

EXHIBIT II

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
MATTHEW CAMPBELL, MICHAEL
HURLEY, and DAVID SHADPOUR,
on behalf of themselves and
all others similarly situated,
Plaintiffs,
vs. No. 4:13-cv-05996-PJH
FACEBOOK, INC.,
Defendants.

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HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY
CONTAINS SOURCE CODE

VIDEOTAPED 30(b)(6) DEPOSITION OF
RAY HE
Wednesday, October 28, 2015

Reported by:
COREY W. ANDERSON
CSR No. 4096
Job No. SF 2173701B
PAGES 1 - 114

1 Q. Okay. Can you please point us to the 16:13:26
2 source code that performs that functionality? 16:13:29
3 A. Yes. 16:13:32
4 (Pause) 16:13:32
5 A. So at a high level, the code I have loaded 16:14:08
6 here will render markup that will instruct the 16:14:11
7 browser to fetch the image and render it. That 16:14:20
8 would be line 54. 16:14:24
9 Q. And is this the source code that says 16:14:39
10 [REDACTED] 16:14:42
11 [REDACTED]? 16:14:50
12 A. Yes. 16:14:51
13 Q. A few lines below that there is code that 16:14:57
14 says [REDACTED]? 16:14:59
15 A. Yes. 16:15:01
16 Q. What function does that code perform? 16:15:04
17 A. I believe show privacy warning instructs 16:15:09
18 UI share states to display a message to the user 16:15:14
19 that people who can see their share cannot see the 16:15:17
20 original content and thus it won't be rendered as an 16:15:20
21 attachment. 16:15:23
22 Q. What is a share in the context of the 16:15:36
23 answer you just gave? 16:15:38
24 A. A share is a object created by a Facebook 16:15:44
25 user that represents something that the user has 16:15:53

1 shared as an attachment. 16:16:00

2 Q. What did you mean by people who can see 16:16:17

3 the share cannot see the original content and thus 16:16:18

4 it won't be rendered as an attachment? What does 16:16:22

5 that mean? 16:16:25

6 A. So for instance, you have -- let's say you 16:16:26

7 share something, say I can see this, but Josh can't, 16:16:32

8 it's a photo. You have made it so only I can see 16:16:39

9 it. 16:16:42

10 Now, if I share it, this is the code which 16:16:43

11 will say that hey, you can share this, but some 16:16:47

12 people won't be able to see the attachment. So when 16:16:51

13 I share, Josh still won't be able to see the photo. 16:16:55

14 Q. In section 1 (b) the response states "The 16:17:23

15 JavaScript may provide a brief description of the 16:17:28

16 URL." 16:17:30

17 Do you see that? 16:17:32

18 A. Yes. 16:17:32

19 Q. Where is the information that informs the 16:17:34

20 brief description of the URL obtained from? 16:17:36

21 A. That would be part of the data eventually 16:17:41

22 returned by the sharescape dispatcher we were just 16:17:44

23 looking at. 16:17:47

24 Q. Does this code instruct the JavaScript in 16:17:56

25 the user's browser to return that information, or 16:18:01

1 A. So at the -- at a high level it's the code 17:55:21
2 on the left. 17:55:23

3 Q. Okay. And this is -- which file is this 17:55:24
4 again? 17:55:28

5 A. This is [REDACTED]. 17:55:28

6 Q. Okay. And what lines are you referring 17:55:33
7 to? 17:55:35

8 A. So the entire file kind of is needed to 17:55:38
9 render this. But in particular where we call in to 17:55:43
10 our rendering code is this [REDACTED] 17:55:51
11 [REDACTED]. 17:55:56

12 Q. In the context of 1 (y), what exactly was 17:56:18
13 the data regarding URL attachments to messages that 17:56:26
14 was obtained? 17:56:29

15 A. So if a share object was previously 17:56:40
16 created in the process that we referred to, the 17:56:43
17 aggregate -- sorry, the global share objects counter 17:56:48
18 field would be incremented, or part of the counter 17:56:58
19 field would be incremented. 17:57:02

20 Q. Can you point to the code that incremented 17:57:06
21 the global share object's field when a share object 17:57:08
22 was created? 17:57:13

