

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Title: GESTURE-EQUIPPED TOUCH SCREEN
SYSTEM, METHOD, AND COMPUTER
PROGRAM PRODUCT

SUPPLEMENTAL DECLARATION OF DR. LOREN TERVEEN

I hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code.

Dated: July 25, 2025

By: 

Loren Terveen, Ph.D.

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I, Loren Terveen of Minneapolis, MN, declare that:

I. INTRODUCTION

1. I have been retained on behalf of Apple Inc. (“Apple”), as an independent expert consultant in this *inter partes* review (“IPR”) proceeding before the Patent Trial and Appeal Board (“PTAB”) of the United States Patent and Trademark Office (“USPTO”). I understand that the proceeding number of this IPR proceeding is IPR2024-01083.

2. I have been asked by Apple’s counsel (“Counsel”) to consider whether certain references describe or make obvious features recited in claims 1-3, 7, 9, 10, and 101 of U.S. Patent No. 10,642,413 (“the ’413 patent”) (EX1001). My opinions are based on my education, my knowledge and experience in the relevant fields of technology, and my review of the materials considered in preparing this document.

3. I previously submitted a declaration in this proceeding that I signed on June 28, 2020⁴ (“Original Declaration”). I understand that the Original Declaration was marked as EX1003. The Declaration contained my opinions and the bases for them. Since submitting the Original Declaration, I have considered the Declaration of Dr. Craig Rosenberg (“Rosenberg Declaration”) (EX2006) as well as the references cited by him, including:

- EX2008: Provisional Patent Application 61/581,918

- EX2009: Jonathan (“Jono”) Xia, Pie in the Sky, Mozilla Labs
(Archived July 21, 2011 and available online at
<https://web.archive.org/web/20110721001737/https://jonoscript.wordpress.com/2008/10/28/pie-in-the-sky/>)
- EX2010: Ben Meadowcroft, Pie Menus a Brief Examination,
(Archived March 8, 2011 and available online at
<https://web.archive.org/web/20110308003423/https://www.benmeadowcroft.com/reports/piemenu/>)
- EX2011: Ben Meadowcroft CV (Archived June 17, 2011 and
available online at
<https://web.archive.org/web/20110617040542/http://www.benmeadowcroft.com:80/about/>)
- EX2012: Andreas Schuderer, Pie menus on the Web, Experiments
(Archived March 3, 2011 and available online at
<https://web.archive.org/web/20110303221610/http://www.schuderer.net/experiments.shtml#readingmore>)
- EX2013: J. Callahan, et. al. An empirical comparison of pie vs.
linear menus (1988). CHI’88: Proceedings of the SIGCHI
Conference on Human Factors in Computing Systems, May 1988,
ACM, 95-100, (full version available online at

https://archive.org/details/humanfactorsinco0000chic_c8g7/page/n1/mode/2up)

- EX2014: Kirill Grouchnikov, The usability of radial menus, Pushing Pixels, (Archived July 28, 2012 and available online at <https://web.archive.org/web/20120728140221/https://www.pushing-pixels.org/2012/07/25/the-usability-of-radial-menus.html>)
- EX2015: Kirill Grouchnikov, About me, Pushing Pixels, (Archived July 1, 2011 and available online at <https://web.archive.org/web/20110701062127/http://www.pushing-pixels.org/about-me>)
- EX2016: Jonathan (“Jono”) Xia,, About me, Work Press, (Archived July 21, 2011 and available online at <https://web.archive.org/web/20110721001007/https://jonoscript.wordpress.com/tag/blogging/>)
- EX2017: European Publication App. No. EP08101835.0 to Hye Sang Ahn et al. (“Ahn EP”)

4. My opinions from my Original Declaration have not changed.

II. BACKGROUND AND QUALIFICATIONS

5. My background and qualifications are set forth in the Declaration. I incorporate that section in this declaration (“Supplemental Declaration”) by reference.

III. INFORMATION CONSIDERED

6. In preparing this Supplemental Declaration, I have considered materials listed in paragraph 18 of my Original Declaration. I have also considered the references listed below. In addition, my opinions are further based on my education, training, experience, and knowledge in the relevant fields.

