

This Transcript has not been proof read or corrected. It is a working tool for the Tribunal for use in preparing its judgment. It will be placed on the Tribunal Website for readers to see how matters were conducted at the public hearing of these proceedings and is not to be relied on or cited in the context of any other proceedings. The Tribunal's judgment in this matter will be the final and definitive record.

IN THE COMPETITION
APPEAL TRIBUNAL

Case No: 1403/7/7/21

Salisbury Square House
8 Salisbury Square
London EC4Y 8AP

Tuesday 4th February 2025

Before:
Ben Tidswell
Dr William
Bishop
Tim Frazer

(Sitting as a Tribunal in England and Wales)

BETWEEN:

Dr. Rachael Kent

Class Representative

v

Apple Inc. and Apple Distribution International Ltd

Defendants

A P P E A R A N C E S

Mark Hoskins KC, Tim Ward KC, Michael Armitage, Matthew Kennedy, Antonia Fitzpatrick,
(Instructed by Hausfeld & Co. LLP) On behalf of Dr. Rachael Kent

Marie Demetriou KC, Brian Kennelly KC, Daniel Piccinin KC, Hugo Leith, Hollie Higgins
(Instructed by Gibson, Dunn & Crutcher UK LLP) On behalf of Apple Inc. and Apple
Distribution International Ltd

Tuesday, 4 February 2025

(10.30 am)

MR DEREK HOLT (continued)

DR HAL SINGER (continued)

PROFESSOR LORIN HITT (continued)

PROFESSOR ANDREW SWEETING (continued)

Questions by THE TRIBUNAL (continued)

DR BISHOP: Good morning. We are now going on to theme 4, and I am going to invite the witnesses to comment, any of those who wishes to.

Theme 4, let me remind you what is in it. It is a question of: is there a separate demand for payment system separate from the supply of apps? Another strand in it, the second strand in it: is the existence of payment processes evidence of such separate demand? Thirdly: do the Payment System Restrictions at issue in this case constitute an anti-competitive tie?

So these are the questions. Who would like to start commenting on this, of the experts?

Yes, Professor Sweeting. Thank you.

PROFESSOR SWEETING: Okay. Yes, I am happy to kick off the discussion.

So obviously there were three broad kind of questions there. So I think initially I will speak to the first two, and then obviously we can come back to

1 kind of the broader is it anti-competitive.

2 So just to pick up on something that I said
3 yesterday, this is obviously in the context of tying, we
4 understand tying is pervasive and often pro-competitive,
5 and then it is only anti-competitive when what the tie
6 is doing is leveraging market power from one market --
7 a dominant firm's power from one market to another
8 market. That is worth bearing in mind when we think
9 about this kind of distinct products kind of test.

10 So I think there is agreement about the four
11 necessary conditions that need to be met to view a tie
12 as anti-competitive. But one of them is this, you know,
13 separate products or distinct products, and that needs
14 to partly be considered in the context of are these
15 products really in kind of separate markets.

16 So obviously if one takes Professor Hitt's
17 conclusions on kind of the definition of products and
18 the definition of markets, then this -- you know, there
19 are a kind of single transactions facilitation product
20 in a single market and kind of a tying claim is
21 irrelevant.

22 But it would also be irrelevant if one said: well,
23 actually -- if one took the view that what we are
24 talking about is two alternative forms of monetisation
25 that are close substitute, you know, paid downloads,

1 in-app transactions that are close substitutes for
2 developers and close substitutes for consumers who just
3 know they are going to be paying in different ways.
4 Because they would think of the products as being in the
5 same market, and once again kind of a tying claim would
6 fall away.

7 Now, obviously the claimants are claiming there are
8 separate markets here. So if we take that approach, and
9 we are just going to assume for the sake of argument
10 that they are in separate markets, we want to think
11 about the European Commission test, which says we are
12 going to evaluate this by thinking whether, as Dr Bishop
13 said, whether there is separate demand in the following
14 sense. So would a substantial number of consumers
15 purchase the tying product without the tied product from
16 the same firm. So when I hear that test I often --
17 I tend to focus on the tying and the tied words and just
18 getting clear in my mind which is which.

19 But I actually think the important words there are
20 "substantial" and "purchase", right? So we are trying
21 to do this kind of hypothetical exercise, obviously
22 appealing to data where possible, where we are thinking,
23 you know, customers would be purchasing the tying
24 product from a firm without the tied product.

25 So the word "purchase" is important because it makes

1 clear we are thinking about a counterfactual where
2 customers are paying for the value they are getting from
3 the firm for the tying product.

4 So obviously in this context it comes back to
5 something we talked about yesterday, the tools,
6 technology and services developers are receiving from
7 Apple, as well as the kind of distribution related
8 services as well. So we need to think about a
9 counterfactual where they are paying for those. Then we
10 when turn to the evidence, sometimes some of the
11 evidence that is claimed for separate demand would be --
12 you are looking at firms such as Facebook, who it seems
13 have wanted to use an alternative payment processor, or
14 their own payment processor, in order to avoid the
15 entire commission. I would say that under this, you
16 know, purchase the tying product test, that is simply --
17 those are simply not relevant examples to look at, even
18 if one decided there was a substantial number of
19 developers in that group.

20 So if we want to look at other examples obviously
21 relevant to this, where actually you can avoid the
22 entire commission, is the Epic Games Store example. So
23 Epic Games, since, I think, 2019, has allowed developers
24 to avoid paying the Epic Games Store commission of 13%
25 if they use their own payment service.

1 Now, Dr Singer and I agreed yesterday that actually
2 very few developers have taken kind of up that option,
3 and obviously how many is enough to meet the
4 substantiality test obviously is a judgment, but it
5 certainly seems demand is limited.

6 There are also other examples which have been cited,
7 such as the Microsoft Store for non-game apps and the
8 Samsung Store, where developers can avoid a commission
9 by using their own payment processor, and while they
10 have been taken as examples, I do not think there is any
11 evidence in the record of substantial demand.

12 Now, the easy test, you know, as well as this kind
13 of demand side counterfactual -- hypothetical, says you
14 can look at supply side factors in a couple of different
15 senses. So firstly they say, you know, is it typical
16 that firms that do not seem to have market power are
17 also providing these products jointly, so a platform and
18 payment services, integrated, not allowing customers to
19 choose an alternative?

20 So there, it seems, that Mr Holt has provided
21 evidence, say the Amazon Appstore on the Android
22 platform, you are forced to use the same payment
23 service. There are other examples in PC games, other
24 than Steam, that are also requiring developers to use
25 the integrated payment service. So this is not

1 uncommon, and it is suggestive that it is very natural
2 to put these two things together.

3 Obviously the case of Paddle has been discussed, and
4 I will just finish by saying that something that struck
5 me in Mr Owens' evidence is that while, you know, Paddle
6 is obviously an ambitious company, and it has developed
7 something that could be used in iOS, it actually has
8 not entered, I understand from what he said, either kind
9 of the EU after the DMA kind of allowed alternative
10 payment services to be used, or South Korea, or
11 The Netherlands after the dating app decision. That
12 is -- part of the EC test is, is there kind of entry
13 into this? Well, it is possible. It is not so clear
14 actually that some of the cited examples would enter.

15 Then the final point, the existence of lots of other
16 payment processors, I think actually I view that as
17 speaking to the fact that it is clearly not the case
18 that Apple has leveraged any market power that it has in
19 kind of app distribution to foreclose the payment
20 processing or payment services market more generally.

21 So I would view that as evidence against the
22 anti-competitive nature of this, rather than the
23 existence of those firms, say, you have to call these
24 things distinct products.

25 THE CHAIRMAN: Can I just ask you a question about -- this

1 point about the way in which Apple is charging or might
2 be charging for the services. I think you have said, as
3 I understood, I just want to be clear I understand what
4 you are saying are the implications of that.

5 PROFESSOR SWEETING: Yes, absolutely.

6 THE CHAIRMAN: I think you are making the point that people
7 might appear to be creating demand when, in fact, the
8 real purpose, the real motivation is actually to avoid
9 the full amount of the commission, which I think on your
10 case obviously includes the value of the tools and the
11 technology and so on.

12 Is there a separate point that you were making in
13 a joint experts statement and your reports about the
14 need to take into account that alternative pricing
15 regime, if you like, in a counterfactual? In other
16 words, when you -- you make your point about market
17 price. Is that a separate point or is it the same point
18 made in a different way?

19 PROFESSOR SWEETING: So I would say that when I am talking
20 about the counterfactual, I am talking about this world
21 where Apple is going to disintermediate what I say, you
22 know, its pricing, so it will end up offering a menu of
23 different options, and developers who choose
24 an alternate payment processor will be paying some
25 amount in kind of recognition of the value of the

1 services and technologies they are receiving from Apple,
2 and that is both part of my kind of counterfactual
3 counterfactual analysis, but also the kind of
4 counterfactual exercise that I am considering when I am
5 looking at the conduct, right, so to decide whether what
6 is alleged is anti-competitive tying, or
7 anti-competitive exclusive dealing is actually
8 anti-competitive.

9 It is worth saying that it has been mentioned that
10 such prices could be viewed as kind of a penalty fee.
11 Now, obviously there could be a discussion about -- we
12 had some of this discussion yesterday about what charges
13 for these kinds of value are appropriate and would not
14 be deemed as excessive. That is a little bit outside my
15 scope.

16 But what I would say is, I think it is quite clear
17 from the way that, say, a test for anti-competitive
18 tying and the separate product test is framed that you
19 are thinking that the firm will be being able to charge
20 for the value it is supplying in the so-called tying
21 product.

22 THE CHAIRMAN: So -- I just want to be clear. So you are
23 saying that counterfactual analysis is part of the
24 analysis about -- it is not a foreclosure point you are
25 making, it is a point about whether there is a separate

1 product and a separate demand, and you are saying the
2 demand will actually be diminished because there would
3 be, if you like, less incentive for developers to seek
4 the alternative product because of the economic
5 consequences of having to pay the charge anyway. Is
6 that the point?

7 PROFESSOR SWEETING: It is a -- the counterfactual, as
8 I said, I think is playing kind of multiple roles here,
9 right. So when one is assessing whether there are
10 anti-competitive effects or, indeed, anti-competitive
11 incentives to engage in exclusive dealing or a tie, one
12 has to do that in the context of the counterfactual
13 thinking without these restrictions, what are
14 developers' options going to be, and I think there it is
15 kind of sensible to recognise that Apple would very
16 likely engage -- you know, disintermediate its menu, and
17 make some charges to developers who are choosing
18 alternative payment systems in this context. I think
19 you have to apply the same logic in the context of
20 applying the European Commission's kind of distinct
21 products test as well.

22 So I am using this counterfactual that assumes
23 disintermediation, which I think is kind of the natural
24 competitive counterfactual to think about in a number of
25 places in the analysis, because I think in each of those

1 places it is the right kind of approach to use.

2 THE CHAIRMAN: Thank you. That is helpful.

3 DR SINGER: Good morning. So let me take on -- there are
4 three questions there. Some of this we did yesterday,
5 so I just want to go back over some of these points
6 quickly. But on the separate demand, my position has
7 not changed since yesterday, and the three points I will
8 take you through, and Dr Sweeting has not addressed any
9 of them, is matchmaking, which is the critical service
10 being provided in the primary market, is no longer
11 present in the aftermarket. That is one key distinction
12 between the two markets.

13 The second one I mention is the two activities are
14 happening at different points in time. The primary
15 market is happening when you download the app,
16 aftermarket in-app purchases are happening at some point
17 into the future. The third point is they are happening
18 at different places. I really botched this one
19 yesterday, let me see if I can say it right today. The
20 primary market is occurring in the App Store and the
21 aftermarket activities are occurring within the app.
22 Then Apple has offered us a technical distinction, and I
23 botched this one too, I said IAP. I think it is the API
24 is only utilised in the aftermarket, that is the bridge
25 back to the commerce engine. It is only used in the

1 aftermarket.

2 So for those reasons and many others I have written
3 about, I think it is pretty obvious there is separate
4 demand. I am going to address Dr Sweeting's point again
5 about substantial; again, I raised this yesterday. He
6 makes a big fuss out of the fact that he does not think
7 you see a lot of defection, or he does not think that
8 developers are availing themselves of this option, this
9 outside option of payment processing, and I respond
10 again: if you are already getting the competitive or the
11 near-competitive rate of 12% from Epic for in-app
12 support services, right, including payment processing,
13 you are not going to go looking for those outside
14 options.

15 In contrast, if you think about our counterfactual
16 world, where Apple begins with a supra-competitive 30%
17 commission, well, by then of course people will avail
18 themselves of the option, because there will be lots of
19 savings on the table for them to take advantage of.

20 Then I want to turn to your third question, which
21 is: is this an anti-competitive tie, right? So I think
22 there is agreement between me and Dr Sweeting about the
23 elements that you need. You need market power in the
24 primary; I think it is airtight, 100% market share in
25 the primary market, and you need a substantial

1 foreclosure.

2 Now, when I think about foreclosure, I think about
3 the foreclosure share. That is of all the customers
4 that the defendant -- in the defendants' control, what
5 percentage of them are foreclosed from rival suppliers,
6 what percentage of them cannot be accessed by rivals,
7 right?

8 Now, in some of my cases, like in the UFC case, we
9 had to go contract by contract, looking at whether the
10 fighter contract contained an exclusionary provision,
11 because if it did not, then that fighter was not
12 foreclosed from rivals.