23 A. Yes. 17:57:15

24 (Pause) 17:57:24

25 A. So the code I have on the left is code 18:00:30

1 couple of questions talking about the dif set 19:11:58

2 modified the tracking info. 19:12:00

3 MR. RUDOLPH: Yes. 19:12:03

4 THE WITNESS: Just want to paint a picture 19:12:04

5 of what actually changed. 19:12:05

6 So the tracking info is just five or six 19:12:07

7 numbers, each of which is a counter for things like 19:12:12

8 attachment, Facebook feed posts, likes, comments, 19:12:16

9 stuff like that. And there is no way to like go 19:12:24

10 back from these counters to the original objects 19:12:26

11 that caused their incrementing. 19:12:31

12 BY MR. RUDOLPH: 19:12:38

13 Q. Okay. Is there anything else? 19:12:39

14 A. That was it. 19:12:41

15 Q. If you can go back to 1 (v), please? 19:12:44

16 A. Yes. 19:12:51

17 Q. 1 (v) states "The message event was logged 19:13:03

18 on a number of ways." 19:13:05

19 Do you see that? 19:13:07

20 A. Yes. 19:13:07

21 Q. And you, we discussed that the logs that 19:13:08

22 you are aware of in which the message event was 19:13:10

23 logged are the impressions log and the ODS log? 19:13:13

24 A. Yes. 19:13:18

25 Q. Okay. Are there other logs in which this 19:13:18

1 I, the undersigned, a Certified Shorthand
2 Reporter of the State of California, do hereby
3 certify:

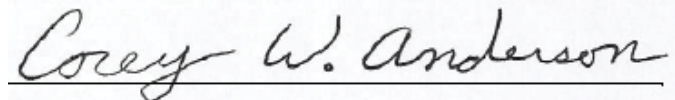
4 That the foregoing proceedings were taken
5 before me at the time and place herein set forth;
6 that any witnesses in the foregoing proceedings,
7 prior to testifying, were administered an oath; that
8 a record of the proceedings was made by me using
9 machine shorthand which was thereafter transcribed
10 under my direction; that the foregoing transcript is
11 a true record of the testimony given.

12 Further, that if the foregoing pertains to
13 the original transcript of a deposition in a Federal
14 Case, before completion of the proceedings, review
15 of the transcript was not requested.

16 I further certify I am neither financially
17 interested in the action nor a relative or employee
18 of any attorney or any party to this action.

19 IN WITNESS WHEREOF, I have this date
20 subscribed my name.

21 Dated: 10/30/2015

22 
23 _____

24 COREY W. ANDERSON

25 CSR No. 4096

In the Matter of: *Campbell et al. v. Facebook, Inc.*
Case No. 13-CV-05996-PJH

Date of deposition: October 28, 2015

Witness: Ray He

Reason codes:

1. To clarify the record.
2. To conform to the facts.
3. To correct transcription errors.

Page	Line	Reads	Should Read	Reason Code
5	20	Q. What is it? A. Ray Sunshine He.	Q. What is it? A. Ray Chengchuan He.	3
15	19	A. I would estimate between three and – certainly greater than three, and I would say less, fewer than ten hours in person.	A. I would estimate between three and – certainly greater than three, and I would say less, fewer than ten meetings in person.	1
16	5	A. I met with Nikki, who is in the room, and Gina.	A. I met with Nikki, who is in the room, and Jeana.	3
20	15	A. That would be Nikki, Chris, Priyanka, and Gina.	A. That would be Nikki, Chris, Priyanka, and Jeana.	3
21	14	Mr. Jessen: I just object.	Mr. Jessen: I must object.	3
23	10	Q. List the ones that you know. A. Yes. Java, Python, C++, C, HaskellR.	Q. List the ones that you know. A. Yes. Java, Python, C++, C, Haskell.	3
23	16	A. CSS, if you consider that coding language, which not everyone does. Regular expressions, raw HTML and XML files, shell scripts, batch scripts.	A. CSS, if you consider that coding language, which not everyone does. Regular expressions, raw HTML and XML files, shell scripts, bash scripts.	3
24	1	A. Lisp. I mean, it depends on what you consider Facebook code and depends on the time period in question.	A. I mean, it depends on what you consider Facebook code and depends on the time period in question.	3