- EX1024: Transcript of July 10, 2025 Deposition of Craig Rosenberg, Ph.D.
- EX1025: Ken Hinckley *et al.*, *Pen + Touch = New Tools*, UIST '10: Proceedings of the 23rd annual ACM symposium on User interface software and technology, 27-36 (Oct. 2010)
- EX1026: Ken Hinckley *et al.*, *Design and Analysis of Delimiters for Selection-Action Pen Gesture Phrases in Scriboli*, CHI '05: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, pp. 451-460 (Apr. 2005)
- EX1027: Andrew Bragdon *et al.*, *Experimental Analysis of Touch Screen Gesture Designs in Mobile Environments*, CHI '11: Proceedings of the

SIGCHI Conference on Human Factors in Computing Systems, pp. 403-412
(May 2011)

- EX1028: Jeremie Francone *et al.*, *Wavelet Menus on Handheld Devices: Stacking Metaphor for Novice Mode and Eyes-Free Selection for Expert Mode*, Conference Proceedings of ACM-AVI 2010, pp.173-180 (May 2010)
- EX1029: Michael Rohs, *Visual Code Widgets for Marker-Based Interaction*, 25th IEEE International Conference on Distributed Computing Systems Workshops (Jun. 2005)
- EX1030: Stéphane Huot and Eric Lecolinet, *ArchMenu et ThumbMenu : Contrôler son dispositif mobile « sur le pouce »*, IHM '07: Proceedings of the 19th Conference on l'Interaction Homme-Machine, pp. 107-110 (Nov 2007)
- EX1031: Shengdong Zhao and Ravin Balakrishnan, *Simple vs. Compound Mark Hierarchical Marking Menus*, UIST '04: Proceedings of the 17th annual ACM symposium on User interface software and technology, pp. 33-42 (Oct. 2004)
- EX1032: Jeremie Francone *et al.*, *Wavelet Menus: A Stacking Metaphor for Adapting Marking Menus to Mobile Devices*, MobileHCI '09: Proceedings of the 11th International Conference on Human-Computer Interaction with Mobile Devices and Services (Sep. 2009)

IV. SUMMARY OF OPINIONS

7. I have been asked to consider whether the claims of the '413 patent are anticipated or obvious over certain prior art references. As explained in the Original Declaration, and in further detail in this Supplemental Declaration, it is my opinion that claims 1-3, 7, 9, 10, and 101 of the '413 patent are obvious over Ahn, Chaudhri-842, and Hinckley.

V. Reply to Arguments Made By Dr. Rosenberg

8. The Original Declaration analyzed how the combination of Ahn, Chaudhri-842, and Hinckley render claims 1-3, 7, 9, 10, and 101 of the '413 patent obvious. I incorporate that analysis here by reference. In this Supplemental Declaration, I further address statements from Dr. Rosenberg relating to the prior art discussed in the Original Declaration.

A. Dr. Rosenberg's Arguments Regarding the Scope of Limitations [1.e.ii] and [1.e.iii] and Corresponding Limitations [101.e.ii] and [101.e.iii]

9. Dr. Rosenberg argues that Limitations [1.e.ii], [1.e.iii], [101.e.ii], and [101.e.iii] “describe logical functions/steps to process instances of user input on a touch screen that begin from a common starting point—the start of “a first duration of contact.” EX2006, [84]. I disagree.

10. Limitations [1.e.i] and [101.e.i] recite “detecting, utilizing the touch interface, a first duration of contact on at least one of the one or more first menu

items.” Dr. Rosenberg’s arguments do not properly account for the phrase “at least one.” *See* EX2006, [82]-[84]. The fact that the relevant limitations (1.e.i, 1.e.ii, 1.e.iii, 101.e.i, 101.e.ii, 101.e.iii) recite “at least one of the one or more first menu items” means that the claimed electronic device may detect contact with respect to any of the first menu items.

11. For example, if the menu includes five separate menu items, the language of limitation [1.e.i] allows that the electronic device perform this detection with respect to all five of these menu items. In a first instance of contact, the electronic device may detect contact on a first menu item, and in a second instance of contact, the electronic device may detect contact on a second, separate menu item. Detection of each of these distinct contacts would satisfy limitation [1.e.i], even though each contact is on a separate menu item.