13 Here it is a lot easier. We have uniform contracts,
14 right, that every developer enters into the same
15 contract. Every developer has to commit to not using
16 a third-party provider for a payment processing service.
17 So external or third-party payment processors are
18 foreclosed by the contract, and the foreclosure share is
19 equal to Apple's market share, which is 100%. It is
20 a much easier case, right, relative to some of my other
21 cases.

22 So we have got these first two elements taken care
23 of: market power in the primary; foreclosure share,
24 high, and under US anti-trust law it is a 30% -- it may
25 not matter here, but if the foreclosure share is above

1 30%, in the US there is a presumption of
2 anti-competitive effects.

3 Then finally we have price effects, right, from the
4 tying as well. We have the Landes Posner model that is
5 telling us the inflation in the commission rate relative
6 to the competitive, and we have our competitive
7 benchmarks, right, which is Paddle.

8 So I would submit to you, in closing, that we tick
9 through the elements and every element is satisfied in
10 this case for an anti-competitive tying.

11 MR HOLT: Sorry, are there any follow-up questions?

12 DR BISHOP: I have listened to you.

13 MR HOLT: Although I was not asked to opine on the question
14 of foreclosure or therefore the tying of the payment
15 solution point, I do have a couple of observations
16 perhaps to make.

17 I think the first one is non-contentious and is
18 probably agreed amongst the experts. You cannot look at
19 actual evidence of separate demand in the form of entry
20 in the iOS payment solutions market, but of course
21 that is due to the payment restrictions, so therefore
22 you have to look elsewhere. In my view, the best
23 alternative source of evidence, therefore, is the intent
24 of developers and the intent of suppliers, and I think
25 that is what has been discussed. I think what

1 Professor -- sorry, Dr Sweeting is indicating is that
2 that type of evidence should not be given great weight
3 because of this counterfactual concern about what is
4 being provided in terms of those services, what is the
5 impact of the Apple distribution service, and what
6 counterfactual fees should be applied.

7 So just on the issue of fees, of course, or these
8 hypothetical additional fees, we talked about that a lot
9 yesterday, of course. I was doing so primarily from the
10 excessive and unfair pricing allegation, as opposed to
11 what we are talking about here, which is the
12 restrictions counterfactuals. But there are a number of
13 points, I think, that are important, I think, for the
14 Tribunal to consider when assessing that evidence or
15 that point.

16 The first is, are these counterfactual additional
17 fees being inflated by other terms and restrictions, and
18 in particular the App Store restrictions? In other
19 words, would they be sustainable in a competitive
20 market?

21 The second issue is, what account has or should be
22 taken of the value that developers are already providing
23 in this counterfactual, which goes back to the series of
24 points I made yesterday. I will not repeat them, but
25 they relate to the developer contributions, both

1 directly in the form of fees, App Store profitability,
2 and also the ecosystem impact on devices.

3 My next point is that, I do not think one can look
4 at some of these examples of where Apple has been forced
5 to remove the payment tie to see what has happened in
6 terms of the payment solution separate demand question,
7 ie has there been entry there. The cases like the 27%
8 fee imposed on dating app stores -- or, sorry, dating
9 apps that would wish to make use of that third-party
10 payment solution.

11 But of course that does not really tell you
12 anything, because it stands to reason that if the
13 maximum effective price that you can charge is 3%, and
14 the costs are clearly above that, ie whatever it is,
15 5-10%, then you are not going to observe any interest by
16 anybody, but that does not tell you anything about the
17 prospects for a separate demand under more competitive
18 conditions.

19 Then finally let me just respond to a couple of
20 points -- or one point, really, that Dr Sweeting raised
21 regarding the integrated payment solution, which he
22 referred to my report. I did, in my analysis, indeed
23 look at that and what the implications of that were for
24 my counterfactual not unfair price in relation to the
25 aftermarket. Incidentally, I overall found that it was

1 reasonable to assume the same range and the same sort of
2 best estimate for both the primary and the aftermarket,
3 in part because of that point.

4 But I was saying Dr Sweeting considers that that
5 evidence is pertinent to the question of whether there
6 is separate demand. I am not sure that is the case for
7 a number of reasons. Firstly, I think Dr Singer just
8 expressed it well, if the base fee is already highly
9 competitive, then that obviously has an impact on
10 incentives for looking at third-party aftermarket
11 providers. Secondly, while it is the case, as
12 Dr Sweeting has identified, that some cases in other
13 markets, such as Amazon and Microsoft, do offer, and
14 indeed in some cases mandate, the use of the
15 aftermarket, I think the impact of tying, of course,
16 depends on the competitive conditions in the primary
17 market. So I think the use of that example in terms of
18 what is the position of Amazon and Microsoft and their
19 respective primary markets, compared to Apple with the
20 App Store and the restrictions associated with the App
21 Store, is a completely different situation.

22 DR BISHOP: Thank you.

23 Professor Hitt.

24 PROFESSOR HITT: So I think somebody touched on some of the
25 things we raised about commission last time, so I just

1 wanted to bring them back in because I think they are
2 relevant to the discussion here.

3 One of the things I noted in the discussion last
4 time is that the services that Apple is providing both
5 in the payments market, as defined by my colleagues, as
6 well as sort of the distribution market, are very
7 similar. They provide things like App Review, security;
8 many of the services that Apple provides is predicated
9 on their ability to be involved in the transaction.
10 Things like family sharing, things like subscription
11 management are provided in both of these markets.

12 So they are an integrated service, they provide many
13 of the same services there, including matchmaking, and
14 I will give you an example of why I think it is not
15 correct to think of the matchmaking process stopping at
16 the distribution. Think about Netflix, and Netflix
17 currently does not monetise -- currently you cannot buy
18 a subscription for Netflix in iOS, you have to go to
19 Netflix to sign up.

20 So imagine the consumer considering the Netflix app.
21 Well, the Netflix app they get in the distribution
22 service cannot be limited to simply that app provided in
23 the distribution service because that app would not be
24 able to watch movies. In order to watch movies, one
25 would need to get a subscription on the secondary

1 market. So the idea that there would -- at least in the
2 past, you would subscribe and that would unlock the
3 features in there.

4 A number of other apps follow a business model,
5 since in-app purchase became available, of instead of
6 having a paid download they have a free download and
7 then you unlock functionality in the in-app purchase
8 process, and that valuation of the functionality of the
9 app happens at the beginning by the consumer, so they
10 are also thinking about what are the opportunities to
11 engage in these future transactions, and you think of
12 most types of games the same way.

13 The type of experience that a consumer can expect
14 from a game depends also on the ability to engage in
15 in-app purchases to the extent that they have a demand
16 for additional cosmetics, dances, other things you can
17 acquire on here. So matchmaking occurs both at the
18 beginning and as part of the secondary -- this allegedly
19 tied market. So I just want to highlight that that is
20 an important consideration.

21 Also note that these things are very strong
22 substitutes. A developer can choose to offer a paid
23 app. They can also offer a free app with in-app
24 purchase. Those are very strong substitutes for each
25 other. Developers have switched from one mode to

1 another when it became available. There is evidence
2 that developers think about these kinds of trade-offs
3 when they are making decisions, and as a result one has
4 to think that these things are very closely economically
5 connected, in addition to being closely technically
6 connected in the sense of what they are offering.

7 I will just make a final observation. I think a lot
8 of the discussion about the motivation for separate
9 demand, and so forth, I think you got it very clearly,
10 which is one of the reasons why developers might be
11 interested in separate demand for payment systems is
12 because they could then move into a world where it is
13 a payment system-only fee, instead of the service fee
14 for all the services Apple is providing.

15 I think that -- as I have noted before, I think that
16 is the wrong comparison, because it fails to account for
17 the potential changes in pricing. Right now, Apple
18 provides tools and technologies, they provide free
19 download services and a number of other services for
20 free. That is likely to change. The types of things
21 that they may change it to are things that are certainly
22 within the realm of normal competitive behaviour. For
23 example, charging for your intellectual property or
24 setting a price that is non-zero for a service that you
25 are providing. So I do think it is worth coming back to

1 that point about separate demand in terms of that
2 increment as well. Thanks.

3 DR BISHOP: Well, which of you wants to go first?

4 DR SINGER: Dr Sweeting, you have things you want to say?

5 PROFESSOR SWEETING: Yes.

6 DR SINGER: Go ahead.

7 PROFESSOR SWEETING: I agree with what Professor Hitt has
8 just said in terms of this market product definition
9 point, so I will not kind of repeat what he has just
10 said.

11 The second point is, just on this Epic Games, you
12 know, their commission is competitive, that is why it is
13 being explained we do not see much demand for these
14 alternative services.

15 Without wanting to go back to yesterday's energetic
16 discussion, I would just point out that Dr Singer's
17 counterfactual model assumes that if Apple is charging
18 only a commission of 9.1%, 50% of the demand would go to
19 other payment suppliers. So it seems, basically,
20 inconsistent with the fact that at 13% we do not see
21 shifting.

22 In terms of the foreclosure share, there is
23 discussion of foreclosure shares in US case law. Those
24 screens, in some sense, are not clearly founded on
25 economic models, and in fact if you look at the kind of

1 theoretical literature on kind of using exclusive
2 dealing to foreclose, or tying up customers with
3 contracts to foreclose, often those models rely on the
4 idea that a dominant firm is able to lock up some set of
5 customers with contracts, and that actually leads them
6 to be able to exploit this other set of customers. So
7 there is what is sometimes called this negative
8 externality amongst the customer groups.

9 Once you have kind of 100% of people on this same
10 uniform contract, that kind of logic disappears. So do
11 not think that 100% foreclosure, you know, what is being
12 called 100% foreclosure share is necessarily worse than
13 some other intermediate figure.

14 Then finally obviously the question is, I would
15 agree with Dr Singer, we are interested in: is this
16 conduct anti-competitive foreclosure, anti-competitive
17 exclusion? That is the question. I do think it is for
18 that reason, as we have said before, you have to define
19 the counterfactual correctly. You have to think about
20 what is going to really happen to Apple's prices in the
21 counterfactual. Dr Singer and I agreed in the joint
22 report that just in terms of how things will be
23 disintermediated, it is relevant to look at examples
24 like Netherlands, South Korea, and other jurisdictions,
25 where things have had to happen as a result of

1 regulation or litigation to kind of the ability to use
2 other payment services. Then finally, within that, you
3 have to think about the incentives to foreclose.

4 So if it was really the case that lots of value for
5 developers would be added by using alternative, let us
6 say, better payment systems, then of course that is
7 going to tend to make Apple's tools and technology and
8 distribution services more valuable.

9 So you need to ask the question if there really was
10 this separate extra demand for other people's payment
11 services, would it be really in Apple's incentives to
12 foreclose? Unless, of course, there are some other
13 reasons for example to ensure security and privacy that
14 you would want to have these kind of requirements.

15 Anyway, I will pass it over to Dr Singer.

16 DR SINGER: Okay, let me respond to Dr Hitt's points first.

17 He likes to draw attention to the overlapping
18 services in each of the two markets, and I agree there
19 are -- there are overlapping services, including payment
20 processing is in both. But I would like to draw
21 attention to the services that are distinct and not
22 overlapping.

23 So distribution, right, there is no distribution
24 going on in the aftermarket. That is a service that is
25 unique to the primary market. Matchmaking is unique to

1 the primary, notwithstanding what he said, I am going to
2 come to that in a second, it is unique to the primary.
3 Unlocking functionality that is built into the app; that
4 only happens in the aftermarket. I could go on, but
5 there are many critically distinct features in each of
6 those two markets, and I acknowledge that there is some
7 overlap, but that does not make them some kind of
8 unified or integrated whole.

9 Let me take on. He points to this Netflix example
10 as one -- I think he is saying that Apple is
11 providing -- continues to provide matchmaking services
12 into the aftermarket as evidenced by the fact that when
13 Netflix availed itself of this opportunity to do its own
14 payment systems on the web, that that is somehow proof
15 that Apple is offering matchmaking services in the
16 secondary market.

17 Let me just suggest, respectfully, that I disagree
18 with that. Once Netflix and the customer have paired
19 off, and they go onto making wonderful music together
20 for years and years, Apple is no longer engaging in any
21 matchmaking. Apple is no longer engaging in any
22 matchmaking after that. There is no matchmaking any
23 longer. The matchmaking was in the primary market.

24 Now, let me go up to Dr Sweeting's points very
25 quickly.

1 He is looking for substantial demand, I explained
2 how Epic -- sorry, Epic -- he said Epic's 12%, you would
3 not see it. But let me point to a few other things.

4 The record suggests that over 2,000 app developers
5 have been kicked off of Apple's system for seeking to
6 get access for third party payment providers. They were
7 found in violation of the terms. That, to me, is
8 indicative of the demand for going outside. We know
9 that Epic sued Apple over its inability to find
10 a third-party payment processing at a reasonable and
11 competitive rate. That is indicative of demand for
12 external services.

13 Then finally, Dr Sweeting is perplexed as to how
14 Apple would lose significant share. He said I take them
15 down to 50. That is not quite right. I have a boundary
16 of somewhere between 30 and 60% for Apple in the
17 secondary market, but I get the point. He says he
18 cannot figure out how that would happen if I got them at
19 9.5%. Well, this is how it would happen. Apple is
20 currently charging 30%, right, and the attackers, when
21 allowed in, are going to come in at somewhere between
22 6.5, which is the marginal cost of providing, according
23 to Mr Dudney, 6.5% coming in, to 10%, which is Paddle's.

24 So given that gigantic delta between what Apple is
25 charging and what competitors would be charging, there

1 would be a giant sucking sound. There would be massive
2 defection. The effect is that Apple would have to
3 compete, for the first time on the merits, by dropping
4 its commission rate down and down and down, and the
5 Landes Posner model says that that process would stop at
6 around 9.5%.