25	7, 9, 12	<p>A. In general to find production optionees for Facebook and implement them or build them.</p> <p>Q. What's a product optionee?</p> <p>A. Opportunity.</p> <p>Q. What's an example of a product opportunity, product optionee that you found for Facebook?</p>	<p>A. In general to find product opportunities for Facebook and implement them or build them.</p> <p>Q. What's a product optionee?</p> <p>A. Opportunity.</p> <p>Q. What's an example of a product opportunity that you found for Facebook?</p>	3
25	24	<p>A. For instance, e-comments plug-in used by third party Websites to use Facebook's platform to add comments to their Website.</p>	<p>A. For instance, the comments plug-in used by third party Websites to use Facebook's platform to add comments to their Website.</p>	3
28	14-16	<p>Q. What did you do?</p> <p>A. Typed "get log."</p> <p>Q. And what did that function perform?</p> <p>A. It shows you a log of the get commits.</p>	<p>Q. What did you do?</p> <p>A. Typed "git log."</p> <p>Q. And what did that function perform?</p> <p>A. It shows you a log of the git commits.</p>	3
28	17-24	<p>Q. What's a get commit?</p> <p>A. A get commit is a revision added to a code base via the get revision control system.</p> <p>Q. And what did the log of get commits reveal in terms of the get commits that have been performed on this computer?</p> <p>A. It showed me the first or second most recent get commit within this branch.</p>	<p>Q. What's a git commit?</p> <p>A. A git commit is a revision added to a code base via the git revision control system.</p> <p>Q. And what did the log of git commits reveal in terms of the git commits that have been performed on this computer?</p> <p>A. It showed me the first or second most recent git commit within this branch.</p>	3
28	25	<p>Q. And does a get commit inform you as to the timeframe that this source code relates to?</p> <p>A. Yes.</p>	<p>Q. And does a git commit inform you as to the timeframe that this source code relates to?</p> <p>A. Yes.</p>	3
29	4	<p>Q. Okay. And what did the get, the log of get commits reveal in terms of the source code that's been---</p>	<p>Q. Okay. And what did the git, the log of git commits reveal in terms of the source code that's been---</p>	3
29	9	<p>Q. Okay. Were there any other get commits?</p> <p>A. I believe the second commit was also December of 2012.</p>	<p>Q. Okay. Were there any other git commits?</p> <p>A. I believe the second commit was also December of 2012.</p>	3
30	17	<p>A. [REDACTED]</p>	<p>A. [REDACTED]</p>	3
31	24	<p>A. It's likely</p>	<p>A. It's likely</p>	3
32	7	<p>A. [REDACTED]</p>	<p>A. [REDACTED]</p>	3
32	10	<p>A. It allows the instantiation of a URL scraper</p>	<p>A. It allows the initiation of a URL scraper which</p>	3

32	14	which detects URLs. A. It -- under certain cases, it checks to see if a -- if a deposition of DOM element passed the URL scraper contains something that looks like a URL based on a certain set of criteria.	detects URLs. A. It -- under certain cases, it checks to see if a -- if the composition of a DOM element passed the URL scraper contains something that looks like a URL based on a certain set of criteria.	3
36	24	Q. Two lines below that there is code that says [REDACTED]. A. Yes.	Q. Two lines below that there is code that says [REDACTED]. A. Yes.	3
37	13	A. It would likely be the [REDACTED].	A. It would likely be the [REDACTED].	3
38	4, 6	And if a scrape, like a force scrape is not requested, returns to cache, and finally it will fetch the fester contention of the URL, place it in the cache, do some post processing on it and return the data in a form for use by various parts of Facebook's code base.	And if a scrape, like a full scrape is not requested, returns to cache, and finally it will fetch the content of the URL, place it in the cache, do some post processing on it and return the data in a form for use by various parts of Facebook's code base.	3
38	12, 14, 15	A. In the context of the share scraper it's to call into [REDACTED] to fetch the contents of the URL. Q. What's the [REDACTED]. A. [REDACTED] is a piece of code which abstracts away some of the details of fetching the contents of a given URL.	A. In the context of the share scraper it's to call into a [REDACTED] to fetch the contents of the URL. Q. What's the [REDACTED]. A. [REDACTED] is a piece of code which abstracts away some of the details of fetching the contents of a given URL.	3
39	3	THE WITNESS: [REDACTED]	THE [REDACTED]	3
40	20	A. That is contained within [REDACTED], or called by [REDACTED]	A. That is contained within [REDACTED] or called by [REDACTED]	3
41	5	A. Outside of the library code the code is called by share scrape dispatcher into share scraper into URL fetcher.	A. Outside of the library code the code is called by ShareScrapeDispatcher into ShareScraper into URLFetcher.	3
41	7	our [REDACTED]	our [REDACTED]	3
41	12, 14	The standard data that's returned in HTTP get requests. Q. What's an HTTP get request?	The standard data that's returned in HTTP GET requests. Q. What's an HTTP GET request?	3

