q. What's the difference between a foreground
16 and a background in this context?

17 A. I haven't provided a construction for the
18 terms. My focus is on demonstrating how the prior
19 art renders these claims obvious and meets these
20 limitations.

21 Q. To meet these limitations, the prior art
22 has to have background and foreground objects.

1 Correct?

2 A. I provide examples of how the prior art
3 meets those limitations. Yes.

4 Q. And to do that, you'd certainly need to
5 understand the difference between background and
6 foreground objects and opine on that?

7 A. That's correct. And I provide examples of
8 how the prior art does so.

9 Q. Are you able to explain the difference
10 between background and foreground objects in this
11 context outside of those examples?

12 A. My declaration provides examples of how
13 those limitations are met.

14 Q. And now I'm asking you to just explain the
15 difference between background and foreground
16 objects in the context of Claim 1 of the '755
17 patent.

18 A. One example of the difference between
19 background and foreground objects is provided by
20 the analysis of Hackborn.

21 Q. Outside of that analysis, are you able
22 sitting here today to just explain how background

1 and foreground objects differ from one another?

2 A. One example would be the way in which
3 Hackborn does that. Hackborn has a background
4 wallpaper and it also has other icons such as
5 those disclosed in Figure 1 of Hackborn.

6 Q. So outside of Hackborn, just starting with
7 the '755 patent and its claim, are you able to
8 tell me the difference between a background object
9 and a foreground object?

10 A. I haven't provided constructions for those
11 terms, so I can't provide you with a definitive
12 distinction of the boundaries of each of those
13 terms.

14 However, I'm perfectly happy to provide
15 you with examples of how Hackborn and other
16 disclosures disclose these limitations.

17 Q. So, Dr. Cockburn, we'll get to Hackborn.
18 Right now I'm asking about the '755 patent. I'm
19 not asking you for a construction.

20 I'm just asking you as an expert in
21 human-computer interaction if you can just explain
22 what a background and a foreground object is and

1 how those two things differ.

2 A. One example of a background would be a
3 wallpaper that sits on the background of a
4 display. These were well known in the art at the
5 time.

6 Q. And then if you have a background
7 wallpaper, then what is a foreground object?

8 A. One example of a foreground object would
9 be something that sits in front of that
10 background.

11 Q. So is it fair to summarize that, then,
12 that a foreground object is something that appears
13 in front of or above a background object?

14 A. I didn't provide that definition. I said
15 one example of a foreground object would be
16 something that sits in front of a background
17 object.

18 Q. Is it the fact that the foreground object
19 sits in front of or above the background object
20 that makes it a foreground object?

21 A. I didn't provide a construction for the
22 term. I merely provided an example.

1 Q. And I'm asking you if there is anything in
2 terms of characteristics of background and
3 foreground objects generally that would allow one
4 to understand how you reach that example.

5 A. Well, if a piece of art, such as Hackborn,
6 describes background wallpaper, the term
7 "wallpaper" is well understood in the art. It's
8 something that sits on the background and it's
9 explicitly identified as background. Therefore, a
10 person skilled in the art can understand that a
11 background object is present.

12 If Hackborn then additionally -- not
13 Hackborn necessarily, but if any disclosure then
14 identifies an object that's in the foreground,
15 such as those depicted in Figure 1 of Hackborn, a
16 person of skill in the art would understand that
17 both a background object and foreground objects
18 are disclosed.

19 Q. So in the context of a two-dimensional
20 display, electronic display, wallpaper is
21 considered a background object? Just generally
22 speaking. I think you said that's known in the

1 art that wallpaper is a background. Is that
2 accurate?

3 A. There are certainly situations in which
4 wallpaper is a background object.

5 Q. Well, let me ask it this way. What are
6 the situations in which wallpaper is a foreground
7 object?

8 A. This is a hypothetical. I can certainly
9 conceive of cases where wallpaper could be a
10 foreground object, but I haven't relied on them in
11 my opinions.

12 Q. And can you give me an example of a case
13 in which wallpaper would be a foreground object?

14 A. I'd prefer to not make one up on the fly.
15 I'd want to think carefully about it just to be
16 certain.

17 Q. Okay. So if there is wallpaper and if it
18 is background, then anything above the wallpaper
19 would be a foreground object?

20 A. This is a hypothetical. In the case of
21 Hackborn, it describes, quote, background
22 wallpaper, quote. That's at Paragraph 11 of

1 Hackborn, and that clearly discloses to a person
2 of skill in the art an object on the background.

3 Q. So if an object is visible above that,
4 quote, background wallpaper, it is necessarily a
5 foreground object?

6 A. In the case of Hackborn's disclosure in
7 Figure 1, you can see the background wallpaper and
8 you can see objects that are above that background
9 wallpaper. And in Hackborn's disclosure, a person
10 of skill in the art would understand that there
11 are both background and foreground objects.

12 Q. Okay. How would a person of ordinary
13 skill in the art reach the conclusion that the
14 objects that are visible above the background are
15 foreground objects?

16 A. In the case of Hackborn, that's clearly
17 disclosed to a person of skill in the art.

18 Q. Well, Hackborn doesn't use the word
19 "foreground." So I'm asking you to illuminate the
20 thought process and deductive reasoning that goes
21 into concluding that those objects are foreground
22 objects.

1 A. You stated that Hackborn does not use the
2 term "foreground." I don't have access to
3 Hackborn right now. Before agreeing with the
4 question, I'd like to check that that is indeed
5 the case.

6 Q. So I'm going to provide Hackborn in the
7 chat.

8 As I'm uploading it, though, just to
9 confirm, without looking at it you don't know
10 whether Hackborn uses the term "foreground"?

11 A. I have not memorized every word in
12 Hackborn, so I cannot be certain that the term
13 "foreground" is not present within it. It
14 certainly discloses foreground objects at least in
15 Figure 1.

16 Q. It should be available in the chat now.

17 A. Thank you.

18 Is there a pending question?

19 Q. Let me go back and read it to you.

20 Hackborn doesn't use the word
21 "foreground." Can you explain the thought process
22 that would lead a POSITA to conclude that

1 Hackborn's Figure 1 includes foreground objects?

2 A. I think that question is compound. Can we
3 break it into two, please?

4 Q. Okay. Hackborn doesn't use the word
5 "foreground," does it?

6 A. That's the case, as far as I understand
7 it.

8 Q. Okay. You have opined that Hackborn's
9 Figure 1 discloses foreground objects. Correct?

10 A. That's correct.

11 Q. Which of the objects in Hackborn's
12 Figure 1 are foreground objects?

13 A. In Figure 1, I would include among the
14 foreground objects the Items 108 that appear to be
15 above the background. I think it would also
16 include Item 106 and 102 that also appear to be
17 above the background.

18 Q. What is it about those objects that leads
19 you to conclude that they are foreground objects?

20 A. Figure 1 and associated descriptions of
21 those, at least associated with Figure 1. There's
22 a variety of statements such as each of the

1 displays -- sorry. Let me just pause for a
2 second.

3 One, one way would be to refer to Claim 1
4 of Hackborn, which is obviously in association
5 with Figure 1, which talks about graphical
6 wallpaper representation in a first visual layer
7 and a second layer that's positioned visually on
8 top of the first visual layer.

9 This discloses to a person of skill in the
10 art at least two layers, which would also disclose
11 to a person of skill in the art in combination
12 with Figure 1 the presence of background and
13 foreground objects.

14 Q. So if an object is in a second layer
15 that's above a first layer, then the object in the
16 second layer would be a foreground object?

17 A. In the case of Hackborn, that is the
18 understanding that a person of skill in the art
19 would take.

20 Q. More generally, in the human-computer
21 interaction field, is that how a POSITA would
22 decipher between a foreground object and a

1 background object as well?

2 MS. HUANG: Objection. Sorry. Objection
3 to form. I was late.

4 Q. Is there a context in the human-computer
5 interaction field in which an object that is
6 displayed above another object would not be a
7 foreground object?

8 MS. HUANG: Objection to form.

9 A. That's a hypothetical. But yes, I think
10 in this hypothetical there could be situations in
11 which the layers that you've referred to are not
12 necessarily disclosing a foreground object.

13 Q. What's an example of a situation in which
14 that hypothetical would not involve a foreground
15 object?

16 A. Broadly, if the object that you've
17 referred to as being the foreground object is not
18 at the foreground.

19 Q. So if there's another layer above that
20 object, then it wouldn't be a foreground object?

21 A. In this hypothetical. I think there are
22 cases where that could be the case.

1 Q. What's an example of a case in which that
2 would be the case?

3 A. I don't want to provide examples on the
4 fly without thinking about them carefully. My
5 declaration provides clear examples of how
6 Hackborn discloses a background and foreground
7 object, therefore disclosing or rendering obvious
8 the limitations.

9 Q. If there were three layers in a graphic
10 display and there are objects in the lowermost
11 layer, call it layer 1; there are objects in the
12 second layer, call it a middle layer; and there
13 are objects in the top layer, call it a top layer,
14 would the objects in the middle layer be
15 foreground objects?

16 A. This is a hypothetical that I would want
17 to analyze carefully.

18 Q. Without a very specific hypothetical, you
19 are unable to offer any description of how one
20 would determine whether an object is a foreground
21 object?