7 So he cannot accept that there is defection. I am
8 telling you, this is the intuition of the defection.
9 You start off with a big gap, and competitive forces are
10 going to take Apple down to something -- a premium over
11 competitive. They are not going to have to go down to
12 their marginal cost of 6.5%. But the Landes Posner
13 model is saying 9.5% is where we go.

14 DR BISHOP: I think we have fairly thoroughly ventilated ...

15 MR FRAZER: Sorry, this is just a question for
16 Professor Hitt.

17 I just wanted to clarify something you said, sir, in
18 relation to -- you were talking about -- you made some
19 final observations on developers' motivation for
20 separate demand, et cetera, and you insisted that we
21 really should look at the counterfactual world where
22 a number of things would change, including the payment
23 system, only fee, instead of a service fee for other
24 services. One of those things might be moving into the
25 world of different payment structures, which you

1 expressed as being normal competitive behaviour, and one
2 of those was charging for intellectual property rights.

3 This has come up a number of times in a number of
4 different places, and I wanted just to pick that up.

5 Am I understanding it correctly: you are not saying
6 that merely characterising a payment as being in return
7 for an intellectual property right is ipso facto
8 a normal competitive behaviour, are you?

9 PROFESSOR HITT: No. No.

10 MR FRAZER: Right.

11 PROFESSOR HITT: So the way I would think about it is that

12 Apple set up their structure in a certain way, where
13 they choose to monetise their intellectual property
14 rights in a certain way through the systems they had.
15 They could consider an alternative. That alternative,
16 on its surface, of the idea of either charging for
17 intellectual property, or charging a non-zero price
18 where they currently are, which I was referring to
19 downloads, that by itself could not be viewed, at least
20 immediately, without analysis. Maybe the level, maybe
21 there should be analysis. But certainly the idea that
22 you could either charge for your intellectual property
23 or set a non-zero price is certainly within the realm of
24 normal competitive behaviour. That is all I was saying.

25 MR FRAZER: Thank you. I thought that was what you were

1 saying.

2 DR BISHOP: I think that exhausts this topic.

3 I want to move on to theme 5, which is incidence or
4 pass-on. In particular, Dr Singer has put forward two
5 models to measure pass-on, a linear demand model and
6 a logit demand model, and that has given rise to
7 a certain amount of controversy.

8 Dr Singer, do you want to prime the pump here with
9 a short explanation of what you said?

10 DR SINGER: Absolutely. To be fair, I have put in more than
11 two, although there are two models. Let me suggest that
12 I have got two points that I think create a reasonable
13 boundary around which the incidence would likely shake
14 out, and on the high end I am looking at complete
15 pass-through of 100%, and on the low end I am looking at
16 pass-through of 50%. I have four independent bases for
17 the 100%, and let me quickly tick through them, okay.

18 The first one is a nice place to begin because it is
19 an area of agreement. I point you to proposition 89 in
20 the Singer-Hitt joint statement, and we both agree that
21 under perfectly competitive markets and under perfect
22 competition the pass-through rate is 100%, okay? That
23 is the first one. I am going to get into why I think it
24 is fair to characterise these app markets, when you
25 break them down into their very genres, as being

1 reasonably perfectly competitive.

2 The second pillar for this 100% pass-through is the
3 VAT tax. Now, I have done my own estimation of what
4 I think incidence was under the VAT tax and that comes
5 out to about 133%, as you will recall. Apple does its
6 own internal estimates of the VAT tax incidence, and we
7 cite that as well, and they came out at 180%.

8 But I think those are two important pieces of
9 information. I am grouping it under one pillar, calling
10 it the VAT experiment. It is a very nice experiment to
11 have. The VAT tax is an ad valorem tax, it is applied
12 to the same products at issue, and we see the prices
13 going up as a result.

14 I will move now to the third pillar, and that is the
15 EU finding in the Spotify case. The EU found that the
16 incidence in that case was in the order of -- is it okay
17 if I say this? It was 95%. I think that is in the
18 public domain. But again it is another pillar, it is
19 another piece of evidence. We have a digital product
20 with incidence, ad valorem taxes, pointing us again to
21 something around 100%. Then finally my logit model is
22 saying 92%.

23 So I think we have four separate pillars that are
24 telling us that this is basically full pass-through.

25 Now, you recall that the reason why the logit is the

1 most popular model in anti-trust application, applied
2 anti-trust work for doing pass-through, is because it
3 gives us a very simple formula for the pass-through.
4 Economists like simple formulas, it makes our lives
5 easy, and it basically says, and I will try to give you
6 the intuition: if you know what the firm's share is in
7 the market, you simply do 1 minus the firm's share and
8 that gives you the pass-through for the firm in
9 question, right?

10 So if I am atomistic and my share is 1 or close to
11 zero, then under the logit I would pass through 100% of
12 my cost increase, and that makes perfect sense compared
13 to what we know from the -- not to overuse the word --
14 perfectly competitive environment that we agree on,
15 using 100% pass-through. So the logit and the perfect
16 competition model are both pointing to 100% for
17 atomistic firms.

18 In contrast, what the logit is saying is if you have
19 a monopolist of 100%, I will make it easier for you,
20 50%. If it is a 50% market share of some bully in some
21 genre, he would absorb fully 50% of the cost increase
22 and only pass through 50% under logit. That is what the
23 logit is telling us.

24 Now, we have looked at the concentration in every
25 genre. You remember, when I get an 8% pass-through

1 rate -- sorry, when I get a 92% pass-through rate under
2 the logit, the implication is that the revenue-weighted
3 firms by genre have roughly about 8% share. That is how
4 you get to the 92%. That is all we are doing, is just
5 taking a revenue-weighted average by genre of everyone's
6 share in the market, and that tells us that on average
7 the pass-through is going to be about 92%.

8 But here is an important disclaimer that you should
9 know: if you remove the revenue weighting, right, if you
10 do not treat the bigs bigger when coming up with
11 a weighted average pass-through, and you just do
12 a simple average by genre, the average share of any firm
13 of any app developer within this category is under 1%,
14 right? The HHIs are under 100. These are very
15 unconcentrated markets. It would be fair to
16 characterise these markets as "atomistic", it is a word
17 that economists like to use at cocktail parties.

18 These firms are price-takers, right? They do not
19 have price-setting authority or power generally, right,
20 and under the perfectly competitive model, Dr Hitt and
21 I agree that pass-through would be 100% at proposition
22 89.

23 Now, I just want to now tell you about the bases,
24 and I will get out, for the fallback. I wanted to have
25 a conservative fallback: what is the lower bound? How

1 could you -- what is the lowest possible incidence that
2 you could fathom in this case? Here there are two
3 pillars. The first pillar is the linear model, and
4 Dr Hitt is right, and we are in agreement, that the
5 formulation I am using assumes, conservatively, that the
6 firm in question is a price setter, has pricing powers
7 facing a downward-sloping demand curve. We agree, at
8 least, on that much.

9 I do not think that is the case in most of these
10 firms. I just told you that their average share is
11 below 1. Very low concentration, right.

12 So I am doing this because I want to have
13 a conservative lower bound. What the literature is
14 telling us, this is Hausman and Leonard, it is telling
15 us that a monopolist, because they are so good -- the
16 title of this article is "Efficiencies from the Consumer
17 [Perspective]". It is defensive monopoly. What Hausman
18 is saying is do not think badly of monopolists, because
19 they do one thing good by us. They absorb the shock of
20 a cost increase. Under a linear model, they absorb half
21 of any shock. So this is a good thing. We should be
22 happy that they were served in some industries by
23 monopolists, right?

24 The second pillar for that 50% lower bound, I go
25 back, and this is so important, is steering, right, it

1 is steering-based pass-through. What do I mean by that?
2 We go back to that example of you are paying a 30% tax
3 right now, and some attacker comes in with 10%, and your
4 sword or your app is £10, and you get that \$2 of savings
5 if you can get them to go.

6 The question is how much of that \$2, am I, the
7 developer, willing to share with my customer in order to
8 induce her to move with me to transact over the lower
9 cost platform? I have got \$2 of savings, right, so I
10 have got very powerful incentives on each sword, right,
11 to say: you know what, if you follow me over to the
12 lower cost I am going to give you a slug of this too.

13 What does economics say about the sharing? Well,
14 economics is all over the place. We are in agreement
15 that the bargaining models can take you anywhere. But a
16 natural equilibrium of these bargaining models is
17 a 50/50% split. Dr Hitt reads the literature and he
18 says he likes 40/60 better. Fine, 40/60 is fine. The
19 point is that whether it is a 40/60 or 50/50 split, we
20 will have pass-through no matter what.

21 So that is the basis for the lower bound, the two
22 pillars, the linear and the bargaining models that take
23 you under steering-based incidence that get you down to
24 the 50% sharing, 50% incidence.

25 So I think I will wrap up there, but those are the

1 bases for the two upper and lower bounds.

2 DR BISHOP: Okay. Thank you.

3 Professor Hitt.

4 PROFESSOR HITT: Certainly. So I will talk a bit about the
5 analysis that I have done regarding incidence first, and
6 then I will address Dr Singer's points.

7 What we are observing is the competition between
8 empirical results directly on incidence in my report,
9 and a number of theoretical models that Dr Singer has
10 proposed, plus one sort of I think not quite relevant
11 experiment, which is the VAT tax, so I will come back to
12 that a little bit later.

13 In my analysis there have been four times in which
14 Apple has changed their prices, changed their
15 commissions. We studied all four of them. That is the
16 Small Business Program, the Auto-renewing Subscription
17 Program, the News Partner Program which is the most
18 recent, and the Video Partner Program. They affect
19 different developers, they involve different changes in
20 terms. The underlying monetisation structure of these
21 different developers is different. Some are large, some
22 are small. It is a wide variety, different kinds of
23 changes.

24 What we consistently see, when the commission rate
25 changes, is that the most likely response of developers

1 is to do nothing, to leave the prices the same, and we
2 see that over and over again. The least -- the only
3 small one is news partner, where it is close to 70%, but
4 it hovers around 90%.

5 Now, I think a question was raised early in the
6 proceedings about whether or not, for example -- let us
7 use 90% just as a gauge, because that is close to the
8 ARS and Small Business Program results. I find that
9 when the commission rate changes, developers do not
10 lower their prices 90% of the time.

11 The question was raised earlier, well, what about
12 that other 10% of the time? The answer is you do not
13 know from that analysis but you do know from the
14 complementary analysis. The additional analysis we did
15 was a difference-in-difference analysis, right, compare
16 a treatment group, the group that experienced the
17 commission shift, to a number of different control
18 groups. We are able to do this for small business. We
19 are able to do this for ARS. The other two are
20 sufficiently idiosyncratic, there are not good control
21 groups.

22 But when you do this in a standard sort of
23 difference-in-difference framework, what you find is the
24 mean incidence rate is zero, essentially, across all of
25 them. Sometimes it is slightly positive. I think there

1 is one result out of very, very many that is negative,
2 insignificant, in all of them, that would be consistent.

3 So the overwhelming evidence from the natural
4 experiments when we observe how developers actually
5 respond to a commission rate change is that they do
6 nothing and that, on average, the incidence rate is
7 zero.

8 How do you square that with the underlying theory.
9 There is any number of ways in which that could be the
10 case. One way in which that squares the underlying
11 theory is that marginal costs are zero. But keep in
12 mind, this is an empirical, observed result of what
13 happens when developers actually change the prices. One
14 reason why you might get zero incidence is if marginal
15 cost is zero, ad valorem tax. A simple algebraic model
16 can show that to be the case. It is true for
17 Dr Singer's models as well, as long as you treat the
18 commission as being applied as a percentage of revenue
19 instead of a fixed amount. Those are relatively
20 standard results. Then also you can do it in the
21 boundary condition. If, for example, marginal cost is
22 close to but not quite zero, it converges essentially to
23 zero.

24 So that is one reason.

25 There are also other reasons articulated in my

1 report. Developers may prefer to have common pricing
2 across multiple channels. They may compete with other
3 outside developers who do not pay commissions. If they
4 engage in in-app advertising, they may actually decide
5 to raise their prices because that changes their
6 relative value between engaging in advertising and
7 engaging in priced either IAP or downloads, in the sense
8 that, when you lower the commission, having a price
9 starts becoming more attractive because you keep more of
10 that, maybe advertising is less attractive, and many
11 developers engage in both practices where they have both
12 IAP or paid downloads and in-app advertising.

13 Now let me come back to Dr Singer's analysis. Keep
14 in mind these are all theoretical predictions, whereas
15 I have actual empirical results in this setting. So
16 four things. The perfectly competitive market is simply
17 not relevant here. We are dealing with software
18 products in the developer side. We are dealing with
19 platforms on the other side. So these are not -- these
20 are differentiated product competition markets, and that
21 would be consistent with, for example, this logit model,
22 differentiated product competition.

23 So I do not believe the perfect competition model is
24 right.

25 His second point, he has his VAT experiment. We

1 have to be very careful what exactly that was. So
2 a change -- a regulatory change was made and Apple had
3 to adjust its price tiers based on a new ruling
4 regarding the VAT taxes that they were required to
5 remit. I will note the fact that that is not the same
6 thing as a natural experiment on incidence, because that
7 tax change, the price changes that Dr Singer is
8 observing, are not developers choosing a different
9 price, it is Apple choosing different price tiers. That
10 is different. Developers had their prices changed
11 because Apple made a different choice, not because they
12 have reviewed this and made an election.