41	19	Q. And what sort of data is returned in an HTTP get request?	Q. And what sort of data is returned in an HTTP GET request?	3
42	7	Q. Is a relevant image something that might be returned with an HTTP get request?	Q. Is a relevant image something that might be returned with an HTTP GET request?	3
43	10	Q. And is this the source code that says [REDACTED]	Q. And is this the source code that says [REDACTED]	3
43	18	A. Yes. A. I believe [REDACTED] instructs [REDACTED] to display a message to the user that people who can see their share cannot see the original content and thus it won't be rendered as an attachment.	A. Yes. A. I believe [REDACTED] instructs [REDACTED] to display a message to the user that people who can see their share cannot see the original content and thus it won't be rendered as an attachment.	3
44	22	A. That would be part of the data eventually returned by the [REDACTED] we were just looking at.	A. That would be part of the data eventually returned by the [REDACTED] we were just looking at.	3
46	25	A. This is [REDACTED]	A. This is [REDACTED]	3
48	13	A. Yes. That would be line 989 on [REDACTED] on the right.	A. Yes. That would be line 989 on [REDACTED] on the right.	3
48	21	A. It's a call into the [REDACTED] and it passes within it a [REDACTED] to parse the [REDACTED] with.	A. It's a call into the [REDACTED] and it passes within it a [REDACTED] to parse the [REDACTED] with.	3
49	11-14	A. When I say native library, I usually mean a library that's included as part of php from zend or a library that we later compiled from our own implementation of the native library after the introduction of hip hop.	A. When I say native library, I usually mean a library that's included as part of php from Zend or a library that we later compiled from our own implementation of the native library after the introduction of HipHop.	3
49	15, 16	Q. What is hip hop? A. Hip hop is a php compiler that is used to speed up php execution.	Q. What is HipHop? A. HipHop is a php compiler that is used to speed up php execution.	3
51	15, 16	Q. Where is the global share FB ID stored? A. The FB ID?	Q. Where is the global share fbid stored? A. The fbid?	3
52	16	Q. Are there tables within the UDBs that are used specifically to store the global share FBObject? A. Yes. Not as such, no.	Q. Are there tables within the UDBs that are used specifically to store the global share FBObject? A. No. Not as such, no.	3