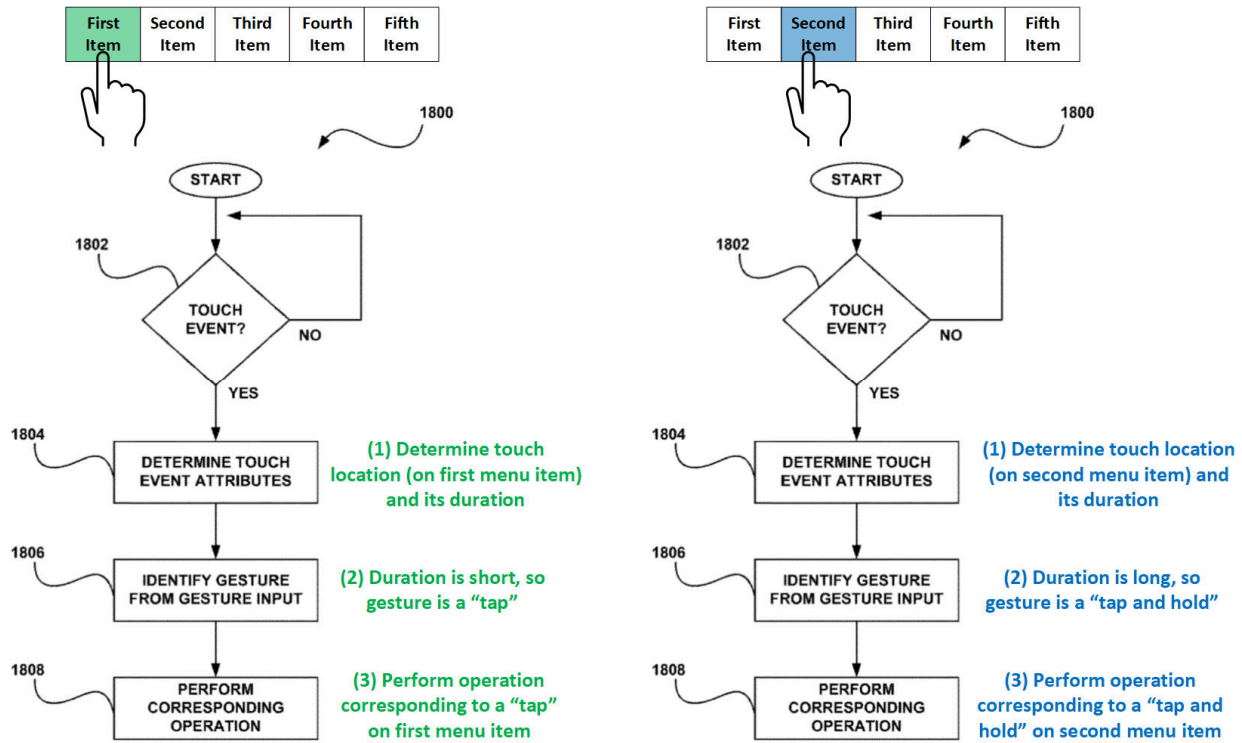
12. Limitations [1.e.ii] and [101.e.ii] are mutually exclusive of Limitations [1.e.iii] and [101.e.iii]. That is, any given instance of contact can only satisfy Limitations [1.e.ii] and [101.e.ii] or Limitations [1.e.iii] and [101.e.iii]. As a result, so long as the claimed electronic device is configured to satisfy Limitations [1.e.ii] and [101.e.ii] for some instances of contact and satisfy Limitations [1.e.iii] and [101.e.iii] for other instances of contact, the electronic device meets these limitations of claims 1 and 101.

13. Expanding on my above example, the first instance of contact detected on the first menu item might be a “tap” (*e.g.*, a quick touch-on and touch-off at a location on the touch interface corresponding to the first menu item) and therefore its duration would not surpass a threshold of time, so it would satisfy Limitations [1.e.ii] and [101.e.ii] so long as, in response, the electronic device performs a corresponding first operation. This would be akin to a user tapping on a menu slot in Hinckley’s bezel menus and Hinckley’s device accessing the “functionality” associated with the menu icon, where “any type of functionality can be associated with the icons or slots.” *See* EX1004, [0074], [0077].

14. On the other hand, the second instance of contact detected on the second menu item might be a “tap and hold” (*e.g.*, a touch-on at a location on the touch interface corresponding to the second menu item for a threshold amount of time before a touch-off). Therefore its duration would surpass the threshold of time, so it would satisfy Limitations [1.e.iii] and [101.e.iii] so long as, in response, the electronic device performs a corresponding second operation. This would be akin to a user tapping and holding on or near a radial menu icon of a menu slot in Hinckley’s bezel menus, and Hinckley’s device accessing a radial menu associated with the menu slot. *See* EX1004, [0106]-[0109].

15. This is consistent with the specification of the '413 Patent. With respect to FIG. 18, the '413 Patent describes a process in which whenever there is a “touch event:” (1) “the initial touch event attributes are determined;” (2) “the gesture is identified from gesture input,” which “refers to the collection of inputs, flags, and signals by which a gesture is identified and parameterized;” and (3) “the corresponding operation is performed.” EX1001, FIG. 18, 56:53-57:39. While the process of FIG. 18 includes determining attributes of the “touch event” (*e.g.*, duration or location), the process of FIG. 18 does not require that multiple instances of contact have a “common starting point.” *See* EX1001, 58:15-47. In describing the process of FIG. 18, the '413 Patent states that “these and the following operations may be associated with any gesture or other user input,” including, for example, “apply[ing] front surface contact pressure, above a predefined threshold for a predefined amount of time, to a status bar icon to turn off the associated device hardware” and “apply[ing] contact pressure to a status bar battery indicator icon to activate a menu populated with one or more predefined collections of settings for various power scenarios.” *Id.*

16. The following diagram illustrates how the process of FIG. 18 would operate for each of the distinct instances of contact I described in the example of paragraphs [13] and [14], above.