13 The Spotify Decision has an incidence rate of 93%,
14 and that -- my read, again I do not know all the
15 information that went into that. Essentially what they
16 are saying is that Spotify chose to charge roughly 30%
17 more on the Apple platform than they did from the direct
18 download. Now, any developer can do that for any number
19 of reasons, including perhaps in their mind they are
20 passing on the fee. It could be because there is higher
21 demand in the Apple channel. That by itself cannot tell
22 you exactly why they did it. They said it is for
23 incidence rates, but keep in mind they are also involved
24 in litigation over exactly this issue.

25 I will note a couple of things about that incidence

1 rate as well. One thing is that is not uniform in the
2 industry. So Spotify is not a market, it is a large
3 participant in one of many industries. You will note
4 that within that industry you get a variety of
5 responses. So, for example, some developers charge the
6 same price on all channels. Some developers charge
7 different prices for different products on different
8 channels. So sometimes they have a different price on
9 Apple and sometimes they do not have a different price
10 on Apple. So there is no uniformity to the Spotify
11 experience, so that is not a market-wide test.

12 Then finally coming around to the logit model. This
13 is where we have devoted a lot of back and forth in
14 recent time, so let me give you a couple of comments on
15 that.

16 Dr Singer's incidence rates are solely based on
17 a theoretical model. The linear model, which requires
18 developers be monopolists, I do not think that is
19 a realistic assumption, and even under that model, if
20 marginal cost is zero or close to zero, you do not get a
21 prediction of 50% incidence.

22 The logit models is where we have had a lot of back
23 and forth, and I will point out that the logit model,
24 while the structure of this discrete choice random
25 utility model that Dan McFadden introduced in the 1970s

1 is definitely a workhorse, with all sorts of empirical
2 econometrics, you do not currently use basic logit
3 models really for anything any more. There used to be
4 a time when that was an acceptable practice, when
5 computation was really, really, really expensive, and
6 certain models that do not make the same restrictive
7 assumptions were difficult to estimate.

8 So these days it is recognised that the underlying
9 assumptions of the logit model generally do not hold in
10 real markets, and they certainly do not hold in markets
11 that have heterogeneity in them. So if you are
12 analysing, say, peanut butter, the assumption that if
13 one peanut butter disappears from the market, you can
14 expect consumers to basically spread their purchases
15 over the other brands of peanut butter in roughly the
16 same proportion that they sell now, that is probably
17 a good assumption.

18 We are not talking about uniform products here, we
19 are talking about apps, and you can get some very
20 strange predictions about the kind of substitution
21 patterns that are implied by logit.

22 In modern econometric practice, you generally do not
23 use that model anymore. You can use mixed logit and get
24 around it entirely, you can use nested logit. There are
25 many techniques for getting around this.

1 So I think there should be no presumption that logit
2 is a good model in current practice.

3 I will finally note that Dr Singer recognised the
4 limitations of his logit model, and predictably the IAA
5 assumption I was talking about before, that is called
6 the IAA assumption. Early in one of his reports he said
7 he was going to test it. He never did. In his
8 subsequent reports he has been arguing why he does not
9 have to test it. I have responded to many of those
10 claims. But the general practice is, if you are going
11 to assume a relatively simple model, you should test
12 whether or not the underlying assumptions hold. He has
13 not done that. He has decided instead to argue against
14 the need to test those assumptions. When I do test
15 those assumptions, he has argued against them. I am
16 happy to get into that, but I do not think it is
17 absolutely critical.

18 Then finally I will point out one last thing which
19 is that his empirical validation of his theoretical
20 model relies on his demand estimates. I took up the
21 issue of what his demand estimates actually show in,
22 I believe, my second report. What you find is -- so
23 what he does is he says, well, it may be linear demand,
24 or it may be logit demand. Let me estimate a demand
25 curve and see if it actually fits the data.

1 There is a couple -- there is an inherent problem
2 with that approach to start with. One is you cannot
3 have both the assumptions of a logit demand and the
4 assumptions of a linear demand. One has competition,
5 one does not. They both cannot be true yet, he says
6 both fit the data well.

7 The second point is they actually do not fit the
8 data well on the part that is relevant. So what he has
9 done is he has taken -- and this is true for his logit
10 model, it is also true for his linear model. What he
11 has done is he has taken something -- 30-plus million
12 observations of products, not apps, and he has estimated
13 a model that has something like 3.5 million individual
14 variables representing each product, and again this is
15 not Apple. Then he claims that -- and then he also has
16 price terms. So when you think about demand curves, you
17 think about estimating the relationship between quantity
18 and price.

19 What really drives the fit of his model, and he is
20 relying on the goodness of fit as an argument, is
21 that -- what is driving the fit is not the relationship
22 between price and quantity, but simply the fact that
23 some products sell more than other products. It's the
24 3.5 million individual variables that are explaining
25 almost all the variants, and in fact if you look at the

1 portion of variants explained by the actual price terms,
2 which are the critical part, it is very little, if any,
3 in his actual model. So his empirical validation of the
4 model is not correct.

5 Just to summarise, I have direct empirical results
6 that are inconsistent with Dr Singer's theoretical
7 models. They demonstrate the incidence rate. The most
8 likely response is 0, the average incidence rate is 0.
9 The underlying assumptions of theoretical models which
10 he is relying on are not self-consistent, and they are
11 not validated, and then his VAT experiment I think is
12 just not relevant, because again it looks at Apple
13 choice rather than developer choice.

14 I have been speaking for a while. I think I have
15 covered the ground. I wanted to make sure we got it all
16 on the tape and I will pass it to my colleague.

17 DR BISHOP: -- the debate we had earlier.

18 DR SINGER: I have got it all. I have heard all these
19 before, so there is nothing new in here and nothing
20 informative, but I would like a chance to respond, if
21 I could, and I will be brief. I will try to be brief.

22 Dr Hitt begins by saying that all my models are
23 theoretical and of course that is not the case. I mean,
24 I gave you the four pillars for full pass-through, and
25 many of those are empirical. He does not like the

1 empiricism.

2 Let us begin with the VAT one which he dismisses
3 because he says that Apple was choosing the tiers. So
4 what Apple did, to be clear, is that in response to the
5 VAT going up, Apple reached out to its developers and
6 said: look, in an effort to mitigate what is happening
7 we are going to raise your prices on each of the tiers.

8 And at that point the developers had a choice: do
9 I ride up the price that Apple is suggesting I take or
10 do I stay pat? About 70% of developers rode up with the
11 price, about 15% of them did not go up with the price,
12 and I think another 10% went beyond what Apple was
13 suggesting.

14 So to suggest that the developers were completely
15 incapable or did not even have a hand in the ultimate
16 prices is just wrong. They did not have to go up with
17 the tiers. They were complicit in the price increase,
18 right. So that is why the VAT tax, which is
19 an ad valorem tax, does shed light on the incidence
20 here.

21 Now, I am not using it as a point estimate. Our
22 best estimate of what happened was about 133%. I am not
23 suggesting that you go up to 133%. I just think it is
24 an important natural experiment for us to exploit.

25 On the Spotify, he thinks that that is unique to

1 Spotify and that it does not speak to other developers.
2 He has also said in his writings that Spotify uniquely
3 has marginal costs and other developers do not. He
4 points to music royalties.

5 Let me just point out that all developers have
6 marginal costs, so this assumption of zero marginal cost
7 is not correct.

8 I am going to point you to an article I cite by
9 Ghose and Han, which spells out the marginal cost of app
10 developers. We also have through testimony in this
11 matter, and I am bad with names, but I think it is
12 Howell, who offers testimony about the marginal cost
13 that app developers face, that is the cost of selling
14 an additional unit. So it is nothing unique to music
15 developers.

16 The Spotify thing is important, and he is upset that
17 when he looks out he does not always see an attempt to
18 steer. When he sees that there is an opportunity to go
19 to a lower tax, why do firms not, 100% of the time,
20 offer a lower price to do that? The answer is because
21 part of the payment restrictions involves
22 an anti-steering provision, and it reads as follows:
23 thou shalt not tell your customers within the app that
24 there is a lower price available elsewhere. What that
25 means is that steering based incidence is largely

1 foreclosed. You could go out and buy a billboard, which
2 would be very inefficient, along the highway, and you
3 say: hey guys, I just want you to know that we are
4 offering lower prices if you consummate the transaction
5 from our website.

6 Short of that, unless you have a name like Netflix,
7 it is going to be very difficult for an app developer to
8 encourage that kind of steering base, and that is why we
9 do not see it as much as we might expect.

10 On a perfect competitive point, he says this is
11 software differentiated products, therefore they are not
12 perfectly competitive. Let me say this: besides our
13 children's lemonade stands on the street corner, there
14 are not many perfectly competitive markets on earth,
15 right, so I think it is unfair to say it does not meet
16 the ideal. The question is: is it close enough to use
17 the result from perfectly competitive as a reasonable
18 approximation? These are atomistic, they are generally
19 atomistic firms with shares less than 1%. They are
20 price-takers, they have no price-taking power, right?
21 In that case, the competitive model is a reasonable
22 model.

23 We use competition all the time, competition models,
24 competitive models, all the time to make inferences and
25 assessments in anti-trust, right? So the notion that we

1 are going to say that because these are software we
2 cannot draw any lessons from perfect competition is the
3 wrong inference to make.

4 Let me go now to his empiricism, which I put zero
5 weight on, and I want to try to convince you to do the
6 same. To understand -- I just have three quick
7 critiques of these empirical -- these actual commission
8 decreases, the attenuated commission decreases that
9 Apple has offered in the real world.

10 The first point is that they go in the wrong
11 direction, right? In each case, Apple, beginning from
12 30%, you could not go any higher, so each one of them
13 takes you down to 15. It was a cut, it was a costs
14 savings, right, that developers enjoyed, some of them,
15 in the actual world.

16 In contrast, what we are trying to figure out when
17 we model the counterfactual is a cost increase. That is
18 to say, if the competitive world would have been, say,
19 15% or 12%, and Apple took us to 30, a cost increase,
20 would developers have been inclined to push forward
21 those costs onto their customers? So a very different
22 answer. A very different answer.

23 The reason why is economists recognise this thing
24 called asymmetric pass-through. Asymmetric pass-through
25 is the notion that firms are much more inclined to pass

1 along cost increases than they are to share costs
2 savings with their customer. Why is that? Well, let me
3 try to give you some intuition. It turns on asymmetric
4 information. The firm knows better than the customer if
5 their costs are going up and knows how much it is going
6 up. We all just lived through the Covid experiment
7 where inflation took off and thankfully has come back
8 down. What we observed during Covid was that a lot of
9 firms' profits went up, despite the fact that their
10 sales were not necessarily going up, but they were
11 earning higher margins. That is, they were passing
12 through more than 100%. We had what is called cost
13 amplification during this recent bout of inflation.
14 What happens is that some firms, I do not want to
15 condemn all of our wonderful firms, but many firms in
16 the economy basically exploit these situations by
17 raising prices by more than what their costs went up,
18 because they know the costs, and they know the customer
19 is just thinking that, well, if his costs went up, maybe
20 I should give them some slack and go along with this
21 price increase, right.

22 I want to just mention, you guys know this, the EC
23 put out a study on MasterCard and interchange fees
24 recently and they found asymmetric cost pass-through,
25 right, for cost increases and cost decreases. The

1 reason why the interchange fee is such a lovely example
2 is because it is yet another ad valorem tax but it is
3 highlighting the fact that you get differences when you
4 go up and down.

5 So the first problem is wrong direction.

6 The second problem with his is that in the actual
7 world, because Apple is still the monopoly platform
8 provider, there is no opportunity for steering-based
9 pass-through, and I think steering-based pass-through is
10 the key linchpin to how pass-through would have occurred
11 in the counterfactual world. In the actual world there
12 is no one to steer to. Apple is still the only game in
13 town. So we cannot look at these experiments as natural
14 approximations of the but-for world because
15 steering-based pass-through is off the table.

16 The third and final thing I want to submit to you
17 about why his empiricism is not helpful is these apps
18 who were lucky enough to get the cost break -- I am
19 talking about for the in-app purchases, right -- are the
20 mom and pops, these are the ones who make sales less
21 than a million dollars. My estimate is that about 2% of
22 the in-app transactions, 2% were lucky enough to be
23 subjected to this price cut, right. What Dr Hitt wants
24 you to believe is that the way that these 2% responded
25 to the price cut is representative that you can actually

1 extrapolate from this small sample, right, and in my
2 opinion unrepresentative of the mom and pops, who are
3 basically competing against the incumbents who are not
4 dropping their prices.

5 So for these three reasons, and we are not subjected
6 to the experiment, right, and are the price setters in
7 the marketplace. So for these three reasons: the wrong
8 direction, right; no steering-based incidence, because
9 Apple is still the monopolist; and it is not
10 representative, it is the mom and pops. We can go into
11 the subscription stuff, but that is even easier. The
12 subscription stuff was second year only, and Apple did
13 not give them the tool to just drop their prices for the
14 second year, so we should not be expecting any
15 pass-through there.

16 Let me see. He really gave me a lot of things
17 there. I just want to check to see ...

18 Okay, let us talk about -- oh, he says there is
19 a conflict between the logit and the linear. I do not
20 think there is a conflict. I think the common intuition
21 is that, as I said under logit, when the firm gets big
22 enough, has, say, a 50% share, that their pass-through
23 is going to go down, it is going to go down to 50%,
24 which is exactly the prediction of the linear model.

25 So, yes, the models are making different

1 assumptions. The linear model is assuming that prices
2 are negatively related to output, and the logit model is
3 assuming that prices are negatively related to market
4 share.