22 A. My declaration provides clear examples of

1 how Hackborn discloses background and foreground
2 objects. Other than that, I have not construed
3 the terms "background" and "foreground."

4 Q. So when you say examples in your
5 declaration, you've pointed to objects in Hackborn
6 as being foreground and background, but you
7 haven't explained why they're foreground or
8 background, have you?

9 A. I think that misstates my earlier
10 testimony. I read extracts from, for instance,
11 Claim 1 of Hackborn, which identifies a first
12 visual layer, and it also identifies a second
13 visual layer wherein the second visual layer is
14 positioned visually on top of the first visual
15 layer.

16 This is one example of a background and
17 foreground object.

18 Hackborn also describes objects being
19 above other objects, and this would also disclose
20 to a person of skill in the art background and
21 foreground objects.

22 Q. So then --

1 MS. HUANG: Sorry. Counsel, we've been
2 going about an hour. So whenever it's convenient,
3 I think it might be a good time for a break.

4 MR. ROBINSON: All right. Just let me
5 finish up one or two questions.

6 MS. HUANG: All right.

7 Q. Dr. Cockburn, you also testified that if
8 there were a third layer above the second layer,
9 that the objects in the second layer may not be
10 foreground objects.

11 A. That misstates my testimony. I stated
12 there could be hypothetical situations in which
13 that was the case. I didn't say it was
14 definitively the case. I said there could be
15 hypothetical situations in which that is the case.

16 Q. Okay. How does a POSITA determine whether
17 a third layer above the second layer renders
18 objects in the second layer not foreground
19 objects?

20 A. Calls for a new opinion. My declaration
21 shows clear examples of how Hackborn discloses
22 background and foreground objects.

1 Q. So, Dr. Cockburn, if you can't offer any
2 framework for the analysis as to what the limits
3 are of foreground and background objects, we're
4 left with a bit of "you know it when you see it."

5 So I'm just trying to understand the
6 reasoning that goes into understanding the
7 limits for your opinions, for your analysis, sir,
8 of when an object is and is not a foreground
9 object.

10 A. When Hackborn discloses a, quote,
11 background wallpaper, a person of skill in the art
12 understands that to satisfy a background.

13 When Hackborn discloses objects clearly
14 sitting on top of that background wallpaper, as
15 disclosed in Figure 1 and as described in my
16 declaration, a person of skill in the art
17 understands that there are foreground objects
18 present as well.

19 Q. What about when Hackborn discloses another
20 object above the foreground objects in a third
21 layer above the foreground objects that you just
22 listed?

1 You've testified that that could mean that
2 those objects in the second layer are not
3 foreground objects, but you haven't given me an
4 explanation and don't seem to be willing to give
5 me an explanation for how you make that
6 determination of what you've said is possible.

7 A. I'm relying on a person of skill in the
8 art's plain and ordinary understanding of the
9 terms and Hackborn's disclosures satisfy those
10 terms.

11 MR. ROBINSON: Let's go ahead and take a
12 break.

13 Should we say ten minutes, come back at
14 15 after the hour?

15 MS. HUANG: Thanks.

16 (Recess, 2:04 p.m. to 2:16 p.m.)

17 BY MR. ROBINSON:

18 Q. Dr. Cockburn, did you have any
19 communications with counsel for Apple during the
20 break?

21 A. No.

22 Q. Thanks. You pointed to Claim 1 of

1 Hackborn as having two visual layers. If there's
2 a third layer above a second layer, how would a
3 POSITA determine whether objects in the second
4 layer are foreground objects?

5 A. I think that would depend on the context.

6 Q. As you sit here today as an expert in the
7 field for over 30 years, can you offer any
8 guidelines or rationale that a POSITA would have
9 applied to determine whether a third layer would
10 change objects in the second layer from being
11 foreground objects?

12 A. I think there are a variety of factors
13 that could be considered; however, my analysis
14 focuses on Hackborn's disclosure of background and
15 foreground objects. The boundaries of what could
16 or could not be foreground and background objects
17 is not something I considered. I merely
18 considered how Hackborn disclosed them.

19 Q. What are the variety of factors that could
20 be considered to determine whether a third layer
21 would mean objects in the second layer are not
22 foreground objects?

1 A. As I said, I haven't considered the
2 boundary of the factors that could be considered.
3 I haven't provided the construction for those
4 term. I applied a person of skill in the art's
5 plain and ordinary understanding when I analyzed
6 Hackborn's disclosure of background and foreground
7 objects.

8 Q. Let's refer to Hackborn's Figure 2.

9 A. I'm there. Thanks.

10 Q. This shows a third layer, doesn't it?

11 A. I think that misstates the description
12 provided within Hackborn of Figure 2. Figure 2 is
13 disclosing processes.

14 And in Paragraph 29, Hackborn states,
15 "This does not mean that the objects are
16 physically arranged as they are shown in FIG. 2."

17 Q. Let's go to Claim 14 of Hackborn. It says
18 "further comprising receiving a user selection on
19 the second layer and opening a graphical object in
20 the third layer that is visually in front of the
21 second layer and that executes in a third process
22 that differs from the first process and the second

1 process."

2 In the very specific context of Claim 14
3 of Hackborn, are any objects in the third layer
4 foreground objects?

5 A. As far as I can recall, Claim 14 of
6 Hackborn was not something I relied on in my
7 report. If that's incorrect, please point me to
8 where I rely on it.

9 Q. I don't know if you relied on it in your
10 report or not, but I know that you did opine and
11 you have repeatedly stated that you analyzed
12 Hackborn, and Claim 14 is undoubtedly a part of
13 Hackborn.

14 So I'm asking you whether objects in the
15 third layer of Hackborn's Claim 14 would be
16 foreground objects.

17 A. This is a new opinion, one I would prefer
18 to think about more carefully.

19 But broadly, yes. I think that the
20 example provided by Claim 14 where a third layer
21 is visually in front of a second layer, that would
22 be one example of an object that is on the

1 foreground.

2 Q. Would the objects in the second layer
3 still be foreground objects?

4 A. I think that would depend on the context.

5 Q. How so?

6 A. Well, in a complete hypothetical, if there
7 was a user interface that segregated the display
8 into foreground and background and included a set
9 of layers in the background and a set of layers in
10 the foreground, then a set of layers could be
11 contained within the foreground. It's a complete
12 hypothetical, though.

13 Q. Okay. Let's go with the actual example of
14 Claim 14 of Hackborn. Are the objects in the
15 second layer foreground objects?

16 A. I think we established earlier that
17 Hackborn does not use the term "foreground"
18 explicitly.

19 Q. Are the objects in the second layer of
20 Claim 14 of Hackborn foreground objects to a
21 POSITA?

22 A. Is this continuing with the hypothetical

1 that I gave you earlier?

2 Q. I'm asking you about the actual example of
3 Hackborn's Claim 14 and whether a POSITA would
4 understand objects in the second layer to be
5 foreground objects.

6 A. And my earlier hypothetical gave you a
7 scenario in which they could be.

8 Q. So only if the first or the second and
9 third layers were considered to be foreground
10 layers would objects in the second layer be
11 foreground objects?

12 A. I didn't say only in that situation. I
13 provided you with a hypothetical of one situation
14 in which objects in the second layer could be
15 considered foreground objects.

16 Q. So if you considered the second layer a
17 foreground layer, then objects in the second layer
18 would be foreground objects?

19 A. That was the hypothetical I presented you
20 with. Yes.

21 Q. Okay. Do you need that hypothetical to
22 determine whether objects in the second layer of

1 Hackborn's Claim 14 would be considered foreground
2 objects to a POSITA?

3 A. I haven't provided a construction of the
4 term "background" or "foreground." I applied a
5 person of skill in the art's plain and ordinary
6 understanding, and I provided examples of how
7 Hackborn discloses or renders obvious foreground
8 and background objects.

9 Q. But to render obvious a claim that
10 requires foreground and background objects, you've
11 got to be able to determine whether an object in
12 the art is a foreground object or a background
13 object. Right?

14 A. Hackborn explicitly discloses the
15 objects -- the wallpaper object is a background
16 object. It also discloses that there are objects
17 above that background or on a visual layer in
18 front of those objects. To a person of skill in
19 the art, that would disclose objects on the
20 foreground.

21 Q. And that's what I'm trying to understand,
22 and frankly, I'm not sure why it's difficult.

1 Is any object that's above or visible in
2 front of a background wallpaper necessarily a
3 foreground object?

4 A. I think that depends on context.

5 Q. Well, the challenge I'm having is you
6 don't seem to be able to tell me what context that
7 would depend on.

8 What is it objectively that a POSITA would
9 rely on to determine whether a foreground object
10 is a foreground object?

11 A. I haven't provided a construction for
12 either of those terms, "background" or
13 "foreground." I relied on a person of skill in
14 the art's plain and ordinary understanding of the
15 term.

16 Hackborn clearly discloses and explicitly
17 discloses background wallpaper, and it explicitly
18 discloses objects in front of that background
19 wallpaper.

20 It's therefore clear to a person of skill
21 in the art from the textual disclosures of
22 Hackborn and from the images in Hackborn that

1 there are foreground objects.