17. Had Smith intended the conditions of Limitations [1.e.ii] and [1.e.iii] be evaluated with respect to the same menu item, Smith could have written the claims to recite that limitation. For example, Smith could have written the claims as “a first duration of contact on one of the one or more first menu items.” Smith did not write the claims this way. Instead, Smith wrote the limitations with respect to “at least one of the one or more first menu items.”

B. Hinckley’s Menu Icon 1714 Is a Constituent Part of Menu Slot 1712, And Therefore These Are Not Two Different Icons

18. Dr. Rosenberg argues that, under his claim construction, “a given contact must be capable of doing either of the two functions, depending on whether its duration surpasses a threshold.” EX2006, [86]. Dr. Rosenberg argues that

Hinckley's icon 1712 and icon 1714 are different user interface "objects," and therefore "do not meet the plain language of the claims." EX2006, [85]-[87]. Even assuming for the sake of argument that Dr. Rosenberg's construction of the claim language were correct, I disagree that Hinckley's description of the menu slot 1712 as "includ[ing] a radial menu icon 1714" indicates there are two distinct user interface "objects," as Dr. Rosenberg is using that term.

19. First, Hinckley's plain language does not distinguish, but instead combines the functionality of menu slot 1712 and radial menu icon 1714. For example, Hinckley describes that "icon or slot 1712 includes a radial menu icon 1714 that gives a clue to the user that one or more radial menus, for example radial menu 1715, is associated with this particular icon or slot." EX1006, [0107]. In other words, while Hinckley describes the radial menu icon 1714 as what 'gives a clue' concerning radial menu 1715, Hinckley specifies that the radial menu 1715 is associated with the icon or slot 1712, not the radial menu icon. In this regard, radial menu icon 1714 is not an independent user interface object, but instead a particular portion of icon or slot 1712.

20. As I explained in my Original Declaration, "it would have at least been obvious to implement Ahn's mobile communication terminal 100 such that tapping the icon would have triggered one action, while tapping and holding the radial menu icon portion of that same icon would have triggered a different action

(*i.e.*, opening the radial menu 715).” EX1003, [110]. In other words, before the radial menu is open, tapping anywhere on icon or slot 1712—including the radial menu icon 1714 portion of that that same icon—would have resulted in the same operation.

21. Specifically, Hinckley teaches that “the radial menus 1715 can be accessed through a tap and-hold of the pen or finger on or near the radial menu icon 1714,” whereas “tapping on the radial menu icon triggers a default action which . . . may not be different than the action associated with tapping on the bezel menu slot.” EX1006, [0107]. In other words, tapping anywhere inside menu slot 1712, including the radial menu icon 1714, would activate a default operation (*e.g.*, launching an application), whereas tapping and holding on or near the radial menu icon 1714 of menu slot 1712 opens the radial menu 1715. *See id.* Moreover, because Hinckley describes that “a tap-and-hold of the pen or finger on or near the radial menu icon 1714” results in accessing the radial menu, there would be a portion of menu slot 1712 outside of radial menu icon 1714 that could be tapped and held to access the radial menu 1715. *See id.* Conversely, tapping menu slot 1712 would activate a default operation—other than opening the radial menu—and at no point does Hinckley limit this tapping to only those portions of menu slot 1712 a certain distance from radial menu icon 1714. *See id.*

22. To implement Hinckley and the Ahn-Chaudhri-Hinckley combination differently would have led to a higher probability of user confusion and frustration, particularly on the display of a handheld device. *See* EX1006, [0043] (describing that the computing device 102 that utilizes the bezel menus may be a “wireless phone” or a “handheld device”). Dr. Rosenberg rightly recognizes that icon 1712 and radial menu icon 1714 are “small [in] size and close [in] proximity.” EX2006, [100]. However, Dr. Rosenberg misunderstands how this would lead to errors. “[A]ssigning functions to both a tap on icon 1712 and a tap on radial menu icon 1714” only leads to error where the functions are different. As I described in my Original Declaration and above, these taps would be assigned the same function.