5 So they are not in conflict; they are just different
6 models, they assume different structures of the nature
7 of demand, and it is perfectly reasonable I think for
8 me, among the various pillars that I put out, to model
9 both of those.

10 I want to get to this question of ... that I should
11 have tested whether the logit model fit the data before
12 assuming the 1 minus share. Well, I did test it, and
13 this is how I tested it. The logit model makes a very
14 explicit prediction about the relationship between
15 an app's price in this context and its market share. So
16 for each of the 28 genres I asked the question:
17 controlling for fixed effects and whatever else we could
18 control for, knowing the price, right, would the price
19 relate negatively to a firm's market share? I think we
20 went 28 for 28, and in every category that we estimated
21 the model we found a negative and statistically
22 significant relationship between an app's price and its
23 market share, right.

24 So given that the model was specified and fit the
25 data, I think it is fair to use the pass-through

equation.

I have a quote from Train, who wrote the seminal piece, a book, an econometrics book that covers the logit, and Train says that in a well-specified model, which I think I have, it fits the data that one can make predictions based on the logit.

A few more points. Sorry, but he did come with a lot.

He says that the price is not carrying its weight. Well, he is trying to create the impression that price is not carrying its weight in these models, that instead all the weight is being done -- all the labouring is being done by the fixed effects. To test this, he used this within our R-squared test.

The test for whether or not price is carrying its weight is very simple. It is whether or not, when you control for fixed effects and you add price to the model, does the P value connote a measure of statistical significance? The answer is yes. That is how an econometrician tests for a variable being significant, right? That is controlling for the fixed effects, does price -- does the P value on price, is it economically significant and is it statistically significant? That is the test, right, and the P value works in each of these cases.

1 So I think the suggestion there was that the model
2 is somehow infirm. That is not how an econometrician
3 attacks a model. Typically, what you would do is you
4 would say Singer omitted a key variable, and when I put
5 in this variable I can show that the price -- the
6 sign-on price flips or the statistical significance on
7 price goes away.

8 It is very weird -- this argument is very unorthodox
9 to say, well, okay, the P value on price is
10 statistically significant, but look at all the work that
11 the fixed effects are doing. We want the fixed effects
12 in the model. The fixed effects are saying: if I want
13 to make a prediction about a given app's market share,
14 do I want to make use of who that app is? Absolutely
15 I want to know who it is, because if it is a popular app
16 that will help my prediction model.

17 So it is a variable that you would of course want to
18 include in the model, and what the model is telling us
19 is that the margin, after I have included fixed effects,
20 now I can tell what the incremental effect of price is,
21 and we go 28 for 28 categories, and the increase in
22 price decreases the market share.

23 Now, I want to quickly turn to --

24 MR FRAZER: Just before you do turn to it.

25 DR SINGER: Yes, absolutely.

1 MR FRAZER: Does that result meet Professor Hitt's criticism
2 that you should have used a nested logit model?

3 DR SINGER: No, it does not. But what is very interesting
4 there -- and I am glad you did that, because that was
5 one of my points. It is very interesting that you point
6 this out. He does not like the simple logit and he says
7 I should have done a nested logit.

8 I would think -- I get into these debates, sadly,
9 way too much -- but if you do not like the model I put
10 forward, put forward a preferred model and let us see
11 what the nested logit did. Would it give us a different
12 result? He never did that.

13 It would be tantamount to saying -- there is
14 a famous case, In re High-Tech Antitrust, involving
15 Apple and other Silicon Valley employers of engineers,
16 software engineers, and in that case the expert
17 economist for the defence said: the plaintiff's
18 economist failed to include an important control
19 variable. He just asserted that but he never said what
20 it was. The court said: look, if you are going to
21 criticise an expert that way, go identify the control
22 variable, put the control variable in the model -- this
23 was Kevin Murphy, I think, of University of Chicago. He
24 said: go put it in the model and let us see what it
25 does. But that is where the defence rested. He just

1 said: there is a control variable that is missing here.

2 The court said: no, that is not enough. If you are
3 going to critique a model, show that that effect of the
4 critique actually has import. He did not do that here.

5 Can I go to the IAA real quick? I am sorry to be
6 hogging the mic, but that was a lot of stuff.

7 Let me just gather my thoughts real quick.

8 He says that I have to, I have to test for the IAA,
9 right, and that it is common practice in the economics
10 profession to always do a test for IAA whenever using
11 logit.

12 If it is common practice to always do, if it is
13 a necessary condition, how are we able to cite to so
14 many papers, where the logit is used to derive
15 pass-through or to otherwise explain demand, where the
16 IAA was not tested? We have paper after paper,
17 application after application, where the IAA is not used
18 in a peer-reviewed and published paper. I think that
19 that calls into question whether you have to test for
20 IAA in every application of the logit.

21 I go back to the Train quote. Train says that in
22 a well-specified model, IAA can be reasonable
23 approximated or reasonably assumed.

24 Finally, let me just get to the actual test that he
25 did, right. So in his test he is looking for what is

1 called -- and I apologise, this is heavy stuff --
2 parameter stability. He wants to know that if he drops
3 within a category, if he drops the most popular app from
4 the category and you rerun the logit model, does the
5 parameter on -- does the price coefficient remain
6 constant? Is it reasonably stable? That is
7 a prediction of the IAA.

8 He comes back and he says the Hausman test --
9 Hausman keeps coming up -- fails, and therefore you have
10 to reject the IAA, right?

11 So we have looked into his results, and I think it
12 is important to note that in 20 of the 28 categories the
13 coefficient does not move at all, okay? In eight of the
14 categories it does. So what is that telling us?
15 I think it is telling us that it is a mixed result,
16 right, that we cannot know with certainty if in every
17 category the IAA, at least according to this test,
18 holds. I would submit that this is not the right test,
19 by the way, for the IAA.

20 But even if you use the test, you do not get
21 an unequivocal rejection of parameter stability. The
22 parameters are generally stable in 20 of the 28
23 categories. The parameter does not move after you take
24 out the most popular app.

25 I have been talking for a while. I am going to pass

1 the mic. If you have any questions, I am happy to
2 answer them.

3 PROFESSOR HITT: I can respond, but I do not want to jump in
4 until everybody else has said their piece.

5 DR BISHOP: Briefly. Well, maybe we should break. (Pause)

6 We think that the debate is running into diminishing
7 returns. So could you please -- we've read a lot of
8 this. Could you please be very brief, Professor Hitt.

9 PROFESSOR HITT: I will be very brief.

10 So I just want to step back. What we are talking
11 about is the contrast between empirical results in this
12 setting versus a theoretical model where he is trying to
13 justify some of the assumptions, okay. So I think, you
14 know, we actually can observe incidence in these models.

15 I will note that in his -- number one, I will note
16 that in his models there is no steering, there is no
17 sticky prices one way or the other. So if you want
18 a test of whether his models reasonably approximate the
19 setting, my empirical results falsify the theoretical
20 models that he has put forward because we show zero
21 incidence in a setting that does not have his
22 auxiliary -- the critiques he has levied against my
23 empirical work are not built into the underlying models
24 that he is using. So if nothing else, the empirical
25 results by themselves refute this. That is point one.

1 Point two, I think Dr Singer, again -- I will just
2 reiterate -- he said he was going to test for IAA, he
3 chose not to. He is now arguing why he does not have
4 to. It is common practice, again, to do that.

5 But I will note, the thing he is resting on is this
6 idea that he has a well-specified model, and "I think
7 I have" is his claim to having a well-specified model.

8 Well, one of the things I did was to check to see
9 whether the model is, indeed, well specified, and one of
10 the things you can do is to see whether or not you get
11 different -- if you break down some of his categories,
12 which are very aggregated -- and in particular the one
13 I did was video streaming out of entertainment -- if his
14 model is well specified, the video streaming and the
15 entertainment should have exactly the same coefficient,
16 because he has imposed that as a restriction in his
17 model. A well-specified model does not have
18 restrictions that are false. You find that the
19 coefficient in his model for video streaming is very
20 different than the coefficient in his model for other
21 entertainment apps, which goes against the idea that it
22 is well specified.

23 Also -- and one last thing regarding the IAA. So
24 Dr Singer, his basic claim that he has validated his
25 theoretical model is no more than demand curve

1 slope-down, that is it. That when the price goes up,
2 the quantity should go down. That is the only thing he
3 has claimed to validate.

4 Now, strangely enough, I do not think his models
5 even show that for the reasons I have described. But
6 that is all he has been able to show, and I do not think
7 that is an appropriate foundation when you can see that
8 the other underlying assumptions of the models are not
9 satisfied.

10 Finally on the point of marginal cost and perfect
11 competition, I do not think anybody would reasonably
12 approximate any kind of software firm as having -- as
13 facing perfect competition. Software is known to be low
14 marginal cost, high fixed cost. Equilibrium prices in
15 such a market would be zero. There is a whole
16 literature that discusses this thing. I have written
17 that literature. So the idea that a perfect competition
18 model was a suitable approximation for these
19 differentiated product low marginal cost goods does not
20 make any sense as well.

21 I will stop there. We can get into the arcanum as
22 well, but that is, I think, enough.

23 DR SINGER: I would like to respond, but if I am killing
24 you, we do not have to.

25 DR BISHOP: One minute.

1 DR SINGER: I can do it in one minute.

2 He does another test of IAA which is completely
3 unorthodox where he splits the category into two, runs
4 two separate models and asks if the parameters are the
5 same. That is not how the IAA is tested, right.

6 The IAA is generally tested, if you go to the
7 literature, by saying randomly remove certain choices,
8 go back and estimate the full panel of data minus the
9 removed choices, and see if parameters were stable.

10 He does that -- he gets close to that when he drops
11 the most popular. I do not like that in particular, but
12 at least he is in the spirit of what the literature is
13 saying.

14 For the video versus entertainment stuff, it is just
15 completely unorthodox, right, splitting the sample in
16 half and looking for the same.

17 He thinks that he has found another reason for why
18 perfect competition cannot characterise software, he
19 says because we would observe zero prices. That only
20 assumes that they have zero marginal costs. But I have
21 said before, the app developers do not have zero
22 marginal cost.

23 DR BISHOP: Dr Singer, I think the time has come to wrap up.

24 DR SINGER: Okay. Good. (Pause)

25 THE CHAIRMAN: Just excuse us.

1 DR SINGER: Sure. (Pause).

2 THE CHAIRMAN: We are just going to do a couple more things.

3 Mr Frazer has a couple of questions that were not on the
4 list, but hopefully will not be a surprise. I think we
5 will do that. I am conscious that we ought to try and
6 have a slightly more extended break, I think. Perhaps
7 we will come back to that.

8 Let us do these questions then we will talk about
9 where we are, Mr Hoskins.

10 MR HOSKINS: Certainly.

11 MR FRAZER: I have just one question, in fact, and I can be
12 brief, and I hope you can too. It is coming back to
13 exclusive dealing, which was the previous theme. There
14 is some discussion in the papers as to whether both
15 restrictions should be regarded as inter-brand or
16 intra-brand restrictions, and I just would like to know
17 whether we need to take account of this labelling and
18 what it would do to help us in making this decision, if
19 at all.

20 I do not know who wants to start that.

21 PROFESSOR SWEETING: I am happy to go first.

22 DR SINGER: It is your idea so you should defend it.

23 PROFESSOR SWEETING: Well, it is a very well known idea in
24 economics. I am not going to claim credit for
25 intra-brand versus inter-brand competition.

1 Just to be clear on definitions, the idea of an
2 intra-brand restriction is when a firm is specifying
3 a restriction, typically on kind of the distribution,
4 for example, of its own product. So the example I give
5 would be a luxury watch brand which is specifying that
6 it is only going to sell through kind of authorised
7 dealers. But it is not having any effect on how other
8 watch brands are distributed, right. So there is no
9 inter-brand effect.

10 So I would regard kind of the -- intra-brand versus
11 inter-brand is something kind of separate from a market
12 definition question. You could just think: okay, is
13 this firm specifying a restriction on kind of the way
14 its own products are being handled or sold, versus
15 someone who is, say, referencing how rivals are going to
16 be considered.

17 So within that framework, I certainly see both the
18 distribution requirements and the payment requirements
19 that Apple is imposing as restrictions on how Apple's --
20 you know, transactions facilitation services are going
21 to operate between consumers and developers.

22 Now, the exclusive dealing literature -- and I do
23 not want to claim kind of legal expertise, but my
24 understanding of kind of the reasons why when people are
25 thinking about exclusive dealing in case law they think

1 it is bad, is really premised on those being inter-brand
2 restrictions. So things that -- you know, things that
3 say: if you are my retailer, you are not allowed to be
4 a retailer of another firm that I compete with, right.

5 So obviously, you know, if Apple was saying: you
6 develop for iOS, you cannot develop for Android, that
7 would be a classic inter-brand restriction.

8 So obviously, you know, I am not claiming that
9 intra-brand restrictions can never be problematic,
10 right? So economists would say intra-brand restrictions
11 in the presence of substantial inter-brand competition
12 are almost always pro-competitive, or competitively
13 neutral. So you have to put it within -- if you really
14 want to assess an intra-brand restriction, one has to
15 think about the market definition, and obviously we have
16 heard a huge amount on that so far.

17 But what I think it is wrong to do is to say it is
18 an intra-brand restriction, but because, you know, we
19 believe there is -- someone believes there is a single
20 brand market, to immediately kind of label that as
21 exclusive dealing and have in the back of your mind this
22 is exclusive dealing thing, right, I would just view it
23 as an intra-brand restriction which we would need to
24 evaluate on those terms.