2 Q. Now, Dr. Cockburn, you say that, but you
3 also say that if there were a third layer above
4 the second layer that the second-layer objects
5 might not be foreground objects.

6 Hackborn discloses a third layer above the
7 second layer, but there's nothing in your report
8 to exclude the possibility that you, yourself,
9 have opined on, which is that a third layer could
10 render objects in the second layer not foreground
11 objects.

12 And I'm just trying to make sense of that
13 because your report doesn't seem to address it.

14 A. My report does not provide a construction
15 for the boundaries and limits of background nor
16 does it do so for foreground.

17 My report provides clear and explicit
18 examples of background and foreground objects
19 disclosed by Hackborn.

20 The limits and boundaries of those terms
21 would require an explicit construction that I have
22 not provided.

1 Q. If an object at a third layer partially
2 covered or obscured an object in the second layer,
3 would that partially obscured object in the second
4 layer be a foreground object?

5 A. Earlier I provided you with a hypothetical
6 in which objects on that second layer could be
7 considered foreground objects. This is not
8 something I've relied on in my report. I relied
9 on explicit disclosures in Hackborn for the
10 foreground and background objects.

11 Q. That didn't answer my question. Let me
12 ask it again.

13 If an object in a third layer partially
14 covered or obscured an object in a second layer,
15 would the partially obscured object in the second
16 layer be a foreground object?

17 A. I apologize if I didn't answer your
18 question, but I think I was referring to my
19 earlier response to the hypothetical regarding
20 reasons that an object on a second level in
21 certain hypotheticals could be considered a
22 background object. It could be considered a

1 foreground object. It would depend on context.

2 If a user interface explicitly labeled a
3 set of layers as background and explicitly labeled
4 a set of layers as foreground, for example, then
5 the person of skill in the art might understand
6 that set of layers as being background and/or
7 foreground. It depends on context.

8 Q. Hackborn doesn't label any of its layers
9 foreground or any of its objects foreground. So
10 how can you possibly conclude that any of its
11 objects are foreground?

12 A. A person of skill in the art, looking at
13 Figure 1, for example, of Hackborn, looking at
14 Figure 2 of Hackborn, and reading its disclosures
15 of layers above and layers below would understand
16 the background objects are disclosed and
17 foreground objects are disclosed.

18 Q. So looking at Hackborn's Figure 2, if we
19 assume that each of those processes represents --
20 also represents a layer, as in Figure 14, is
21 object 110 a foreground object?

22 A. Does your question refer to Figure 14?

1 Q. No. It referred to Figure 2 in the
2 context of Claim 14. If we assume that each of
3 the processes in Figure 2 represents a layer as is
4 recited in Claim 14, is object 110 a foreground
5 object?

6 A. I think given the disclosure of Figure 1
7 and Figure 2 in combination with the content of
8 Paragraph 29, a person of skill in the art would
9 understand that foreground objects are disclosed.
10 I think a person of skill in the art would
11 understand the object 110 is also a foreground
12 object.

13 Q. Looking at Figure 2 of Hackborn, if we
14 assume that each of the processes 1, 2, and 3 are
15 layers consistent with what's recited in
16 Hackborn's Claim 14, are objects 102 and 106
17 foreground objects?

18 A. I'll read to you the final sentence of
19 Paragraph 29 which describes Figure 2.

20 And it says, "In particular, when an
21 element of the wallpaper 104 overlaps in the x-y
22 dimension (that is, in the plane of the display)

1 with an icon 102 or gadget 106, the icon or gadget
2 will receive priority for display so that it looks
3 to the user like it is positioned closer to the
4 user than is the wallpaper."

5 I believe your question specifically
6 identified Items 102 and 106. And I think, given
7 this disclosure, the icon or gadget will receive
8 priority for display so that it looks to the user
9 like it is positioned closer to the user than is
10 the wallpaper.

11 I think that would disclose to the -- a
12 person of skill in the art that those items are in
13 a foreground.

14 Q. So is it that an object gets priority for
15 display that allows you to conclude that that is a
16 foreground object in this context?

17 A. I think that passage that I read to you,
18 including "positioned closer to the user than is
19 the wallpaper," is a clear disclosure of a
20 foreground object.

21 Q. So if the chat window 110 is positioned
22 closer to the user than object 106, is 106 still a

1 foreground object?

2 A. Item 106 is represented in Figure 1 as a
3 clock. I've looked at that clock carefully, and
4 you can see the grass in the background is -- that
5 overlaps with the clock is drawn in a manner such
6 that it is fainter. I think that is showing to a
7 person of skill in the art that 106 is on a
8 foreground with respect to the background of the
9 grass, the wallpaper that Hackborn discloses.

10 Q. So to be a foreground object, it needs to
11 be displayed above the background wallpaper?

12 A. That's not what I said. I didn't say it
13 needs to be. I said it is disclosed to a person
14 of skill in the art because it is on a layer
15 visually in front of.

16 Q. Would it still be a foreground object if
17 it were on a visual layer behind the wallpaper?

18 A. I haven't provided an opinion on that.

19 Q. Could it be a foreground object even if it
20 were displayed on the visual layer below the
21 wallpaper?

22 A. I haven't conducted that analysis.

1 Q. Let's go back to Paragraphs 31 and 32 of
2 your declaration where you've got the language
3 from Claim 1.

4 What's your understanding of a magnitude
5 in the context of a contact from a user?

6 A. A magnitude is an absolute value of
7 something.

8 Q. What's your understanding of a threshold
9 in the context of the magnitude of a contact?

10 A. It could be many things. I provide
11 explicit examples of how the magnitude of a
12 threshold is disclosed by the prior art.

13 Q. Are you able to describe what a threshold
14 is without reference to the prior art?

15 A. Broadly, a threshold is a value that must
16 be surpassed.

17 Q. What's your understanding of the dynamic
18 change?

19 A. A change that is dynamic.

20 Q. Can you define that without using the term
21 itself?

22 A. It's a very, very broad question. Can you

1 give me a specific context?

2 Q. Dynamic change in appearance of a
3 background.

4 A. One example of that is provided by
5 Hackborn whereas the user swipes his or her finger
6 across the grass, the grass changes in its
7 appearance as though it is contacted by the finger
8 during its swipe.

9 Q. So the dynamic change in appearance is an
10 animation?

11 A. An animation could provide an example of a
12 dynamic change in appearance.

13 Q. What's the difference between a dynamic
14 change in appearance and a static change in
15 appearance?

16 A. I haven't conducted that analysis.

17 Q. So you mentioned the grass in Hackborn
18 moving as if touched by the finger.

19 A. Is that a question?

20 Q. Is it your understanding of Hackborn that
21 the grass is animated to simulate the behavior of
22 real grass if touched by a finger?

1 A. Can you repeat the question, please?

2 Q. Is it your understanding of Hackborn that
3 the grass in Hackborn's wallpaper is animated to
4 simulate the behavior of real grass touched by a
5 finger?

6 MS. HUANG: Objection to form.

7 A. I think the best answer to that is
8 provided at the end of Paragraph 33 of Hackborn,
9 which reads, "Such information may be used to
10 generate an animation that makes the grass blades
11 look as if the finger is actually contacting them
12 as it drags across the screen of the device."

13 Q. So the point is to simulate actual contact
14 in reaction to that contact?

15 MS. HUANG: Objection, form.

16 A. Can you repeat the first part of the
17 question, please, or repeat the question, please?

18 Q. Sure. So the point of that disclosure in
19 Hackborn is that Hackborn's wallpaper is
20 simulating the actual reaction of grass to
21 contact. Right?

22 A. It's generating --

1 MS. HUANG: Objection.

2 A. -- animation that makes the grass blades
3 look as if the finger is actually contacting them
4 as it drags across the screen.

5 Q. And that simulates the real-world behavior
6 of grass or is intended to simulate the real-world
7 behavior of grass. Correct?

8 MS. HUANG: Objection to form.

9 A. I think that's extremely vague. The
10 real-world behavior of grass includes a multitude
11 of things.

12 This segment that I'm relying on says
13 "generate an animation that makes the grass blades
14 look as if the finger is actually contacting them
15 as it drags across the screen."

16 Q. What about that is inconsistent with
17 simulating the real-world behavior of grass if
18 contacted by the finger?

19 A. Simulations can have various levels of
20 fidelity. I haven't provided an analysis of
21 simulation here.

22 I'm merely reciting that the purpose of

1 Hackborn, the disclosure here, is that it's
2 focused on the look of the grass blades. A
3 complete simulation might include a multitude of
4 other factors.

5 Q. Does real-world grass move when you touch
6 it?

7 A. Yes. The purpose here is to make the
8 grass blades look as if the finger is actually
9 contacting them as it drags across the screen.

10 Q. So to the extent of real-world grass
11 moving when you touch it, Hackborn is attempting
12 to simulate that real-world behavior of grass in
13 response to being touched. Correct?

14 MS. HUANG: Objection to form.

15 A. It's generating an animation that makes
16 the grass blades look as if the finger is actually
17 contacting them.

18 Q. Hackborn, at Paragraph 26.

19 A. I'm there. Thanks.

20 Q. It describes the example of Figure 1. And
21 about halfway through the part of Paragraph 26
22 that's on page 2 of Hackborn or numbered page 14,

1 at the bottom, it says, "However, the wallpaper
2 104 in this example may instead be an object that
3 includes executable code so that the wallpaper may
4 be active, and in this example may respond to
5 inputs from a user of the computing device."