23. In contrast, under Dr. Rosenberg’s theory, tapping on radial menu icon 1714 would not result in performance of any function before the radial menu is open. *See* EX2006, [99]-[101]. This would create an unintuitive dead-zone within icon 1712 corresponding to radial menu icon 1714 that users could accidentally tap when trying to tap icon 1712 leading to nothing happening in response to the contact—an increase in error rates and user confusion.

24. Dr. Rosenberg further argues that “a POSITA would understand the ‘tapping on the radial menu icon’ in Hinckley’s paragraph [0107] refers to a tap after radial menu 1715 is opened.” EX2006, [100]. Again, I disagree. The final sentence of paragraph [0107] does not state that the radial menu is open. I see no

basis in paragraph [0107] for assuming that Hinckley meant for the radial menu to be open as a prerequisite to the final sentence.

be configured to respond only to touch input. In the illustrated and described embodiment, icon or slot 1712 includes a radial menu icon 1714 that gives a clue to the user that one or more radial menus, for example radial menu 1715, is associated with this particular icon or slot. In the illustrated and described embodiment, the radial menu 1715 can be accessed in any suitable way, e.g. through a pen or touch. For example, in at least some embodiments, the radial menu 1715 can be accessed by hovering a pen over or near radial menu icon 1714. Alternately or additionally, a pen or finger can be used to pull down the radial menu 1715. Alternately or additionally, the radial menus 1715 can be accessed through a tap-and-hold of the pen or finger on or near the radial menu icon 1714. In some embodiments, tapping on the radial menu icon triggers a default action which may or may not be different than the action associated with tapping on the bezel menu slot.

EX1006, [0107]. In fact, the very next sentence shows that when Hinckley wanted to discuss operations or functionalities with the radial menu open, it explicitly said so. *See* EX1006, [0108] (“Once the radial menu 1715 is exposed, the user can access various functionalities or commands by touching down on or near radial menu icon 1714 and stroking in a particular direction”).

25. Because a tap (*i.e.*, a contact with a duration below a threshold) anywhere within icon 1712, including on or near radial menu icon 1714, “triggers a default action” (*e.g.*, opening an application) whereas tapping and holding “on or near” the radial menu icon 1714 portion of icon 1712 opens the radial menu, at

least the area of icon 1712 “near” radial menu icon 1714 is a “common starting point” that would satisfy both limitations [1.e.ii] and Limitation [1.e.iii], even under Dr. Rosenberg’s narrow construction and the incorrect assumption that tapping within the radial menu icon 1714 would not access the default function.

C. Motivation to Utilize Hinckley’s User Interface Elements and Associated Gestures in the Context of the Ahn-Chaudhri-Hinckley Combination

26. Dr. Rosenberg argues that neither Hinckley’s gestural modes nor its bezel gestures “relate to the opening of the radial menu that Dr. Terveen’s combination relies upon.” EX2006, [104]. This is not correct. Contrary to Dr. Rosenberg’s assertion that my Original Declaration “provides two modifications based on Hinckley” (EX2006, [102]-[103]), Hinckley’s bezel menus, slots, radial menu icons, and radial menus are all related to one another. I relied upon those interconnected teachings in explaining a POSITA’s motivation “to integrate Hinckley’s teachings about bezel gestures and associated user interface elements, including the bezel menus and radial menus, in conjunction with the Ahn-Chaudhri touch screen mobile device.” EX1003, [63].

27. For example, Hinckley describes that, “[i]n at least some embodiments, so-called radial menus can be utilized in connection with menus such as bezel menus.” EX1006, [0105]. In FIG. 17, “device 1702 includes a bezel 1703 and a bezel menu 1710 that has been exposed on display device 1708 as

described above.” EX1006, [0106]. In other words, opening a bezel menu with a bezel gesture is a prerequisite to the device 1702 displaying the bezel menu’s “multiple selectable icons or slots,” one of which is the “icon or slot 1712 [that] includes a radial menu icon 1714.” EX1006, [0106]-[0107].

28. As I explained in my Original Declaration, a “POSITA would have recognized that implementing Hinckley’s different user interaction modes in the context of Ahn’s mobile communication terminal would have created a user interface that adapts to a user’s experience level and created a more intuitive, efficient, and pleasing experience for a user.” EX1003, [64]. In supporting this conclusion, I cited to Hinckley’s teachings regarding the gestural modes of both the bezel menus (which are discussed in cited paragraphs [0077]-[0080]) and the radial menus (which are discussed in cited paragraph [0110]). *Id.*

29. My mapping of the Ahn-Chaudhri-Hinckley Combination to independent claims 1 and 110 focused primarily on novice mode. *See, e.g.*, EX1003, [105] (describing how aspects of Hinckley’s novice mode render obvious Limitation [1.e.i] in the Ahn-Chaudhri-Hinckley Combination). As I describe in greater detail in Section V.D, *infra*, in Hinckley’s novice mode, “the bezel menu slides out and tracks with the user’s finger.” EX1006, [0080]. “[A]fter the user gestures to reveal the bezel menu [], the user can lift their finger, whereupon the bezel menu can remain open for a configurable interval (or indefinitely).”