25 DR SINGER: Do you want to say something?

1 MR HOLT: Sure.

2 DR SINGER: I want to say something too.

3 MR HOLT: Okay. I have to say again this sort of debate
4 arose in the foreclosure context.

5 PROFESSOR SWEETING: Yes.

6 MR HOSKINS: So I was not opining on that, so I have not
7 sort of investigated the points in detail. But just
8 some -- an initial sort of reflection on that point.

9 I think there is a distinction between the case of
10 selective distribution, or intra-brand distribution,
11 where you have a manufacturer that is applying
12 restrictions on how its products might be distributed by
13 retailers.

14 So I was involved a number of years ago in a case
15 involving a CMA fine against a golf club manufacturer,
16 Ping, which restricted online sales. Now, that was
17 clearly an intra-brand restriction. Ping is one of many
18 golf club manufacturers, it levied restrictions on its
19 golf clubs as to how retailers could sell those golf
20 clubs, but of course had nothing to say about how any
21 other golf clubs might be sold. That would have been
22 some sort of a limit on inter-brand competition. But it
23 was Ping's golf clubs and the restriction of how those
24 golf clubs should be sold.

25 I think the case here of the App Store restrictions

1 relate to developers' apps, not Apple's apps, and the
2 restriction -- and while obviously developers engage in
3 inter-brand competition, it is their apps that are being
4 subject to the restriction, not Apple's.

5 Again, there is at least the prospect in a market
6 for, for example, iOS App distribution, for
7 inter-brand competition to take place in that, ie the
8 App Store compared to Epic, or whoever else might want
9 to enter in iOS App distribution.

10 But the restriction does have an impact directly on
11 that by removing the capability of developers to use
12 alternatives. So although I have not sort of engaged on
13 the precise debate between Dr Sweeting and Dr Singer on
14 this, that is my immediate reflection; that I do not
15 really see the comparison being made is valid.

16 DR SINGER: Can I go?

17 MR FRAZER: Briefly, please.

18 DR SINGER: Yes, briefly.

19 This distinction is not helpful at all. It does not
20 advance our understanding of the case. It is a backdoor
21 way of fighting against market definition. Basically
22 he wants you to assume, counterfactually, that there are
23 a whole bunch of brands competing against Apple for the
24 two products at issue: app distribution for iOS, and
25 the aftermarket service.

1 By design, by contract, there is no competition in
2 either of these two. So it is inappropriate to think
3 about this as like a restriction between Mercedes and
4 BMW. I mean, that would only make sense in a market
5 where you have multiple brands competing against each
6 other. We have no competition here.

7 I will just -- this is the last thing I want to say.
8 If there were competition, say you had three app stores
9 and Apple's share was 33%, and in that world Apple
10 decided to put a restriction that says that: when you
11 come down our branch, you have got to use our payment
12 processor, that could potentially be properly deemed as
13 intra-brand, right. We have this counterfactual
14 assumption of competition, which does not exist here,
15 and maybe that restriction would not be as pernicious as
16 the one that Apple is doing now.

17 Thank you.

18 THE CHAIRMAN: Good. Thank you very much, everyone. That
19 has been really very, very helpful indeed.

20 So we will take a break. I am just wondering,
21 Mr Hoskins, the plan, I think, was to release all of the
22 experts from the hot tub and from their oath. I think
23 we are conscious that you will be calling Dr Singer
24 next, and we wanted to make sure you had some proper
25 time, if you so wished, or if he so wished, to have

1 a discussion with the team. So that seemed fair to us.

2 So the question, really, is how long do you think
3 that time should be. Dr Singer may have a view on that
4 as well.

5 MR HOSKINS: I think it is best to ask Dr Singer. He is far
6 better placed than I am to tell us.

7 THE CHAIRMAN: So the options are to take a short break and
8 just get going again. Or we can take a longer break.
9 I think we need to break for at least 10 or 15 just to
10 make sure we have got the furniture back in the right
11 place. In which case we would have a relatively short
12 run and a 1.00 finish.

13 Or we could take a longer break and we could
14 start -- we could effectively move the short adjournment
15 forward. There are lots of different ways we could do
16 it. I am open to any suggestions.

17 What I do not want to do is to lose time
18 unnecessarily. So I would much rather get something
19 done rather than just wait until 2 o'clock.

20 But, really -- Dr Singer, do you have a view on --
21 do you have a desire to spend a bit of time with your
22 team and discuss what has happened over the last day and
23 a half?

24 DR SINGER: Not particularly. I mean, I care more about
25 food actually, at this point.

1 THE CHAIRMAN: You will get lunch, do not worry. Whatever
2 happens you will get lunch.

3 DR SINGER: But at this break?

4 THE CHAIRMAN: Well, we will work that out. If you just
5 give us a second, we will work out what we are doing.

6 Does anybody on that side of the court have a view?

7 Ms Demetriou, you are going to be in the --

8 MS DEMETRIOU: Yes. I am in the Tribunal's hands. It may
9 make sense, if we are breaking for 15 minutes anyway, to
10 have an early lunchtime adjournment, because otherwise
11 I am not going to make very much progress before we have
12 to rise again.

13 But if the Tribunal thinks otherwise, I am relaxed.

14 THE CHAIRMAN: Well, maybe the best thing to do is actually
15 to break and start again at 1.30? Would that be
16 sensible? That would certainly give us a good --

17 MS DEMETRIOU: I think that would work well, from my
18 perspective, and it would give Dr Singer his food now.

19 THE CHAIRMAN: Good.

20 All right. Any objection to that?

21 MR HOSKINS: I am very happy with that.

22 THE CHAIRMAN: Are you happy with that, Dr Singer?

23 DR SINGER: Yes.

24 THE CHAIRMAN: Very good. So that is the plan.

25 So the experts are released from your oath. You are

1 able to discuss things and go and talk about things
2 other than sandwiches, and that applies to everybody.

3 I am afraid what it that does mean is when you come
4 back, we will have to reswear you.

5 DR SINGER: That's fine.

6 THE CHAIRMAN: If you will put up with us for that process.

7 We will rise and we will start again at 1.30.

8 (12.03 pm)

9 (The short adjournment)

10 (1.33 pm)

11 THE CHAIRMAN: Yes, Mr Hoskins.

12 MR HOSKINS: I would like to call Dr Singer, please.

13 THE CHAIRMAN: Yes, we are going to swear you again,

14 Dr Singer, so if you do not mind while we do that.

15 DR HAL SINGER (affirmed)

16 Examination-in-chief by MR HOSKINS

17 MR HOSKINS: Dr Singer, I have got to go through some
18 formalities with you which are very tedious, but bear
19 with me.

20 Can we have {C2/3/1} on the screen, and there are
21 a variety of documents going to appear on the screen in
22 front of you. Sorry, I just need to get access to the
23 screen myself.

24 Is that your first report in these proceedings?

25 A. I am sorry, is this the first report?

1 Q. Is this your first report?

2 A. I believe so. Yes. Yes.

3 Q. Can we have page 28, please. Is that your signature?

4 {C2/3/28}?

5 A. Yes.

6 Q. Then can we have {C2/8/1}. Is that your second report?

7 A. Yes.

8 Q. At {C2/8/160}, please. Is that your signature?

9 A. Yes.

10 Q. Then {C2/15/1}. Is that your third report?

11 A. Yes.

12 Q. You see a theme developing?

13 A. Yes. It is exhausting!

14 Q. Can we see {C2/15/123}. Is that your signature?

15 A. Yes.

16 Q. {C2/17/1}. Is that your fourth report?

17 A. Yes.

18 Q. {C2/17/14}. Is that your signature?

19 A. Yes.

20 Q. Then can we have {C4/2/1}. Is that a joint experts'

21 statement you prepared with Professor Sweeting?

22 A. Yes.

23 Q. {C4/2/17}, please. Is that your signature?

24 A. Yes.

25 Q. Then {C4/3/1}. Is that a joint experts' statement you

1 prepared with Mr Holt and Professor Hitt?

2 A. Yes.

3 Q. {C4/3/3}. Is that your signature?

4 A. Yes.

5 Q. Then {C4/7/1}. Is that a joint experts' statement you

6 prepared with Professor Hitt?

7 A. Yes.

8 Q. At {C4/7/6}, is that your signature?

9 A. Yes.

10 Q. Do these reports and joint experts' statement set out

11 your expert opinion in this case?

12 A. Yes.

13 Q. Insofar as the facts set out in these reports and joint

14 statements are within your own knowledge, are those

15 facts true?

16 A. Yes.

17 MR HOSKINS: Thank you very much. You will now be asked

18 some questions.

19 THE CHAIRMAN: Sorry, just before you sit down.

20 MR HOSKINS: Oh, sorry.

21 THE CHAIRMAN: I may have got my wires crossed, but there

22 was an additional paragraph or two from Dr Singer,

23 wasn't there, that followed on from Professor Hitt's

24 fourth --

25 MR HOSKINS: There is a letter. Mr Armitage, if there are

1 any questions, is primed and ready to deal with that.

2 THE CHAIRMAN: Yes, and I think we had an exchange with
3 Mr Ward who tried to persuade us to let more of it in,
4 and we --

5 MR ARMITAGE: No. I think that is right. The view is that
6 that has been covered in the hot tub, and I think
7 Dr Singer is of the view that ... There is no intention
8 to adduce further evidence-in-chief at this stage.

9 THE CHAIRMAN: Fine. Okay. So that is out of the record as
10 far as Dr Singer is concerned. That is helpful.

11 MR ARMITAGE: Thank you.

12 THE CHAIRMAN: Yes. Thank you very much.

13 Ms Demetriou.

14 Cross-examination by MS DEMETRIOU

15 MS DEMETRIOU: Dr Singer, I am going to start by taking you
16 back to the joint experts' statement, just to clarify
17 a couple of things. So can we go to {C4/2/91}, and if
18 we look at proposition 144, do you see the proposition
19 there. So:

20 "Differentiation ..."

21 You can read it to yourself:

22 "... between mobile device ecosystems (ie iOS and
23 Android) is beneficial for device competition."

24 You say:

25 "No opinion. I have not studied competition for

1 devices."

2 Yes?

3 A. Yes.

4 Q. Then if we go to proposition 145, we see there that the
5 proposition is:

6 "One way that Apple differentiates iOS from
7 Android is through its emphasis on security and
8 privacy."

9 Again you say:

10 "No opinion."

11 That is because you have not studied competition for
12 devices and iOS ecosystems; correct?

13 A. Correct.

14 Q. So what you are saying here, in summary, is that you
15 have not considered, and you have not reached any view,
16 as to whether Apple seeks to compete, by reference to
17 security and privacy, either in devices markets or as
18 a platform against Android; yes?

19 A. I think that is fair, that my focus to date has been on
20 the relevant markets in this case, and those are outside
21 the relevant markets.

22 Q. Thank you. That is what I thought.

23 If we go over the page to 147, {C4/2/92}, and if we
24 look at that proposition. That says:

25 "If the App Distribution Restrictions and Payment

1 System Restrictions lead to higher levels of security,
2 privacy, and quality of App Store transactions, these
3 benefits contribute to making the App Store more
4 attractive to both developers and consumers."

5 If we look at what you say about that, you say that
6 you:

7 "... agree that, if the Restrictions did provide
8 benefits, that would make the App Store attractive."

9 So just pausing there. You are agreeing that if the
10 restrictions do in fact contribute to the security,
11 privacy, or quality of transactions, they would be
12 a means through which Apple competes on the merits in
13 the devices market and in the facilitation of
14 transactions; yes?

15 A. I think that I am speaking to -- let me just make sure
16 which market I am speaking to here. (Pause)

17 I think that, yes, I am saying that if -- it is
18 a big if -- the restrictions are necessary to provide
19 the same level of benefits, that those benefits would
20 make the App Store attractive to both consumers and
21 developers.

22 Q. So would be a means by which Apple is competing in the
23 relevant markets?

24 A. If the restrictions are necessary, yes, it would be
25 a means of competing, yes.

1 Q. Well, if they do provide benefits; yes?

2 A. If they do provide benefits.

3 Q. Yes.

4 A. It is not my opinion that the benefits would go away in
5 the absence of the restrictions, as you know.

6 Q. Well, we will come back to that point. I am just, at
7 the moment, trying to establish the framework.

8 Then if we go to {C4/2/28}, please, and I want to
9 look at proposition 24. So:

10 "Apple has other or procompetitive incentives to
11 require the App Distribution Restrictions and/or the
12 Payment System Restrictions."

13 In response to that proposition you say that you
14 partially agree, and you say:

15 "Aside from the self-evident profit motive of
16 excluding rivals, the Restrictions also give Apple the
17 additional benefit of maximum control over the iOS
18 ecosystem (an 'other' incentive), which could in theory
19 help mitigate negative externalities. I do not credit
20 Apple's procompetitive efficiency defences."

21 So looking at that paragraph, I think you are
22 accepting in principle that the alleged restrictions
23 could be a means by which Apple could avoid or minimise
24 negative externalities; yes?

25 A. As a matter of theory, I am agreeing.

1 Q. Yes. In principle?

2 A. Yes.

3 Q. Negative externalities would include, for example, apps

4 with malicious hidden content; yes?

5 A. Yes.

6 Q. Or apps that direct a consumer to a payment method that

7 is not secure; that would be another example?

8 A. Yes.

9 Q. You agree that security is a parameter of competition on

10 the app transactions markets; yes?

11 A. Well, I do not -- I do not accept the app transactions

12 market.

13 Q. What phrase would you like to use?

14 A. I would like to use my phrases, if that is okay.

15 Q. Tell me what your phrase is?

16 A. Well, you know, it is the distribution for iOS is the

17 primary market, and in-app support services for iOS is

18 the aftermarket.