6 Do you see that?

7 A. I do.

8 Q. Okay. Those "inputs" is not limited to
9 any particular type of input, is it?

10 A. In this particular sentence, there is no
11 limitation that I see on the type of input.

12 Q. Have you ever swiped real-world grass?

13 A. Yes.

14 Q. Have you ever -- what did the grass do
15 when you swiped it?

16 A. Amongst other things, it bent.

17 Q. So if you swipe grass left to right, the
18 grass will bend along with the direction of your
19 swipe. Correct?

20 A. Sounds reasonable.

21 Q. All right. And what if you poke a blade
22 of grass and it's going to -- poke it away from

1 you, it's going to bend away from you. Correct?

2 A. In the physical real world, sure.

3 Q. Paragraph 28 of Hackborn, about halfway
4 down, says, "Examples of predetermined user inputs
5 that may be received by the device to cause the
6 live wallpaper to become responsive to user input
7 can include agitating or shaking the device,
8 selecting an icon, button (not shown in FIG. 1),
9 or area of the display screen (e.g., a corner of
10 the screen) reserved for activating the live
11 wallpaper, making a particular movement on or
12 across the display screen, tapping on the display
13 screen a predetermined number of times within a
14 predetermined time period, and others."

15 Do you see that sentence, sir?

16 A. Yes, I do.

17 Q. What does tapping a -- "tapping on the
18 display screen a predetermined number of times
19 within a predetermined time period" mean?

20 A. That phrase in itself, I think it stands
21 for itself. A person skilled in the art would
22 understand that you can program devices to respond

1 to certain types of events, including tapping on
2 the display screen a predetermined number of
3 times -- so that might be two, three, seven -- and
4 that those multitude of taps must be within a
5 predetermined time period.

6 Q. And the predetermined time period is there
7 to distinguish it from sort of other taps. Right?
8 If you're just tapping in sort of individual
9 inputs, you don't want every three taps for it to
10 switch modes unless you do that intentionally to
11 switch the modes. Right?

12 A. Right. This sentence that we're
13 addressing right now should be understood in
14 context with the prior sentence that identifies
15 the purpose of the predetermined user input.

16 The sentence reads, "Rather, some examples
17 of live wallpaper may be displayed and updated so
18 that an appearance of the wallpaper is changed,
19 but may become responsive to direct user input
20 only after a predetermined user input is received
21 by the device."

22 So this is saying that the system becomes

1 responsive only when a predetermined input is
2 received. And the sentence you directed me to
3 provides examples of what that only predetermined
4 input may be.

5 Q. The beginning of that paragraph says, "In
6 the example shown in FIG. 1, a user is swiping her
7 finger across a touch-sensitive display screen of
8 the computing device." Do you see that, sir?

9 A. Yes.

10 Q. So that is explicitly an example.
11 Correct?

12 A. It's an example that I've relied upon of a
13 user swiping her finger.

14 Q. So that's one type of an input that a user
15 can supply to the touch screen. Correct?

16 A. A swipe is one type of input on a touch
17 screen.

18 Q. Paragraph 48 of your declaration.

19 A. I'm there.

20 Q. Specifically the part that's on page 32.

21 You state that "Hackborn explains that
22 touch input received by each device may be used to

1 provide 'a vector representing the position,
2 direction, and speed of the user's dragging
3 motion,' which 'may then be used by the process
4 executing the wallpaper'" . . . "'to determine
5 that the user's finger contacted items on the
6 wallpaper -- here, the grass 105.'"

7 Do you see that, sir?

8 A. Yes.

9 Q. And then the next sentence says, "'Such
10 information may be used to generate an animation
11 that makes the grass blades look as if the finger
12 is actually contacting them as it drags across the
13 screen of the device 100.'" Do you see that?

14 A. Yes.

15 Q. So if I understand that correctly,
16 Hackborn is using that vector to determine in part
17 whether the finger is contacting the grass. Is
18 that correct?

19 A. That's not how I would characterize it.

20 I would characterize it instead as a user
21 is swiping her finger across a touch-sensitive
22 display screen of the computing device. In

1 response, the blades of grass displayed in the
2 area of the swipe -- of the screen swiped by the
3 user are caused to bend.

4 So I don't see the "whether" clause that
5 you injected there.

6 Q. Well, let me ask that a little bit
7 differently, then.

8 If we refer back to Figure 1 of Hackborn,
9 the user's finger is touching the depiction of the
10 grass. Correct?

11 A. In Figure 1, yes.

12 Q. So if the user's finger were instead up in
13 the open space between the grass and the sun so
14 that the user were not touching the visual
15 depiction of the grass, does Hackborn still move
16 the grass?

17 A. Hackborn states that the grass is caused
18 to bend or sway as if the finger -- sorry -- as if
19 contacted by the user's finger during the swipe.
20 Sorry. I misread that. Maybe I should read it
21 again.

22 So the grass is caused to bend or sway as

1 if contacted by the user's finger during the
2 swipe. So if the finger is in contact with the
3 grass during a swipe, the grass will bend.

4 Q. So then it stands to reason that at some
5 point Hackborn's logic or software application or
6 executable code has to determine whether the
7 finger's vector is overlapping with the depiction
8 of the grass?

9 A. That's not how I would characterize it.

10 Q. Do we agree if the finger doesn't overlap
11 the grass, the grass doesn't move?

12 A. That seems reasonable.

13 Q. Then how would you characterize the other
14 part?

15 A. There doesn't need to be -- I don't think
16 it's necessary that the device would need to
17 compute or determine whether the finger is in
18 contact with the grass. It would merely make the
19 grass that is contacted bend or sway.

20 There doesn't need to be a determination
21 that says -- that calculates a binary of is the
22 finger in contact with the grass or not. It

1 merely needs to make the grass that is contacted
2 bend or sway.

3 Q. So it doesn't need to be a discrete step?
4 It's just if there's no grass contacted, then
5 there's nothing to make sway?

6 A. That seems reasonable.

7 Q. Okay. I'm going to put the Westerman
8 reference in the chat. There it is.

9 All right. That should come through.
10 Would you let me know when you've got access to
11 it?

12 A. It's downloading now. I've got it.
13 Thanks.

14 Q. So in Paragraph 51 of your declaration,
15 you describe a bit about Westerman. Specifically,
16 you say that it detects "a swipe gesture by
17 'acquiring touch image data from the
18 touch-sensitive device, processing the image to
19 generate one or more finger path events,
20 determining a displacement of one or more finger
21 path events, and detecting a swipe gesture if the
22 placement exceeds a predetermined threshold.'"

1 Do you see that?

2 A. Yes.

3 Q. So Westerman does that in the context of
4 keyboards. Correct? Specifically, virtual
5 keyboards displayed on a touch screen.

6 A. The title of Westerman is "Swipe Gestures
7 for Touch Screen Keyboards," and the context in
8 which it discloses its swipe gestures is
9 keyboards.

10 Q. Okay. So if you look at -- well, more
11 broadly, Westerman is disclosing assigning
12 particular functions to particular swipe gestures.
13 Correct?

14 A. That's not how I would characterize
15 Westerman.

16 Q. Okay. Let's look at Paragraph 23 of
17 Westerman, then, and see how Westerman
18 characterizes it.

19 Do you see where it says "Particular swipe
20 gestures that can be linked to particular
21 functions"?

22 A. This was Paragraph 23?

1 Q. Yes, sir.

2 A. Sorry. Could you repeat the question,
3 please?

4 Q. Do you see Paragraph 23 where it says,
5 "Particular swipe gestures that can be linked to
6 particular functions" and then it goes on to list
7 a number of swipe gestures like rightward swipe
8 gesture, leftward swipe gesture, downward swipe
9 gesture, and upward swipe gesture?

10 A. I see that. The yes.

11 Q. And at Paragraph 22, it says, "A variety
12 of functions can be invoked using the swipe
13 gestures"?

14 A. I see that. Yes.

15 Q. And then it lists functions like spacing,
16 erasing, or punctuation inserts?

17 A. Yes.

18 Q. So it's fair to say that Westerman is
19 focused on associating particular functions with
20 particular swipe gestures. Correct?

21 MS. HUANG: Objection, form.

22 A. No. I disagree with that statement.

1 Paragraph 19, which provides the
2 introduction and summary of Westerman or is part
3 of the introduction and summary, states at
4 Paragraph 19, "Detecting a swipe gesture can
5 include acquiring touch image data from the
6 touch-sensitive device, processing the image to
7 generate one or more finger path events,
8 determining a displacement of the one or more
9 finger path events, and detecting a swipe gesture
10 if the displacement exceeds a predetermined
11 threshold." Then, "If the displacement does not
12 exceed the threshold, the input can be interpreted
13 as a conventional tap."

14 So Westerman is concerned with
15 distinguishing taps from swipes.

16 Q. Any time Westerman determines that there
17 is a swipe happening or does not discard an input
18 as a tap, it also determines a direction of the
19 swipe. Correct?