EX1006, [0077]. It is from an open bezel menu that Hinckley describes that “icon or slot 1712 includes a radial menu icon 1714.” EX1006, [0106]-[0107].

30. With respect to the radial menu(s), Hinckley describes that, “[i]n the novice mode, the radial menu can be fully exposed to enable users who are unfamiliar with its accessible functionalities or commands to be visually guided through the selection process.” EX1006, [0110]. As I described in greater detail in Section V.B, *supra*, “the radial menus 1715 can be accessed through a tap and-hold of the pen or finger on or near the radial menu icon 1714,” consistent with limitation [1.e.iii]. EX1006, [0107]. On the other hand, as I explained, a POSITA would have at least found obvious that tapping on any portion slot 1712—including radial menu icon 1714—“triggers a default action which . . . may not be different than the action associated with tapping on the bezel menu slot,” consistent with Limitation [1.e.ii]. EX1006, [0107]. Accordingly, the novice modes of both the bezel menu and the radial menu confer similar benefits (visual guidance to the user) and meet the claim limitations. Dr. Rosenberg’s arguments to the contrary rely upon an incorrectly narrow view of both my explanation of the Ahn-Chaudhri-Hinckley Combination and Hinckley’s teachings of the gestural modes.

31. Yet, even setting aside the clear benefits of Hinckley’s gestural modes, Dr. Rosenberg’s evidence shows that a POSITA would have had ample motivation to utilize Hinckley’s radial menus. EX2009, 3 (calling pie menus “a UI

widget with so many advantages"); EX2013, 2 ("Distance to and size of the target are important factors that give pie menus the advantage over traditional linear menus"). Dr. Rosenberg acknowledges that "radial menus were thought to be faster to select because of the low distance (D) to selection when the menu appears equidistantly around the cursor." EX2006, [75]. Dr. Rosenberg further acknowledges that "[r]adial menus were also thought to benefit because the user would learn to associate a direction of the selection with the assigned functionality." EX2006, [77].

32. Dr. Rosenberg's understanding of the benefits is consistent with the broader prior art, including Kenneth P. Hinckley's own research papers. *See, e.g.*, EX1026 (describing the use of a type of radial menu called a "marking menu" in the context of a pen-based tablet computer and teaching that the authors "focus[ed] on marking menus in our experiment because they have been shown to be a rapid and effective means for command activation"); EX1027, 2 (describing that "[m]arking menus help users move from novice to expert by showing a spatially arranged hierarchical menu that uses compass-aligned marks; the menu is shown on a delay so that after a time users can simply perform the marks from memory," studying their use in the context of mobile phones and the use of "bezel gestures," and finding that, "in the presence of environmental distractions, gestures can offer significant performance gains and reduced attentional load, while performing as

well as soft buttons when the user’s attention is focused on the phone”); EX1028, 1 (teaching that “linear menus are not easy to use on small devices, especially in mobile situations,” whereas at least some implementations of marking menus are “well adapted to the limited screen space of handheld devices”); EX1031, 1 (describing that “marking menus have significant advantages over . . . linear menus,” but “they have some limitations” that the design proposed in the paper seeks to address).

33. The prior art, including that cited by Dr. Rosenberg, demonstrates that POSITAs knew radial/marketing menus had design trade-offs with respect to traditional linear menus. *Compare* EX2010, 2 (comparing advantages of pie menus like “equal level of ease in selecting any menu option” to disadvantages like “[t]he [limited] number of choices given by pie menus”). Taken together, a POSITA would have recognized that radial/marketing menus present a suitable option in the context of mobile devices—like the one taught by Ahn—and would have utilized them where their advantages were consistent with the POSITA’s implementation goals.

D. The Combination of Ahn, Chaudhri, and Hinckley Renders Obvious that

34. As I explained in my Original Declaration, “Ahn describes the use of blurring in at least two ways” that would meet limitation [1.d.ii]. EX1003, [91].

First, because Ahn describes that the menu may be translucent, it would have progressively blurred at least a portion of the graphical user interface as the user slid the menu onto the screen. EX1003, [91]-[92]. Second, Ahn illustrates that when a menu is opened, a clock widget is blurred, and a POSITA would have found it obvious in view of Chaudhri '842 that this blurring would have happened progressively as the user slid open the menu. EX1003, [94]-[99].