19 Q. So let us use those phrases. You accept that on those

20 markets, security is a parameter of competition; yes?

21 A. I think in those markets, security could be a matter of

22 competition. I have -- I am not aware of strong

23 evidence suggesting that security is the top of mind of

24 consumers when making these choices, but I can conceive

25 as a matter of theory that it could be an element of --

1 dimension of competition.

2 Q. Well, do you accept that this is a parameter on which

3 Apple does compete?

4 A. Well, they are not competing against anyone right now by

5 their exclusion, so I am not sure what you mean by that.

6 Q. Well, do you accept that Apple competes in the devices

7 markets and in relation to -- I am going to call them

8 app transactions. But there is nothing between us.

9 I do not want to get into that debate.

10 A. I do not like the word "transactions".

11 Q. Can I just use it, because yours is more long-winded.

12 But can we just then, in parenthesis, say it is the same

13 as your phrase?

14 A. No, I really -- the problem with the word "transactions"

15 is that, as I described, it engenders confusion as to

16 which transaction we care about.

17 Q. All right, facilitation of transactions?

18 A. I like my markets, I mean -- but I can accept -- I can

19 accept, for the purpose of the question, I can accept

20 a market that does not exist.

21 Q. So do you agree that security is a parameter of

22 competition on which Apple competes in the devices

23 markets and against Android on the platform markets?

24 A. As I said earlier, these earlier propositions, I have

25 not studied competition in the device markets and so --

1 but from the surveys that I am familiar with, it is not
2 obvious to me that security is top of mind when
3 a consumer is choosing between an Apple phone and
4 an Android phone.

5 Q. Okay. Just focusing on what you said before, where you
6 said that you do not credit Apple's pro-competitive
7 efficiency defences; do you remember that part?

8 A. Oh yes.

9 Q. Is what you are saying here that you do not agree as
10 a matter of fact that centralisation leads to greater
11 privacy and security; is that what you are saying?

12 A. I have studied -- I have studied the proffer, the
13 efficiency defences that your experts have put forward,
14 and I am not persuaded to accept them as a matter of
15 fact.

16 Q. So as a matter of fact you do not credit -- you say that
17 they are not made out --

18 A. Correct. I am open to the possibility, but I have not
19 seen evidence in support of that contention.

20 Q. Just going back to -- in fact, if we look, please, at
21 paragraph 186 of your third report. Let me just get the
22 reference for that.

23 No, do not worry. We do not need to do that.

24 Your view, is this right, is that the extent to
25 which the restrictions, the alleged restrictions improve

1 security and privacy is only relevant to the question of
2 objective justification, and it is not relevant to the
3 question of whether there is an abuse in the first
4 place; is that right?

5 A. I think that is right. I think that we bring in
6 efficiency defences, at least in my experience, after we
7 have studied the issue of anti-competitive effects. We
8 allow the defendant to offer an efficiency defence to
9 offset the harms that are created by the restraints.

10 Q. But you accept, I would have thought -- you accept, do
11 you not, that if an undertaking is competing on the
12 merits, then that may mean that its conduct is not
13 abusive?

14 A. I do not -- I am having a hard time accepting "competing
15 on the merits", because rather than competing on the
16 merits in the relevant markets here, that is on the
17 commission, for example, Apple has imposed restrictions
18 to ensure no competition.

19 Q. So my point is this: that Apple is competing -- Apple
20 differentiates itself through privacy and security as
21 parameters, and so my question is, do you say that is
22 only relevant to objective justification, or do you
23 accept that it may also be relevant to whether or not
24 there is an abuse in the first place?

25 A. Given that Apple does not compete against anyone in the

1 relevant markets through the restrictions, I would say
2 that the proper place for this inquiry is at the
3 efficiency stage, the justification stage.

4 Q. So you are saying that because it does not compete on
5 your markets on the parameters of security and privacy,
6 then the fact that it may compete on other markets on
7 those parameters is not relevant in determining whether
8 or not there is an abuse in the first place. Is that
9 your position?

10 A. I think that is fair. If I could just say, I do not
11 think we can go looking at markets outside of the
12 relevant markets to serve as an efficiency
13 justification. I think that the proper scope of
14 efficiencies is offsetting the harms that are felt in
15 the relevant markets.

16 Q. So even if -- but even if Apple is a monopolist in your
17 markets, security is part of how it encourages
18 developers and users to use the App Store more; correct?

19 A. I think, as we have said, security can be an element,
20 an element of value for both developers and consumers.
21 I will leave it at that.

22 Q. Would you accept, can we agree that the question whether
23 or not the fact that Apple competes on the basis of
24 security and privacy, the question whether that is
25 relevant to whether there is an abuse in the first

1 place, or whether it only goes to objective
2 justification, is really a legal question for the
3 lawyers, and not one for you?

4 A. Well, I am tripping over this notion of Apple competes.
5 By construction, Apple competes with no one in the
6 relevant markets here. If you are asking me whether or
7 not they are competing in some pre-market, say for
8 devices, it is not something I have studied, but I have
9 noticed that security is not really top of mind as
10 a consumer chooses between Apple and an Android phone.

11 Q. Well, let us look at some of the evidence. If we go to
12 {D1/24/2}, you have probably seen this already, and it
13 is -- so under the heading "Third Party Applications
14 ...", so what this is, is a public announcement by
15 Steve Jobs in 2007 that Apple would allow third party
16 apps on the iPhone. Do you see that?

17 Can I just ask you to read to yourself the section
18 on third party applications on the iPhone, just read
19 that to yourself. (Pause)

20 A. Okay, I have read the -- I have read it. I do not see
21 any mention of the restrictions in there. But it
22 certainly is saying that security is something that he
23 considers seriously for the sale of the iPhone.

24 Q. So this statement was made at a point in time when Apple
25 had a tiny share of the devices market; correct? 2007.

- 1 A. I do not think I would put it that way, respectfully.
- 2 Q. Well, it is just a question of fact. Do you or do you
- 3 not --
- 4 A. No, it is not a question of fact, because Apple made the
- 5 market, in my opinion. Apple made the smartphone
- 6 market.
- 7 Q. You are making an assumption as to what the definition
- 8 of the market is, are you not, which you have not
- 9 studied?
- 10 A. I think when Apple came out, if you are asking my
- 11 opinion, Apple did not really have any competitors. I
- 12 owned a BlackBerry, you probably owned one too, that was
- 13 not close, and BlackBerry soon after died.
- 14 Q. Dr Singer, you are now making statements about what the
- 15 relevant market was, but I have shown you the parts in
- 16 the joint experts' statement where you agree you have
- 17 not studied the device market. So you cannot possibly
- 18 say, can you, that smartphones were in a separate
- 19 market?
- 20 A. I am not making a statement about the market. You are
- 21 asking me if Apple had a small share in the market, and
- 22 I do not know what you are talking about, because
- 23 I think Apple made the smartphone market. They were the
- 24 first in.
- 25 Q. Well, it had a small share of personal mobile devices

1 that were sold at that time; correct?

2 A. If you -- if you want to state it as "personal mobile
3 devices", and that is not a market, then I can concede
4 that it had a small share on the date that it entered,
5 yes.

6 Q. All right. You note here what is said about Nokia also
7 having a closed system; yes?

8 I am just asking if you have noted it.

9 A. Yes, I noted it.

10 Q. The statement that Mr Jobs is making here is providing
11 information to consumers and developers about Apple's
12 products, correct? He is providing assurances as to
13 their security and safety, that is what he is doing, is
14 it not?

15 A. Yes.

16 Q. Then can we look at what Mr Jobs said about protecting
17 security and safety when the iPhone SDK was launched
18 in March 2008, and we can see that at {D1/36/2}. So
19 just look at the codes. "S" is Steve Jobs, "SF" is
20 Scott Forstall, and then "Q" means question from
21 audience; do you see that?

22 A. Okay.

23 Q. Then if we go to {D1/36/26}, halfway down the page you
24 can see the question:

25 "What sort of safeguards ..."

1 Are you with me?

2 "What sort of safeguards have you built in to make
3 sure that all these apps and applications that are going
4 to be coming on to the iPhone are secure?"

5 Then the answer. Can you just read the answer to
6 yourself?

7 A. Sure. (Pause)

8 Okay, I have read the two-paragraph answer under
9 "S".

10 Q. Just pausing there. So he is referring there to the
11 possibility of having a fully closed system like the
12 iPod, or an open system like Windows, correct? Those
13 were the two possibilities at the time that were
14 visible.

15 Then the final paragraph on the page explains that
16 information from developers would be obtained.

17 Then if we go on to the top of the next page
18 {D1/36/27}, could I just ask you to read the very top
19 paragraph.

20 (Pause)

21 A. Yes, I was -- I was expecting you to show me him
22 connecting the security to the restrictions that are at
23 issue here, but I do not see that in either one of these
24 paragraphs.

25 Q. No, well just bear with me. If you just answer my

1 questions without trying to anticipate what I am going
2 to ask you, I think we will get on much more quickly.

3 So Mr Jobs was making the observation that one way
4 of managing safety and security would be an open system
5 like Windows; yes?

6 A. No, actually, the paragraph before he said the way we
7 are going to achieve this is through a \$99 developer
8 fee.

9 Q. Sorry, Dr Singer. Mr Jobs then explains that to make
10 the iPhone great for its users, Apple would be
11 responsible for all distribution. Yes? That is what he
12 is saying.

13 A. Where do you see that, sorry? I am not seeing it.

14 Q. The top of the page. Are we on page 27? Yes.

15 A. I do not see where he is saying we have to be the
16 exclusive distributor. Maybe you want to highlight --

17 Q. -- saying:

18 "... we'll turn off the spigots so no more people
19 download it."

20 That is what he is saying, is it not?

21 A. No, that is in the event that he finds there is a
22 malicious app. He is not saying there that he is making
23 it exclusive.

24 Q. Look at the first sentence:

25 "The other thing that we can do since the

1 distribution of their applications is going to be
2 through the App Store, if we are alerted to a malicious
3 app ..."

4 So he is there saying, is he not, that Apple will be
5 responsible for all distribution?

6 I did not think this was going to be controversial,
7 Dr Singer. It seems plain on the face of what he is
8 saying.

9 A. I think that one interpretation -- your interpretation
10 is that he is saying that we would be the only form of
11 distribution. I do not think that necessarily comes
12 from that passage.

13 Q. Right. So you do not think, reading all of this in
14 context, where he said on the one hand you have got the
15 Windows open system, on the other hand you have got iPod
16 which is secure, but what we are going to do, since the
17 distribution of their applications is going to be
18 through the App Store, we will be able to turn off the
19 spigot so no more people download the app.

20 It is obvious, is it not, that he is talking about
21 what you call the restriction?

22 A. Well, the closest you could come to that is the
23 distribution restriction. He is certainly not invoking
24 the payment restriction there.

25 Q. So we can agree that he is talking about the

1 distribution restriction, can we?

2 A. I do not think that he is ruling out. It is not clear
3 to me, at least the first read.

4 Q. Then we see Mr Forestall adding this. So if you just
5 read what he says next to "SF", from "Technically ...",
6 just that small paragraph. (Pause).

7 A. Yes, I have read it, and that could be consistent with
8 a second app store. It is just saying that we are going
9 to protect, we are going to make sure that we are going
10 to do our own testing to make it into our system. But
11 that does not rule out the possibility of another app
12 store.

13 Q. Let us go down a bit further. He talks about turning
14 off the spigot so no more users have problems. It would
15 not be a very effective way of turning off the spigots
16 if there were competing app stores allowing these
17 malicious apps in, would it? It is obvious what they
18 are talking about is the distribution restrictions, is
19 it not?

20 A. No, I think that in a counterfactual world where you had
21 two app stores, Apple could exercise security over apps
22 that go through the App Store by turning off the spigot
23 if someone proved to be a malicious actor.

24 Q. What I am talking about is not what could happen in the
25 counterfactual but what they were talking about here,

1 and we know that they only launched with one app store.
2 So I did not think this was going to be terribly
3 controversial. They are not envisaging alternative app
4 stores because that was not their business plan, was it?

5 A. Their business plan was not alternative app stores, that
6 is fair. It is just not obvious from here that that is
7 the restriction they have in mind.

8 Q. Have you reviewed any of Apple's marketing materials in
9 this case?

10 A. I have reviewed some. I certainly reviewed the
11 materials that were introduced through your experts.

12 Q. So can we go to {D1/851.1/1}, and if this could be
13 played. It is a short advertisement that Apple has
14 used.

15 I am hoping this is going to start.

16 Thank you. I think it needs to be moved into the
17 centre of the screen.

18 (Video played)

19 So what Apple is doing in this advertisement is
20 directly comparing the App Store with Android; correct?

21 A. I am not sure it was Android. I do not know if I could
22 tell from those symbols. I was not really focused on
23 the symbols of the other ...

24 Q. All right, but it is comparing the App Store with
25 alternative app stores, yes?

1 A. I think that is fair, yes.

2 Q. It is extolling the App Store as safer, in that
3 advertisement?

4 A. Yes.

5 Q. In doing that, Apple was seeking to attract consumers
6 onto the App Store, was it not?

7 A. I think it is part of a campaign. The safety was one
8 element of the campaign, yes.

9 Q. Then can we look at {D1/546.2/1}.

10 Thank you.

11 (Video played)

12 So do you agree with me that here Apple is marketing
13 the iPhone as more secure than an alternative?

14 A. Yes. I do not know when that ad came out, but yes, it
15 looks like it.

16 Q. Then just one last ad, so bear with me. Have you seen
17 Apple's campaign "iPhone, that's privacy"? We can see
18 that at {D1/546.1/1}. If we could turn the volume up on
19 this one, that would be helpful.