54	4, 6	A. It's an HTTP get request. Q. Can you point us to the code that executes the HTTP get request?	A. It's an HTTP GET request.	3
54	9, 11	A. So it's called by, as previously mentioned, the info or get result will actually -- This will kick off as many get requests as necessary on line 129.	A. So it's called by, as previously mentioned, the info or get result will actually -- This will kick off as many get requests as necessary on line 129.	3
54	19	A. Not for the case that we are talking about. But in general, many other endpoints use the same code and they can kick off as many requests as they need, this shared infrastructure.	A. Not for the case that we are talking about. But in general, many other endpoints use the same code and they can kick off as many requests as they need from this shared infrastructure.	3
55	1	I believe our site integrity systems use this infrastructure as well as our use prevention systems.	I believe our site integrity systems use this infrastructure as well as our abuse prevention systems.	3
56	5	There is many factors I haven't listed that could contribute to something not returning a preview.	There are many factors I haven't listed that could contribute to something not returning a preview.	3
56	19	A. This is in	A. This is in	3
58	25	A. The first one on line 153 is and the second is a line 826.	A. The first one on line 153 is and the second is line 826.	3
60	22	A. Yes. That would be the same code we previously mentioned in the line 860.	A. Yes. That would be the same code we previously mentioned in the line 860.	3
62	10	A. That would be	A. That would be	3
62	17	Q. Can you please point us to the source code that buys this functionality? A. The source code which actually handles the cancel action is on the left.	Q. Can you please point us to the source code that performs this functionality? A. The source code which actually handles the cancel action is on the left.	3
62	22	A. It's line 887.	A. It's line 887.	3
65	7	A. So if you look on the left, that's the code which calls into the shared creation process.	A. So if you look on the left, that's the code which calls into the share creation process.	3
65	9-10	A. This is a	A. This is a	3
65	12	Q. Where is it located?	Q. Where is it located?	3

65		A. [REDACTED]	A. In [REDACTED]	
16		A. This is the code that calls the code that likely calls the code that creates the share object.	A. This is the code that likely calls the code that creates the share object.	3
66	18	Q. Is this share URL object sometimes referred to as an ent share, e-n-t s-h-a-r-e?	Q. Is this share URL object sometimes referred to as an EntShare, E-n-t-S-h-a-r-e?	3
67	1-4	Q. From 2010 to 2012, I'm sorry, 2009 to 2012, who would have referred to this share object as an ent share? A. It would have been a subset of engineers after the creation of the ent share abstraction. Q. And what is the ent share abstraction?	Q. From 2010 to 2012, I'm sorry, 2009 to 2012, who would have referred to this share object as an EntShare? A. It would have been a subset of engineers after the creation of the EntShare abstraction. Q. And what is the EntShare abstraction?	3
68	25	I'm not an expert on Facebook's logging instructing tool.	I'm not an expert on Facebook's logging.	3
72	4	A. This [REDACTED]	A. This is [REDACTED]	3
74	7	A. [REDACTED] at the first call that creates the share object in this file, where it says [REDACTED] that's located in a different file.	A. [REDACTED] at the first call that creates the share object in this file, where it says [REDACTED], that's located in a different file.	3
75	2	Q. Are you familiar with the term "ent global share"?	Q. Are you familiar with the term "EntGlobalShare"?	3
76	15	A. Yes. So the answer would certainly be yes if a global share object hadn't existed before anything was typed.	A. Yes. So the answer would certainly be yes if a global share object had existed before anything was typed.	3
78	7	The first is on the left in [REDACTED] line 80.	The first is on the left in [REDACTED] line 80.	3
78	8	And this code is executed doing the scraping process.	And this code is executed during the scraping process.	3
78	19	A. And the second is if for some reason we fetched an attachment, the attachment was previewed to the user, and then the Website was blocked or the user somehow managed to manipulate their browser into having an attachment, the -- the code on the right in create	A. And the second is if for some reason we fetched an attachment, the attachment was previewed to the user, and then the Website was blocked or the user somehow managed to manipulate their browser into having an attachment, the -- the code on the right in	3