20 A. The direction of the swipes is not part of
21 Westerman that I've relied on. I've relied on the
22 discrimination between the tap gesture and the

1 swipe gesture.

2 Q. Nowhere in Westerman does it reference
3 determine a swipe without determining the
4 direction of the swipe, does it?

5 A. Westerman provides clear teachings on the
6 discrimination between taps and swipes. Those are
7 the teachings that I've relied on.

8 Q. Dr. Cockburn, I need you to answer my
9 question. Westerman does not disclose identifying
10 a swipe without also identifying a direction of
11 the swipe, does it?

12 A. I'd need to check --

13 Q. Please do.

14 A. -- Westerman. But it's not part of the
15 information that I've relied on in Westerman.

16 Q. Dr. Cockburn, you've based your opinion on
17 the entirety of Westerman. You said that you've
18 reviewed the entirety of Westerman. It's listed
19 in the materials considered as the basis for your
20 opinion.

21 It is absolutely fair for me to ask you
22 about what Westerman does and doesn't disclose.

1 So if you need to check Westerman to see if there
2 are any examples you can point to as we sit here
3 today, then please do.

4 The question stands: Does Westerman ever
5 identify a swipe without also identifying the
6 direction of the swipe?

7 A. I think Paragraph 19, which is a paragraph
8 I've relied on, provides a distinction between a
9 tap and a swipe without any contemplation or
10 mention of determining the direction of the swipe.

11 A person of skill in the art looking at
12 Paragraph 19 would understand the discrimination
13 between a tap and a swipe is based on if the
14 displacement does not exceed the threshold, the
15 input can be interpreted as a conventional tap. A
16 person of skill in the art reading this would
17 understand that the discrimination between a swipe
18 and a tap is based on whether or not the tap
19 exceeds the threshold.

20 Q. Every time Westerman detects a swipe,
21 Westerman determines a direction of the swipe.
22 Correct?

1 A. I don't think that's a necessary inference
2 that a person of skill in the art would take from
3 Westerman. For instance, Paragraph 19 provides a
4 clear distinction --

5 Q. Okay. I don't need you to read
6 Paragraph 19 again. You're still not answering my
7 question, Dr. Cockburn.

8 A. If you will allow me to answer my
9 question, I will do so.

10 Q. You're not answering your question,
11 Dr. Cockburn; I need you to answer my question.

12 A. I'm trying to answer your question, but
13 you are interrupting me in my attempt to do so.
14 If I can complete my answer, I'll provide you with
15 the clarification that you are seeking.

16 Can I answer the question, please?

17 Q. Please do.

18 A. Paragraph 20 goes on to say, "Determining
19 the direction of a swipe gesture can include."

20 Paragraph 21 says, "A vertical gesture can
21 be interpreted."

22 These statements do not say the

1 determination of the direction must occur. It
2 says the determination of direction can occur.

3 A person of skill in the art reading
4 Paragraph 19 would understand that Paragraph 19
5 discloses the determination of a tap versus a
6 swipe.

7 Q. Dr. Cochran, Paragraph 18 says that "The
8 method can include detecting a swipe gesture
9 across the virtual keyboard, determining a
10 direction of the swipe gesture, and performing a
11 predetermined function determined by the direction
12 of the swipe gesture."

13 Are there any predetermined functions
14 disclosed in Westerman that do not depend on the
15 direction of a swipe gesture?

16 A. Can you repeat the question, please?

17 Q. Does Westerman disclose any predetermined
18 functions associated with a swipe that do not
19 depend on the direction of the swipe?

20 A. The claims of Westerman all determine a
21 direction.

22 This is not something I've relied on in my

1 report. I've relied on the portions of Westerman
2 that disclose clearly discriminating a tap from a
3 swipe.

4 Q. So as we sit here today, you're unable to
5 point to any predetermined functions in Westerman
6 associated with a swipe that do not depend on the
7 direction of the swipe?

8 A. The portions of Westerman I've already
9 directed you to are the portions that I rely on,
10 and they are the portions that determine a
11 distinction between a tap and a swipe.

12 Q. So as we sit here today, you're unable to
13 point to any predetermined functions in Westerman
14 associated with a swipe that do not depend on the
15 direction of the swipe. Correct?

16 A. In addition to identifying when a swipe
17 occurs, Westerman's process will identify the
18 direction of the swipe.

19 Q. Generally speaking, on the virtual
20 keyboards that Westerman addresses, tap inputs are
21 used to select keys associated with letters.
22 Correct?

1 A. Can you repeat the question, please?

2 Q. In the virtual keyboards addressed by
3 Westerman, tap inputs are used to select keys
4 associated with letters. Correct?

5 A. The specific use of taps in Westerman's
6 method for discriminating swipes from tap gestures
7 is to input text.

8 Q. One letter at a time. Right? Just like
9 touch-typing?

10 A. I think the characterization of "just like
11 touch-typing" is inappropriate. The purpose of
12 the taps in Westerman is to input taps -- is to
13 input text, but I'm relying on Westerman's
14 discrimination between swipe and tap gestures.

15 MS. HUANG: Counsel, we've been going
16 about an hour. So if there's a good time to take
17 a break, I'd ask that we do that.

18 MR. ROBINSON: Yeah. We're getting close.

19 Q. The inputting of text in Westerman's
20 virtual keyboard is one letter at a time. Right?
21 You tap one letter, you tap another letter, you
22 tap another letter. Correct?

1 A. As I think I said before, in Westerman the
2 purpose of taps is to input text in Westerman.

3 Q. So each tap inputs a letter. Correct?

4 Maybe Figures 1A and 1B of Westerman will
5 be helpful.

6 A. With reference to Figures 1A and 1B and
7 your question which stated that each tap will
8 input a letter, I think, if I heard it correctly,
9 I don't think that's entirely correct because
10 Westerman includes components that do not input
11 text directly.

12 For instance, in Figure 1A there is a send
13 Item 115 and selecting that send item will send
14 the message and not input text.

15 Similarly, Item 119 that has a full stop,
16 period, question mark, 1, 2, 3, will change the
17 form of the keyboard. That's a person of skill in
18 the art's understanding of that button.

19 And button 120 similarly would not input
20 text, but it would carry out some other function
21 related to the inputting of text.

22 So it's not correct that every tap would

1 input text.

2 Q. Okay. I was asking you specifically about
3 the inputting text function that you referenced.

4 Text is input in Westerman by tapping one
5 letter key at a time. Correct?

6 A. If only addressing the keyboard shown in
7 Figures 1A and 1B, then each tap on a letter key,
8 such as Item 125 in Figure 1B, will input a
9 letter.

10 Q. Okay. And as shown in Figures 2A and 2B
11 of Westerman, a swipe over that same keyboard will
12 perform a different function. Correct?

13 A. Westerman's teachings that I rely on
14 disclose the discrimination between taps and
15 swipes. And the purpose of that discrimination
16 would be to carry out a different function between
17 the tap and the swipe.

18 Q. And to allow that swipe to be performed on
19 the same keyboard that the taps are performed?

20 A. The region that is identifying the
21 gestures, the tap and swipe gestures disclosed
22 here, is over a keyboard.

1 Q. And so Westerman distinguishes between
2 taps and swipes so it knows whether to enter
3 letters or perform the function associated with
4 the swipe. Correct?

5 A. Westerman teaches a method to discriminate
6 between tap and swipe gestures for a specific
7 purpose of discriminating between taps to enter
8 text and swipes to execute other functionality.

9 Q. Thank you.

10 MR. ROBINSON: Let's take a break.
11 15 minutes, come back at 15 until?

12 THE WITNESS: Sure.

13 MS. HUANG: Sounds good. Thanks.

14 MR. ROBINSON: Thank you.

15 (Recess, 3:28 p.m. to 3:45 p.m.)

16 BY MR. ROBINSON:

17 Q. Dr. Cockburn, at Paragraph 86 of your
18 declaration, you address Hackborn's Figure 6. Do
19 you see that, sir?

20 A. Yes.

21 Q. So in Paragraph 86, you quote Hackborn's
22 explanation "that, '[w]hen post 606a is received,

1 the previously displayed post (e.g., posts 606b,
2 606c, 606d, 606e) may be shifted downward.'" Do
3 you see that?

4 A. Yes.

5 Q. So the new posts are arriving and the
6 older posts are shifting downward regardless of
7 any user input. Correct?

8 A. On this device, as the device receives the
9 messages, the messages are shifted down.

10 Some other user elsewhere has provided
11 input to send that message, and that's caused the
12 messages to scroll down when the message is
13 received.

14 Q. So a couple things I want to clarify.
15 First, these are social media posts in this
16 example. Correct? Not necessarily messages?

17 A. They're described as posts, which would
18 include, I think, messages. Yes, they're
19 described as social media posts.

20 Q. Okay. So those posts arrive and the older
21 ones shift down without any input from the user of
22 this device. Correct?

1 A. That's one way in which that scrolling
2 list will be updated. Yes.

3 Q. I mean, that's the only way that Hackborn
4 describes for this Figure 6 embodiment. Correct?

5 A. Well, I think a person of skill in the art
6 would understand that this is a scrolling list and
7 that the user would be able to scroll it.
8 Hackborn's explicit disclosures refer to the
9 images being moved down, the posts being moved
10 down.