35. With respect to the first form of blurring, Dr. Rosenberg argues that I “must show” that “Ahn’s menu moves with the user’s finger as the user drags their finger across the display.” EX2006, [142]. While both Ahn and Hinckley do show this (as I explain briefly below), my Original Declaration argued that a POSITA would have found it obvious in the Ahn-Chaudhri-Hinckley combination “that the menu moves and appears to slide in direct correspondence with the user’s finger.” EX1003, [85]. I did not rely upon any one reference’s teachings for this proposition. Rather, I cited to three references as supporting that it would have been obvious. Dr. Rosenberg did not even address the teachings of two of those references: Nan (EX1010) and Hisatomi (EX1011). *See* EX1003, [85] (citing Nan and Hisatomi in support of the obviousness of having the menu follow the user’s finger); EX2006, [141]-[160] (not addressing Nan or Hisatomi).

36. A POSITA would have at least found obvious that Ahn teaches a menu that follows a user’s finger. For example, Ahn teaches that “as the user may

press the graphic 1800 with a finger, the graphic 1800 gradually disappears in the display 40, and the menu list 1500 can be displayed as emerging from the left side of the display 40 while the graphic 1800 disappears in the display 40.” EX1004, [0119]. A POSITA would have understood or at least found obvious that these temporal descriptions would have been implemented such that menu 1500 emerges “as the user” “drags in a right direction” while “press[ing] the graphic 1800.” See EX1004, [0117]-[0119]¹.

¹ It is my understanding that, during his deposition, Dr. Rosenberg interpreted paragraphs [0117]-[0119] of Ahn as teaching that “it is a right swipe to bring up the graphic shadow and then a left swipe that is starting on the graphic shadow to dismiss the graphic shadow and bring up 15B.” EX1024, 98:17-112:4. According to Dr. Rosenberg, a right-swipe would not open the menu at all. *Id.* This interpretation is directly counter to Ahn’s goal of displaying the graphic shadow 1800. See EX1004, [0117]. Specifically, Ahn teaches that “an identifier [e.g., graphic shadow 1800] for notifying the user that an item list matched to the specific direction is displayed in the display 40 can be displayed in the display 40.” *Id.* Forcing a user to access the notifying identifier with a gesture that itself has no identifier defeats the purpose of notification. Further, Ahn teaches that “the

37. A POSITA would have at least found obvious that Hinckley also teaches a menu that follows a user's finger. For example, Hinckley describes that, in novice mode, there may be a short timer, and when the timer expires, "if the finger is still in the region occupied by the bezel menu, the bezel menu slides out and tracks with the user's finger." EX1008, [0080]. And in expert mode, "the user can perform a continuous finger-drag that crosses through the slot or icon and onto the canvas to create and drag an associated object (or tool, or interface mode) to a specific desired position or path, in a single transaction." EX1006, [0078]. In the next paragraph, Hinckley goes on to teach that, "[i]n at least some other embodiments, in the expert mode, the bezel menu may not necessarily be revealed at all in order to access functionality associated with an icon or slot." EX1006, [0079]. In other words, in the embodiment described in paragraph [0078], as the user "perform[s] a continuous finger-drag . . . in a single transaction" the bezel menu would be "revealed" during the finger-drag gesture. *See* EX1006, [0078]-

identifier may be a specific icon for notifying a start position of the touch and drag operation." *Id.* Under Dr. Rosenberg's interpretation, opening a menu is a two-part touch-and-drag operation that is started before the identifier is even displayed. Thus, under Dr. Rosenberg's interpretation, the identifier (*e.g.*, shadow 1800) would not "notify[] a **start** position." *Id.*

[0079]. A POSITA would have at least found obvious that these teachings mean that Hinckley intended for the bezel menu to “track[] with the user’s finger” as the user drags their across the display to open the bezel menu. *See* EX1006, [0078]-[0080].

38. This is consistent with other contemporaneous publications authored by Hinckley. For example, in a 2010 paper, Hinckley explained that, to access a nearly identical bezel menu, “the user slides a finger across the bezel, which starts to pull out the bezel menu (Fig. 9b).” *See* EX1025, 8. The 2010 paper helpfully provides a graphic showing the bezel menu sliding out with and following a user’s dragging gesture. *Id.*