		line 108 would have stopped the creation of the share.	line 108 would have stopped the creation of the share.	
79	15	A. This is [REDACTED], line 121.	A. This is [REDACTED], line 121.	3
79	20	Q. Is the global share object referred to as an ent_global share sometimes?	Q. Is the global share object referred to as an EntGlobalShare sometimes?	3
80	2	Q. Okay. I think we discussed that in the context of ent share earlier. A. Yes.	Q. Okay. I think we discussed that in the context of Entshare earlier. A. Yes.	3
80	5	Q. And the same answer applies with respect to the term ent global share?	Q. And the same answer applies with respect to the term EntGlobalShare?	3
80	21	The Like button made a JavaScript request to the server which returned the aggregate count.	The Like button made an Ajax request to the server which returned the aggregate count.	3
81	19	Q. Are those the UDBs – A. Yes. Q – that we discussed earlier? A. [No response.]	Q. Are those the UDBs – A. Yes. Q – that we discussed earlier? A. Yes.	3
83	5	A. This is [REDACTED]	A. This is [REDACTED]	3
83	10	But in particular where we call in to our rendering code is this [REDACTED]	But in particular where we call in to our rendering code is this [REDACTED]	3
84	5	A. This is [REDACTED]	A. This is [REDACTED]	3
85	4-6	Q. Are you familiar within sights dashboard? A. Yes. Q. What's your understand what the insights dashboard is? A. I believe it's used -- well, first of all, it depends on what dashboard we are referring to.	Q. Are you familiar with insights dashboard? A. Yes. Q. What's your understanding of what the insights dashboard is? A. I believe it's used -- well, first of all, it depends on what dashboard we are referring to.	3
86	1	A. I mean, there – within the context of Facebook, there is many things people might refer to as an insights dashboard, and then there is something else that, you know, people are Facebook developers might refer to as the insights dashboard.	A. I mean, there – within the context of Facebook, there are many things people might refer to as an insights dashboard, and then there is something else that, you know, people are Facebook developers might refer to as the insights dashboard.	3
88	20	A. In every request to Facebook is at least	A. Every request to Facebook is at least	3

90	18	temporarily logged in the impressions log, and any share creation is logged I guess as a counter in ODS. So it really depends on -- I mean, yes, things are logged. A. Yes. So the plug-in rendering and actions all start out in the controller we were previously looking at, the [REDACTED]	temporarily logged in the impressions log, and any share creation is logged I guess as a counter in ODS. So it really depends on -- I mean, yes, things are logged. A. Yes. So the plug-in rendering and actions all start out in the controller we were previously looking at, the [REDACTED]	3
93	23	Q. And what's the name of this file? A. [REDACTED]	Q. And what's the name of this file? A. [REDACTED]	3
96	4	And there is a couple of cases if you read down where we will in fact use a different number. For example, if the [REDACTED] gets a larger number, then their share object, we will display that number instead. A. But the get [REDACTED] you were asking about is on the right in [REDACTED], line 254.	And there is a couple of cases if you read down where we will in fact use a different number. For example, if the [REDACTED] gets a larger number, then their share object, we will display that number instead. A. But the get [REDACTED] you were asking about is on the right in [REDACTED], line 254.	3
96	9	A. But the get [REDACTED] you were asking about is on the right in [REDACTED], line 254.	A. But the get [REDACTED] you were asking about is on the right in [REDACTED], line 254.	3
100	24	A. You can view that as race condition, yes.	A. You can view that as a race condition, yes.	3
102	20	A. This is a -- this is I guess not really a file so much as a get revision.	A. This is a -- this is I guess not really a file so much as a git revision.	3
102	25	A. It can be identified by either the [REDACTED] or the [REDACTED].	A. It can be identified by either the [REDACTED] or [REDACTED].	3
103	14	A. It's the name of a method that performs the -- well, it's the same -- it's the name of a method that we previously examined in share [REDACTED]	A. It's the name of a method that performs the -- well, it's the same -- it's the name of a method that we previously examined in [REDACTED]	3
106	1	A. Yes. So we spent the last couple of questions talking about the dif set modified the tracking info.	A. Yes. So we spent the last couple of questions talking about the Diff's that modified the tracking info.	3
106	9	And there is no way to like go back from these counters to the original objects that caused their incrementing.	And there is no way to go back from these counters to the original objects that caused their incrementing.	3
107	7	I don't want to guess at what logging	I don't want to guess about logging infrastructure	3

107	17	infrastructure that I am not aware of. So every request gets the same treatment, and thus there is no code that I generally work with that would call this. It's just called automatically.	that I am not aware of. So every request gets the same treatment, and thus there is no code that I generally work with that would call this. It's just called automatically.	3
109	5	And that's called from the file on the left which is initialized any time something within [REDACTED] is called.	And that's called from the file on the left which is initialized any time something within our [REDACTED] is called.	3
110	7	A. It's called [REDACTED]	A. It's called [REDACTED]	3
110	9	A. The file on the left is [REDACTED]	A. The file on the left is [REDACTED]	3

Date: November ____, 2015


Ray He