11 Q. So the fact that Hackborn describes that
12 one example does not mean that that's the only way
13 that Hackborn's posts move?

14 A. The fact that Hackborn describes that one
15 example communicates a certain understanding,
16 i.e., that this is a scrolling list, to a person
17 of skill in the art.

18 And the scrolling list can be moved in a
19 variety of ways. That includes automatically and
20 manually.

21 Q. So the fact that Hackborn only describes
22 one type of automatic movement does not mean that

1 other types of manual movement are not present?

2 A. A person of skill in the art reading that
3 disclosure from Hackborn would understand that
4 this is a scrolling list, and they would
5 understand that scrolling can be achieved or
6 accomplished under computer control or under
7 manual control.

8 Q. So the fact that Hackborn only describes
9 one type of control does not mean that other types
10 of control are not present?

11 MS. HUANG: Objection to form.

12 A. A person of skill in the art would see
13 that disclosure, understand that this is a
14 scrolling list, and understand the nature of
15 scrolling widgets and user interfaces.

16 Q. So for this list in Hackborn's Figure 6 to
17 scroll back up, it would have to have more than
18 just the five posts that are disclosed. Correct?

19 A. Can you repeat the question, please? I
20 don't understand it.

21 Q. Sure. For this list that's shown in
22 Hackborn's Figure 6, this sequence of, what, five

1 posts, for that to scroll back up you would need
2 more than just those five posts. Right?

3 A. I think I misunderstand your question.

4 From the disclosure in Figure 6 alone, a
5 person of skill in the art would understand that
6 that lowest -- the bottommost message, 606e, that
7 appears to be from Mark Royal, it's substantially
8 occluded and it would be difficult for the user to
9 read it.

10 And therefore, to make this device more
11 useful, a person of skill in the art would
12 understand it would be necessary to scroll that
13 list to bring that item better into view.

14 Q. So these social media posts are coming
15 from social media apps. Correct? I'll refer you
16 to Paragraph 46 of Hackborn, if that's helpful.

17 A. Yeah. In Paragraph 46 it's characterizing
18 Figure 6 as, "The information includes posts or
19 tweets 606a-e from social networking sites (e.g.,
20 Google Buzz, Facebook, MySpace, Flickr, Twitter,
21 and the like) posted by friends, acquaintances,
22 group members or contacts of the user, for

1 example."

2 Q. And in Paragraph 48 towards the bottom it
3 explains that, "For example, if message 606c
4 represents a Facebook post, selection of message
5 606c may launch a Facebook application on device
6 600, which may permit the user to respond to
7 Donaldson's post 606c." Do you see that?

8 A. Yes.

9 Q. If a message is selected and an
10 application is launched, the application would
11 then be in the foreground above the icon 608 and
12 above the wallpaper. Correct?

13 MS. HUANG: Objection, compound.

14 MR. ROBINSON: Form or not form.

15 MS. HUANG: Objection.

16 MR. ROBINSON: Form is the only
17 appropriate objection unless you're going to
18 instruct him not to answer.

19 MS. HUANG: Objection to form.

20 A. One way that Hackborn discloses responding
21 to messages is provided in Figure 1 where Item 110
22 is a component of the chat user interface.

1 Q. Is that the entirety of your answer,
2 Dr. Cockburn? I don't want to interrupt you.

3 A. Could you just give me a moment.

4 And Figure 2 further characterizes
5 Item 110 as being on a different layer to other
6 elements in the user interface. And this would
7 disclose to the user -- to the person of skill in
8 the art that Item 110 represents a foreground
9 object.

10 Q. Is Item 110 a Facebook app?

11 A. Item 110 is described as a chat
12 application.

13 Q. Okay. Let's go back to the question I
14 asked, then, please.

15 Referring to Paragraph 48 in Hackborn and
16 Figure 6, the last sentence of Paragraph 48 says
17 that "selection of message 606c may launch a
18 Facebook application on device 600."

19 Launching a Facebook application on device
20 600 would bring that application above the
21 wallpaper and above the icons 608. Correct?

22 A. I think a person of skill in the art would

1 understand that the application -- the Facebook
2 application would be presented above the
3 background wallpaper.

4 Q. Would a POSITA understand that the
5 application would be presented above the icons 608
6 as well?

7 A. I think a person of skill in the art
8 reading the segment would understand that the
9 purpose of selecting that message is to respond to
10 it.

11 A user interface responding to messages is
12 depicted in Figure 1. It's -- Item 110 is a chat
13 user interface that provides an opportunity for
14 the user to respond to messages. And this
15 Item 110 is presented from a different layer to
16 the wallpaper background.

17 Q. Is Item 110 a Facebook application?

18 A. As I said before, Item 110 is described as
19 a chat application. Facebook provides mechanisms
20 to chat with people on social media.

21 Q. Facebook Messenger?

22 A. Facebook Messenger would be one example of

1 a Facebook application that supports facilities
2 for chatting.

3 Q. Does Paragraph 48 say -- use the word
4 "chat"?

5 A. Paragraph 48 provides examples of engaging
6 in message exchange with other people on social
7 media. Chatting is one form of message exchange
8 with people on social media.

9 Q. In the first sentence of Paragraph 48,
10 what does it mean "to cause the wallpaper or
11 portion thereof to assume a more prominent display
12 position or status"?

13 A. The second sentence of Paragraph 48 goes
14 on to provide examples of exactly that.

15 "For example, display planes may be
16 adjusted based on certain inputs or information
17 received" . . . "In some examples, selection of
18 the wallpaper or a portion of wallpaper, or
19 provision of the predefined input, may cause an
20 application associated with the wallpaper or a
21 portion of the wallpaper to launch or become
22 active, and may allow the user to work with an

1 aspect of the wallpaper or associated with the
2 displayed wallpaper."

3 Q. Does that mean that the wallpaper or
4 portion of the wallpaper would be moved to a
5 higher layer?

6 A. This is simply one example of a way to --
7 that this could be achieved.

8 Q. So one example is to move the wallpaper or
9 a portion of the wallpaper to a higher display
10 layer?

11 A. The example simply refers to adjusting the
12 display planes, which would include a variety of
13 adjustments to those planes. It might include
14 changing the opacity of the display planes or
15 other visual effects applied to the display
16 planes.

17 Q. Is one example of an adjustment to the
18 display planes to move the wallpaper to a higher
19 display plane or layer?

20 A. I haven't considered that and Hackborn
21 doesn't disclose it.

22 Q. You haven't considered whether causing a

1 wallpaper or portion thereof to assume a more
2 prominent display position or status might involve
3 moving the wallpaper to a higher display plane or
4 layer?

5 A. It's not something I relied on in my
6 declaration.

7 Q. Well, if interacting with a wallpaper
8 moves it to a higher display plane or otherwise
9 makes it more prominent, it wouldn't necessarily
10 be a background object anymore, would it?

11 MS. HUANG: Objection to the form.

12 A. Your question referred to two
13 possibilities, moving it to a different display
14 layer or -- I can't remember the term you used,
15 but there was an "or" segment that would have
16 allowed other visual effects to be applied to the
17 wallpaper.

18 The other visual effects certainly could
19 be applied to the wallpaper.

20 Q. Let's start with the first one, then.

21 If interacting with the wallpaper means
22 that it is made to be in a more prominent display

1 position or status, then moving it to a higher
2 display plane or layer could mean that it's no
3 longer a background object, couldn't it?

4 MS. HUANG: Objection to form.

5 A. There was one word I missed after
6 "prominent" in your question. I wasn't sure
7 whether it was "or" or "and."

8 When you make it more prominent, are you
9 saying making it more prominent by moving it to a
10 different display layer or are you saying making
11 it more prominent or moving it to a new display
12 layer?

13 Q. If you make it more prominent by moving it
14 to a higher display layer, then the wallpaper may
15 not be a background object anymore. Right?

16 A. That's something I've not considered, and
17 it's not something I believe that Hackborn
18 discloses.

19 Q. Paragraph 25 of Hackborn says, "The
20 graphical objects in the example implementations
21 are objects that are displayed as part of a home
22 screen for an operating device -- the screen that

1 is shown behind applications that may be opened by
2 a user."

3 Do you see that sentence, sir?

4 A. Where in the paragraph is this? Sorry.

5 Q. Back in --

6 A. Second sentence?

7 Q. Of Paragraph 25.

8 A. The second sentence?

9 Q. Yes.

10 A. Yes, I see that.

11 Q. And in the last sentence of Paragraph 25
12 it says, "In addition, open applications may be
13 shown in a visual layer that is even farther in
14 front of the layer for the icons, so that when an
15 application is maximized, none of the other two
16 layers is shown." Do you see that?

17 A. I see that.

18 Q. So in that instance when an application is
19 open and above and blocking the icon and wallpaper
20 layers, the application is the foreground object.
21 Correct?

22 A. I think if a window is maximized, then a

1 person of skill in the art would understand that
2 that window was in the foreground.

3 Q. Paragraph 121 of your declaration, you
4 state that -- I'll give you a second to get there.

5 A. I'm there. Thanks.

6 Q. You state that "A POSITA would have
7 understood or found obvious that Hackborn's
8 'simulated fictional dragging' of grass movement
9 results in the ceasing of grass movement (e.g.,
10 due to friction) after cessation of the user
11 input."