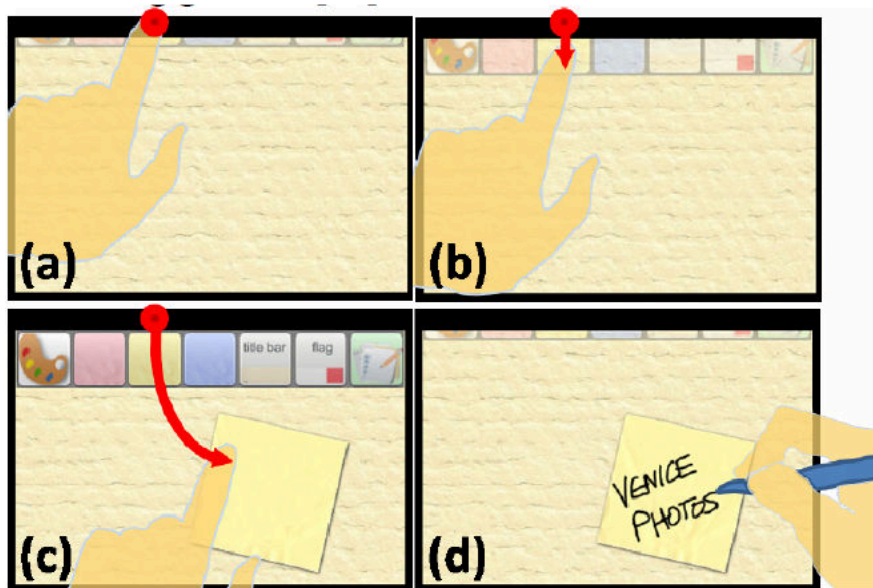


Fig. 9. Creating new objects via the bezel menu. *See* text.

EX1025, FIG. 9

39. With respect to the second form of blurring, Dr. Rosenberg argues that the combination of Ahn and Chaudhri-842 that I explained in my Original Declaration “is premised on the combination providing a user with an indication of or feedback on the progress of Ahn’s gesture.” EX2006, [150]. However, I explained that there were at least four reasons why a POSITA would have found the combination with Chaudhri-842 obvious, and only one of those four related to providing a user with an indication of or feedback on the progress of Ahn’s gesture. *See* EX1003, [57]-[62].

40. Dr. Rosenberg’s arguments assume that the menu does not slide with the user’s input. *See* EX2006, [152]-[153]. Thus, Dr. Rosenberg is not accounting for the full combination, in which both the menu sliding open and the clock widget blurring provide the visual confirmation to a user of their progress. *See* EX1003, [60] (explaining that movable images “when combined with the transition in optical intensity, help the user visualize the correct gesture and how to complete it successfully). Taken together, these two visual cues would have accomplished the benefit of providing the user sensory feedback.

41. Dr. Rosenberg also argues that Ahn’s clock widget is part of the background, and that Chaudhri ’842 does not teach blurring the background. EX2006, [157]-[162]. Dr. Rosenberg is mistaken for at least two reasons. First, my Original Declaration explained that “Ahn already illustrates in FIGS. 3A and

4B that the process of opening the edge menus may cause user interface objects that are displayed as part of the standby screen 300 (e.g., a clock widget) to be blurred when the edge menu is opened and displayed on the screen.” EX1003, [58]. I similarly differentiated the clock widget as a distinct user interface object in other places in my Original Declaration. *See, e.g.*, EX1003, [62] (“varying optical intensity for a user interface object (e.g., the blurring of Ahn’s clock widget)”), [136] (distinguishing the virtual layer of the background and the virtual layer of the clock widget). This is consistent with Ahn’s treatment of the clock widget in the figures, because it shows only the clock widget being blurred and not the whole “background.” *See* EX1004, FIG. 4B, 13(b).

42. Chaudhri-842 teaches an example in which “as the user transitions from a first application and to a second application, a user interface for the second application may fade in (i.e., increase in intensity) and a user interface for the first application may fade out (i.e., decrease in intensity).” EX1005, [0079]. “In other words,” I explained, “the transition may appear to a user as though objects associated with the second user interface state ‘fade in’ while objects associated with the first user interface state ‘fade out.’” EX1003, [48]. From this, a POSITA would have at least found obvious that Chaudhri-842’s teachings regarding varying optical intensity applied equally to Ahn’s clock widget. *See* EX1005, [0079], [0087]

43. Second, Dr. Rosenberg again reads the prior art too narrowly.

Chaudhri-842 teaches that, “[i]n some other embodiments, the optical intensity may be the visual differentiation between the user-interface object and the background, based on color, hue, color saturation, brightness, contrast, transparency, and any combination thereof.” EX1005, [0085]. This description of these “other embodiments” does not limit the use of “color, hue, color saturation, brightness, contrast, transparency, and any combination thereof” to only the user-interface object in order to achieve the differentiation with the background. *Id.* A POSITA would have also understood this sentence as teaching that the properties of the background (*e.g.*, transparency) could also be adjusted to achieve the differentiation.