12 How does friction cause the grass to stop
13 moving?

14 A. A person of skill in the art would
15 understand that friction on a moving object causes
16 it to decelerate and eventually stop. In a
17 simulation of friction dragging, whatever velocity
18 is applied to an object will cease eventually.

19 Q. So friction resists movement between two
20 sliding surfaces. Correct?

21 A. They needn't be surfaces. There is
22 friction of an object moving through gaseous

1 substances.

2 Q. Where is the friction for the grass?

3 A. Friction for the grass is embedded in the
4 cells of the grass and its movement through the
5 air, in a simulation.

6 Q. And it's your opinion that Hackborn is
7 simulating the friction between grass and air and
8 within the cells of the grass?

9 A. Hackborn is teaching the simulation of
10 frictional dragging, which means it's simulating
11 the effects of a -- an object, the grass,
12 gradually slowing due to friction.

13 It needn't attempt to simulate the
14 underlying factors that cause the friction. It
15 merely needs to provide a presentation of the --
16 of those effects.

17 Q. So Hackborn is attempting to simulate the
18 real-world behavior of the grass?

19 A. Hackborn's disclosures here are trying to
20 simulate frictional dragging.

21 Q. Is that frictional dragging between the
22 finger and the grass?

1 A. It includes consideration of the finger's
2 movement through and on the grass.

3 Q. So Hackborn is attempting to simulate the
4 real-world behavior of grass being frictionally
5 dragged by a finger?

6 A. Hackborn directly refers to simulated
7 frictional dragging, which would -- a person of
8 skill in the art would understand means the
9 frictional effects applied to the visualization of
10 the grass to simulate friction slowing and
11 retarding the movement of the grass.

12 Q. Are you familiar with the difference
13 between elastic deformation and plastic
14 deformation?

15 A. I don't recall relying on plastic
16 deformation. I know my declaration makes
17 reference to elasticity. And I don't recall
18 plastic deformation.

19 Q. Are you familiar with the concept of
20 plastic deformation?

21 A. You'll need to refresh my memory.

22 Q. Okay. Let me ask it a little bit

1 different.

2 Grass in the real world doesn't always --
3 when pushed or brushed doesn't always return to
4 the place from which it started, does it?

5 A. Hackborn discloses different seasons and
6 the effects that different seasons can have on
7 simulations or representations with things such as
8 grass. And it mentions summer, spring, autumn,
9 and winter.

10 And a person of skill in the art with
11 reference to grass would understand that it has
12 different representations at different times of
13 the year. Grass's elasticity in summer is
14 different to its elasticity in winter or spring.

15 Q. During which season is grass the most
16 elastic?

17 A. I'm not an expert on grass, but I would
18 guess, and I think a person of skill in the art
19 would understand, that it is most elastic in
20 spring, probably least elastic, at least in New
21 Zealand, in summer when it is highly brittle.

22 Q. I'm sorry. A person of skill in the art

1 and human-machine interaction would understand
2 that grass is the most elastic in spring?

3 A. I think so. I think -- yeah. I think the
4 general public would have that understanding too.

5 Q. So let's start with grass at its most
6 elastic. It's possible to bend grass to a degree
7 to which it doesn't spring back to its original
8 position, isn't it?

9 A. Particularly in the summer, yes. You can
10 snap the grass.

11 Q. Even in spring.

12 A. I guess so.

13 Q. Okay. I'll ask you to refer to
14 Paragraph 148 of your declaration.

15 A. I'm there. Thanks.

16 Q. Page 111 says that "Failure to support
17 manual scrolling would be infuriating to a user --
18 the user might be about to read a message when it
19 is automatically scrolled out of view by the
20 arrival of a new message; manual scrolling would
21 allow the user to bring the automatically
22 scrolled-out message back into view."

1 If these are Facebook posts and a user
2 missed a message or a post, they could also simply
3 open Facebook. Correct?

4 A. They could. I mean, this -- if they are
5 just wanting to keep track of what messages have
6 been received and stay up to date, they may not
7 want to open up the application. It could be
8 inconvenient. Whereas a quick glance might tell
9 them if an important message from a boss or
10 colleague that they had been awaiting has arrived
11 or not.

12 Q. Important message from a boss's Facebook
13 post?

14 A. Possibly.

15 Q. Okay. Paragraphs 15 -- Paragraph 15 of
16 your declaration is almost two pages of documents
17 that you considered in forming your opinions in
18 this proceeding.

19 You don't cite to any of those documents
20 in support of your contention that a user would be
21 infuriated by missing a Facebook post, do you?

22 A. I think it stands for itself. If the user

1 is looking at a message or has just started
2 looking at a message, sees that it's something
3 that they are interested in and would like to see
4 more information about, and then it vanishes off
5 the display because it's been scrolled out by a
6 new arriving message, a person of skill in the art
7 would absolutely understand that this would be an
8 infuriating experience.

9 Q. And for that principle that you seem to
10 think would be almost taken for granted by a
11 POSITA, there's not a single example of any prior
12 art reference cited here supporting that
13 proposition.

14 A. As I say, I rely on my understanding and
15 experience of over 30 years in the field. I think
16 any POSITA would understand that information that
17 the user wants to look at that suddenly disappears
18 while they are just beginning to look at it would
19 be an infuriating experience.

20 Q. Do you consider yourself to be a POSITA?

21 A. Yes, at least.

22 Q. Do you consider yourself to be more than a

1 POSITA? An expert in this field?

2 A. Yes.

3 Q. Hackborn doesn't say anything about what
4 happens to posts when they are automatically
5 scrolled off of the screen, does it?

6 A. Beyond the fact that they are scrolled off
7 the screen, no.

8 MR. ROBINSON: Let's take another quick
9 break, maybe 15 minutes, come back at 20 till.

10 MS. HUANG: Sounds good.

11 (Recess, 4:26 p.m. to 4:40 p.m.)

12 BY MR. ROBINSON:

13 Q. Dr. Cockburn, would you please refer back
14 to the Westerman reference, Exhibit 1005.

15 A. Yes. I have it. Thanks.

16 Q. The last two sentences of Paragraph 19 say
17 that "The time of the motion associated with the
18 input can also be compared to a maximum swipe
19 gesture timeout threshold. If the timeout
20 threshold is exceeded, the input can be
21 interpreted as a conventional tap."

22 Do you see where it says that, sir?

1 A. I do.

2 Q. So that, if you look at the rest of
3 Westerman, is in place to allow a user to find the
4 right letter that they want to select. Correct?

5 A. That's one of the purposes that this is
6 put to. Yes.

7 Q. And so the timeout allows a user to swipe
8 and essentially not break contact so that even if
9 they exceed the motion threshold they can still
10 input a tap of a single letter. Correct?

11 A. This is not part of the disclosure of
12 Westerman that I've relied on, but that is the
13 purpose of that extra functionality described by
14 Westerman.

15 Q. How does Hackborn animate its grass?

16 MS. HUANG: Objection to form.

17 A. As Hackborn describes in the final
18 Paragraph 33, it says, "generate an animation that
19 makes the grass blades look as if the finger is
20 actually contacting them as it drags across the
21 screen of the device."

22 That's one way in which it displays grass

1 in response to a swipe gesture.

2 Q. What's an animation in this context?

3 A. It's a representation of the grass moving
4 in response -- as the grass drags across the
5 screen of the device. Sorry. As the finger drags
6 across the screen of the device.

7 Q. And you say it's a representation of the
8 grass moving. How is the movement of the grass
9 represented?

10 A. It's represented in such a way that it
11 looks as though the finger is actually contacting
12 the blades of grass.

13 Q. And is it represented by still images?

14 A. It's an animation that makes the grass
15 blades look as if the finger is actually moving
16 and actually contacting them as it drags across
17 the screen.

18 Q. Is that animation made up of still images?

19 A. Hackborn doesn't provide specific details
20 on how the animation is accomplished. However, a
21 person skilled in the art would understand many
22 ways of making animations occur.

1 Q. Is one of those ways with still images?

2 A. One of those ways would be with a
3 multitude of still images.

4 Q. Do others of those ways not use a
5 multitude of still images?

6 A. Still images can be precomputed. I think
7 that's what you're referring to here, a series of
8 still images that are precomputed.

9 However, a series of still images can also
10 make up an animation where each of those still
11 images is dynamically computed by the device such
12 as the combination of Hackborn and Townsend.

13 Q. Are others of the multitude of ways of
14 animating the grass movement, do any of those
15 others not use still images?

16 A. You need to understand that in any
17 animation on a computer system, each of the images
18 is briefly displayed in a static manner. There is
19 a refresh rate and a series of images are produced
20 to give the impression of a moving object. So
21 we're currently looking at displays where each of
22 the images we look at is presented to us for only

1 a few milliseconds.

2 So in one way, in one interpretation, each
3 of these images is a still image that gives us the
4 impression of a dynamic and moving display.

5 Q. Okay. And a moment ago you said that
6 those still images can be dynamically computed.

7 What's the difference between precomputed
8 and dynamically computed images in the context,
9 for example, of animating Hackborn's grass?

10 A. Well, for instance, I cite to a reference,
11 Townsend in one of the combinations in ground 1B,
12 Hackborn, Westerman, and Townsend. And Townsend
13 describes mechanisms, APIs and so on, that can be
14 used to compute animations.

15 Q. So precomputed animations or precomputed
16 images for animation don't change with the input,
17 but dynamically computed images for an animation
18 can be computed in response to and reflective of
19 the input?

20 MS. HUANG: Objection to the form.

21 A. I disagree with the premise of the
22 question.

1 Q. What is the premise of the question with
2 which you disagree? Let's start there.

3 A. The premise of the question is the
4 dichotomy between the accomplishment of a dynamic
5 effect. You seem to imply in the question that
6 the dynamic effect can only be produced by the
7 latter of your two scenarios.

8 A dynamic effect can also be produced by
9 the composition of a sequence of still images that
10 have been precomputed.

11 Q. Is that true for the animation of
12 Hackborn's grass, that that could be animated with
13 precomputed images?

14 A. This isn't something I've relied on in my
15 declaration. But yes, with sufficient images that
16 have been precomputed, a solution could be
17 accomplished that selects from a multitude of
18 precomputed images based on the nature of the
19 swiping gesture.

20 Q. That would take a lot of precomputed
21 images, wouldn't it?

22 A. It would depend on the fidelity of the

1 simulation. The higher the fidelity of the
2 simulation, the greater the number of precomputed
3 images.

4 Q. Given Hackborn's disclosure of using the
5 vector of a particular input to animate the grass,
6 would you expect Hackborn to use dynamically
7 computed images for its animations?

8 A. That's an interesting question. It really
9 depends on the fidelity of the representation that
10 the person skilled in the art is wanting to
11 accomplish.

12 A low-fidelity representation could be
13 caused -- could be produced with relatively few
14 precomputed images. A high-fidelity
15 representation could be accomplished with a
16 dynamic computation using a technique such as
17 Townsend's combination.

18 Q. Based on Hackborn's disclosure, including
19 its depiction of individual blades moving in
20 Figure 1, what is your expectation of Hackborn's
21 fidelity?

22 A. I think a person of skill in the art's

1 expectation would be towards the higher end of
2 fidelity as the intention because the intention is
3 to make grass blades look as if the finger is
4 actually contacting them as it drags across the
5 screen.

6 Q. And so higher fidelity would suggest
7 dynamic generation of the images?

8 A. I think that's fair, as taught by the
9 Hackborn, Westerman, and Townsend combination.

10 Q. In Hackborn, Figure 1, you referenced
11 elements 102, 108, 106, and 110, foreground
12 elements, previously. Correct?

13 A. I think that's correct. Yes.

14 Q. So those foreground elements could also be
15 present in Hackborn's Figure 6 embodiment,
16 couldn't they?

17 A. Can you repeat the question, please?

18 Q. Elements 102, 108, 106, 110 from Figure 1
19 could also be present in the Figure 6 embodiment
20 of Hackborn, couldn't they?

21 A. That's not clear to me. A person of skill
22 in the art would not be inclined to place the

110

1 objects 108, for instance, within the
2 representation shown in -- yeah, within the
3 representation shown in Figure 6, not the least
4 because there would be a problem of clarity of the
5 icons displayed.

6 Q. Okay. So other than the element 108,
7 element 102, 106, and 110 could also be present in
8 the Figure 6 embodiment. Correct?

9 A. I would agree regarding element 110.

10 Element 106 is less likely because there's
11 already a clock and display in the top right-hand
12 corner of Figure 6. A person skilled in the art
13 would not be inclined to include both
14 representations of the time.

15 Indeed, if you look at Figure 4, it's
16 substantially in common with the combination of
17 Figure 6. It's similar to the combination of
18 Figure 6 of Item 110 from Figure 1. Not the same
19 but not dissimilar.

20 Q. You referenced the clock at the top of
21 Figure 6. It appears to also include a battery
22 indicator, a signal indicator, and maybe a network

1 indicator, 3G. Do you see those as well?

2 A. Yes.

3 Q. Are those foreground objects or background
4 objects?

5 A. I haven't applied any analysis of those.
6 I haven't mentioned them in my declaration. I
7 don't have an opinion regarding them.

8 Q. Hackborn doesn't refer to the wallpaper of
9 Figure 6 as a background wallpaper, does it?

10 A. I think that's incorrect.

11 Q. Where does Hackborn refer to the live
12 wallpaper of Figure 6 as a background wallpaper?

13 A. I think your previous question that I said
14 was incorrect was whether Hackborn refers to
15 wallpaper with Figure 6, and it does.

16 Paragraph 47, it reads, "While no
17 application windows are shown in FIG. 6, it is
18 understood that a user could launch an application
19 and work in an application area on the display
20 602, where the application area would be displayed
21 above the wallpaper layer and the icon layer."

22 Q. Let me ask my question again.

1 Hackborn doesn't refer to the wallpaper of
2 Figure 6 as a background wallpaper, does it?

3 A. Paragraph 11 provides a general
4 characterization of the disclosures of Hackborn
5 and describes background wallpaper for a home
6 screen. It then describes Figure 6 as containing
7 wallpaper in light of Paragraph 11 and its
8 disclosures about background layers or background
9 wallpaper.

10 I think a person of skill in the art would
11 understand that the wallpaper layer, which is a
12 term of art that was well understood, would be a
13 background layer.

14 Q. Is all wallpaper necessarily a background?

15 A. I think this revisits a question we had
16 earlier on, and I said there could be contexts in
17 which a wallpaper is not on the background.

18 Q. And in fact, in Hackborn itself,
19 Paragraph 7, 8, 9, 10, 11, 12, and 13 all address
20 wallpaper, but only Paragraphs 11 and 12 of those
21 discuss background wallpaper.

22 A. I think that, if the intention is to

1 characterize wallpaper as being something other
2 than on the background as disclosed by Hackborn, I
3 think that's incorrect.

4 Paragraph 2 provides context for the
5 technical field. It reads, The "document relates
6 to components of computer operating systems,
7 including background desktop components commonly
8 referred to as computer wallpaper."

9 So this is providing a context for the
10 entire disclosure. Wallpaper disclosed in
11 Hackborn is background wallpaper.

12 Q. So your opinion and your position is that
13 all of Hackborn's wallpaper is necessarily
14 background?

15 A. I believe all the wallpaper that Hackborn
16 discloses is on the background.

17 Q. Looking at Hackborn's Figure 1, if an
18 application is launched and is above all of the
19 elements that are depicted in Figure 1, are the
20 elements 108, 106, 110 still foreground objects?

21 A. Well, as Hackborn discloses at
22 Paragraph 25, for instance, if an application

1 launched and maximized, none of the other layers
2 is shown.

3 Q. So if the other layers are not shown, then
4 they are no longer foreground objects while that
5 application is displayed?

6 A. If they're not on the display, a person of
7 skill in the art would understand that they are
8 not foreground objects.

9 Q. If an application is launched and the
10 objects 110, 106, 108 are not on the display and
11 are therefore not foreground objects, is there a
12 background object still?

13 A. Can you repeat the question, please?

14 Q. If an application is launched and the
15 foreground objects are no longer foreground
16 objects, is there still a background object?

17 A. In the case that the application is
18 launched and maximized, as described in
19 Paragraph 25, that foreground object, the new
20 application, would occlude any background. The
21 background would not be on the display and
22 therefore there is no background on the display in

1 that case.

2 MR. ROBINSON: Okay. I'll pass the
3 witness for redirect.

4 MS. HUANG: No redirect. Thank you.

5 (Off the record at 5:10 p.m.)

6 (Previously marked Exhibits 1003, 1004,
7 and 1005)

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1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

2

3 I, Michelle Keegan, Registered Merit
4 Reporter and Notary Public within and for the
Commonwealth of Massachusetts, do hereby certify:

5 That ANDREW COCKBURN, PH.D., the witness
6 whose deposition is hereinbefore set forth, was
7 duly sworn by me before the commencement of such
deposition and that such deposition was taken
before me and is a true record of the testimony
given by such witness.

8

9 I further certify that the adverse party
was represented by counsel at the deposition.

10 I further certify that the deposition of
11 ANDREW COCKBURN, PH.D., occurred remotely via Zoom
on Thursday, March 13, 2025, commencing at
12 1:00 p.m. to 5:10 p.m.

12

13 I further certify that I am not related to
14 any of the parties to this action by blood or
marriage, I am not employed by or an attorney to
15 any of the parties in this action, and that I am
in no way interested, financially or otherwise, in
the outcome of this matter.

16 I declare under penalty of perjury that
17 the foregoing is true and correct. Executed on
the 18th day of March, 2025.

18

19

20 Michelle Keegan
21 Notary Public in and for the
Commonwealth of Massachusetts
22 My commission expires: May 15, 2026.

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E R R A T A S H E E T

I, ANDREW COCKBURN, PH.D., do hereby certify
that I have read the foregoing transcript of my
testimony, and further certify that said
transcript is a true and accurate record of my
testimony (with the exception of the following
corrections listed below):

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Signed under the pains and penalties of perjury
this day of , 2025.

ANDREW COCKBURN, PH.D.

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