20 (Video played)

21 Again, this illustrates Apple competing on privacy
22 in the devices market?

23 A. Yes, I think that is fair.

24 Q. Now just to look at a poster campaign, so {D2/388.1/1}.

25 So these billboards appeared in 3,800 locations, but

1 again we see -- can we scroll through, and more. If we
2 just go all the way through {D2/388.1/2-18}.

3 Again we see a prominent campaign whereby Apple is
4 competing on privacy, do you see that? These are just
5 examples, and it is clear, is it not, Dr Singer, from
6 these examples, that Apple markets its products as being
7 more secure and better at protecting privacy, can we
8 agree that?

9 A. It is one way in which Apple markets its products, yes.

10 Q. Apple obviously considers that this will encourage
11 consumers to buy its devices; correct?

12 A. It thinks that that would matter. Whether or not that
13 matters in fact is another issue, but it thinks so.

14 Q. Apple also considers that these are features that will
15 persuade users to use its App Store; correct? Otherwise
16 it would not embark on these marketing campaigns, would
17 it?

18 A. No, it is not obvious from these campaigns that the
19 viewer will have the App Store top of mind. I think
20 that the issue here is conveying the idea that the
21 device itself is secure.

22 Q. Well, do you remember the first video? I do not think
23 we need to go back to it, but it was directly comparing
24 the App Store with an alternative app store, so that is
25 an example of Apple marketing the App Store specifically

1 as being more secure and private, is it not?

2 A. I will grant you that that one seemed to implicate app
3 stores. The other ones you showed seemed to be more
4 directed at the device.

5 Q. Now, can we go to {D1/311/1}, and this is analysis by
6 Morgan Stanley Research, and you have read it, have you
7 not, because you cite it in your second report; do you
8 remember that?

9 Let us go to page 5 {D1/311/5}, and at the bottom of
10 the page, if we can zoom into that, we see:

11 "Apple's customers are willing to pay a premium for
12 better user experience. Apple's products are known for
13 their ease-of-use, expansive ecosystem, and security and
14 privacy. The company provide high-quality retail and
15 support services. Customers are willing to pay for such
16 an experience, and they have voted with their wallets."

17 So noting that, and then going to {D1/311/6}, at the
18 bottom of the page. So the last sentence there:

19 "Compared to Apple, competitors do not possess the
20 combination of hardware and software integration and
21 innovation, for example the fingerprint sensor, and new
22 proprietary services ..."

23 So this research is stating, is it not, that Apple's
24 products are known for their security and privacy and
25 for the integrated nature of the platform?

1 A. I grant you the first part about the security.

2 Q. Right. What is it that you are quibbling with me about?

3 The integration?

4 A. Right. Let me just read that last sentence again.

5 Q. Yes.

6 A. I do not think privacy or security is mentioned in the

7 last sentence.

8 Q. Yes. So I am looking at "integration" here. So I took

9 you to this bit to show you integration being a feature

10 of the Apple offering, and then it was the previous

11 page, the bottom of page 5, that mentioned "security and

12 privacy", do you see that at the bottom?

13 A. Yes, different pages. Yes. Yes.

14 Q. Yes. So I am asking you, these things together, do they

15 not, they show -- the first thing shows that Apple's

16 products are known for their security and privacy, and

17 the second thing shows that Apple's products are known

18 for the integrated nature of the system; correct?

19 A. The first thing says that Apple's products are known for

20 a host of factors, including security and privacy.

21 Q. Thank you. Yes.

22 A. Then the second thing says that one of the great things

23 about Apple is the integration.

24 Q. Correct.

25 A. So you want to draw the nexus between the integration

1 and the security. I do not know if it is there --

2 Q. I am not trying to draw that nexus. You are reading far
3 too much into my question, Dr Singer. I am happy that
4 you have accepted the document says both of those
5 things.

6 If consumers are, as this research paper says,
7 willing to pay a premium for better privacy and security
8 and all of those other features, then that helps Apple
9 to compete; correct?

10 A. Certainly all those things, all the things that are
11 mentioned there, go into the willingness to pay for
12 Apple's products, and they also help them compete, yes.

13 Q. Okay. Then can we go to {D1/1355/1}. This is
14 a literature review prepared for the Department for
15 Digital, Culture, Media and Sport, in December 2022;
16 have you seen this before?

17 A. I do not recall seeing it.

18 Q. That is all right.

19 We can see that the table of contents has, at number
20 3, a section on "The user perspective", and if we go to
21 {D1/1355/3} we can see at the top the literature review
22 was prepared by Professor Furnell, who is a professor of
23 computer science at the University of Nottingham.

24 Under "Executive summary", can you just read the
25 second paragraph to yourself, beginning, "The current

1 mobile app marketplace ..." (Pause)

2 A. All right, I have read that second paragraph.

3 Q. Now could you read the third paragraph, please, to

4 yourself again. Could we scroll ... thank you. (Pause)

5 A. Okay, I have read that one.

6 Q. So what that is saying by way of summary is that the

7 evidence in this review is both that app distribution

8 providers vary significantly in terms of their security

9 and privacy provision; yes?

10 I am just reading the words:

11 "... vary considerably in terms of their associated

12 security and privacy provisions."

13 A. I am sorry, I have lost it.

14 Q. Second paragraph.

15 A. Sorry, I was ...

16 Yes, I am struck by that statement in light of, you

17 know, the Android operating system is also closed, in

18 the sense that Google does not allow anyone besides

19 Google to be the app distributor on Google phones. So I

20 am puzzled a bit by that one.

21 Q. Well, Dr Singer, that is not right, is it, as a matter

22 of fact, because Google does allow competing app stores

23 on Android Devices?

24 A. My understanding is that Google has undertaken efforts

25 to stop Facebook, Amazon, and others from getting

1 a foothold on Android-based phones. Are you speaking of
2 the Samsung Store, by chance, on a Samsung phone?

3 Q. Well, that is one example of a competing app store. So
4 it is not right that the Android system is closed. From
5 the very beginning, Google has permitted competing app
6 stores; are you not aware of that?

7 A. That is not my understanding, no.

8 Q. All right. Well, we will come back to that point. But
9 just sticking with this for the moment and looking at
10 the words, it is correct, is it not, that the evidence
11 in this review, the summary of the evidence, is that
12 many users care about privacy and security and are
13 dependent on the provision put in place by app
14 distributors, yes?

15 A. Yes, that is the -- I would agree that they care. The
16 question is, is it top of mind and is it dispositive?
17 Does it actually move people across the two different
18 phones, the two different platforms, when they are
19 making a purchase decision? I have seen evidence to the
20 contrary.

21 Q. All right, we will come back to that point, because you
22 have now said it a couple of times, "top of mind". I am
23 going to come back to that, but let us just keep on this
24 document and go to {D1/1355/6}, please.

25 If we look at the paragraph saying "Historically

1 ..."", now where is that? Yes. So under "Operating
2 systems platforms", do you see the second paragraph?

3 A. In fact, can I just -- I am sorry, but something came
4 back that might help --

5 Q. Sure.

6 A. -- this discussion that we had.

7 So Google has certain restrictions as to what other
8 stores can get on to the phone. First, they require
9 distributors, phone makers, to install the Play Store as
10 the default, and it is true that you can also have a
11 second one; very few of them do.

12 Another restriction is they will not allow you to
13 download an app store from the Play Store, right? So
14 while you can side-load an app, it is very difficult,
15 and there is a 14-step process with a bunch of security
16 warnings, and Google has taken efforts to undermine
17 Amazon's foothold and other efforts to stop Facebook
18 from doing one as well.

19 So I think it is unfair to say one is open and one
20 is closed. Google is trying to do the same thing,
21 monopolise distribution on its own. In fact, as you
22 know, we talked about Epic v Google yesterday. A jury
23 has found --

24 Q. Dr Singer, I am going to stop you, not because I want to
25 cut you off, but because I am going to come to this in

1 much more detail later. So you have made the point, you
2 have now signalled you want to talk about that. I will
3 not forget, but I want to come --

4 A. You said it to be wrong as a matter of fact, and it just
5 took me a second to remember the restrictions that
6 Google is imposing to prevent competition on its own
7 phones.

8 Q. Yes, and the only point I was making at this stage is
9 that the restrictions do not amount to a restriction
10 prohibiting other app stores, or other forms of
11 distribution. The only point I am making at this stage,
12 and we will come back to your other point --

13 A. They effectively prohibit. So I think it is misleading,
14 what you are saying. I think it is something like 98 or
15 99% of apps are downloaded from the Play Store on the
16 Android system. So you are creating the impression that
17 it is open and competitive, and it is not. Google is
18 being sued by developers, a class of developers, for
19 trying to keep it closed.

20 Q. Dr Singer, we will come back to this point, I promise
21 you.

22 A. Great.

23 Q. Now, just staying on this document, so looking at the
24 paragraph that I asked you to look at, so:

25 "Given that the combined worldwide market share of

1 Android and iOS now accounts for almost 99% of
2 smartphone devices, it is most relevant to consider the
3 position in these two contexts. Historically there has
4 been a notable difference in the stance each takes to
5 user privacy and security - in summary the difference
6 has been characterised as Apple aiming for security
7 'whatever it takes' versus Google aiming for things to
8 be 'secure enough'. In saying this, it should also be
9 noted that they are positioned differently in the first
10 place, as while both have full control over their own
11 operating systems, Apple also has full control over
12 where the operating system is used (as the sole
13 manufacturer of devices that use it). By contrast,
14 Google (while also producing its own range of devices)
15 licences Android to a host of other manufacturers, who
16 can then deploy and maintain it in endpoint devices in
17 different ways (the fact that Android is open source
18 means that OEMs can operate independently of Google if
19 they choose to)."

20 A. That is wrong, yes.

21 Q. So going back, and note here that footnote 6, if we just
22 go back down to the bottom of the page, is a 2019 ...
23 I think we need to click through to footnote 6. I think
24 you can take it from me that footnote 6 is a 2019
25 Article in PC Mag, and we may come back to that, I am

1 just noting it for now.

2 If we go to {D1/1355/10}, "The user perspective", so
3 paragraph 3.1:

4 "The ability to trust apps, or concern about not
5 being able to do so, are factors of relevance for many
6 users."

7 Do you agree with that?

8 A. I am sorry, which ...?

9 Q. The first sentence of 3.1.

10 A. Oh, 3.1. Sorry, let me just read it. (Pause)

11 Q. Just the first sentence.

12 A. Right.

13 "The ability to trust apps... are factors of
14 relevance for many ..."

15 Yes, that is a fair sentence.

16 Q. Okay. Then over the page {D1/1355/11}, and looking at
17 the second paragraph. So:

18 "Further survey findings from 1,300 adult smartphone
19 users (across six countries) conducted ... in mid-2016
20 revealed that security and privacy concerns relating to
21 apps and malware collectively accounted for a fifth of
22 the respondents' greatest fears ..."

23 Then you see:

24 "... (... a further 37.3% collectively expressed
25 concerns around fraud, phishing and hacking of online

1 bank accounts)."

2 So here we see that concern about fraud and phishing
3 and hacking of bank accounts are important for large
4 numbers of consumers; yes?

5 A. It is, but there is no evidence here that users are
6 making the decision between Apple and Android based on
7 material differences in security. I do not think there
8 are material differences in security.

9 Q. So all I am asking at the moment is whether or not you
10 agree that these factors are important for large numbers
11 of consumers?

12 A. It accounted for a fifth, yes, these factors, for
13 a fifth of consumers.

14 Q. Also fraud:

15 "... (a further 37.3% ... expressed concerns around
16 fraud, phishing and hacking of online bank accounts)."

17 Yes?

18 A. Yes.

19 Q. Then if we go down to section 3.2 on {D1/1355/11}, we
20 see -- so that is headed "App Store information for
21 users", and if we look at 3.2.1, you can see that
22 Professor Furnell states that:

23 "... issues of trust, security and privacy are
24 placed front and centre in the marketing of the App
25 Store."

1 Yes?

2 A. Sorry, I am not following you. We can do it one way,
3 you could say it again, or is it possible to highlight
4 the passages that ...

5 Q. I do not think it is. I will try and --

6 A. Just tell me the section again, please.

7 Q. So 3.2.1, do you see "Apple iOS app store"?

8 A. Yes.

9 Q. We see that Professor Furnell, who has compiled this
10 literature review, says that:

11 "... the issues of trust, security and privacy are
12 placed front and centre in the marketing of the App
13 Store."

14 Do you see that?

15 A. Yes, and I would agree, from the ads that you showed me,
16 that Apple is emphasising it in its marketing. Whether
17 or not people are choosing Apple over an Android because
18 of security is another issue.

19 Q. Well, we will come to that.

20 Then 3.2.2, "Google Play Store", so:

21 "The Play Store website does not make any cognate
22 claims in relation to the security or safety of the
23 store environment or the apps within it."

24 Again, you are not disputing that, are you?

25 A. I just want to make sure, when he says "cognate claims"?

1 Oh, he just cannot find claims relating to security or
2 safety on the website?

3 Q. I think that is right, and you have not -- that is not
4 a question that you have looked into?

5 A. I have not studied the Play Store's website, but I think
6 Google would disagree with you about the
7 characterisation that they are somehow lax in security.

8 Q. But you have --

9 A. It is the same developers, in fact, who run both.

10 Q. But this is not something you have not studied, is it?
11 We saw that at the beginning. You have not studied how
12 the different platforms compete against each other in
13 terms of privacy and security?

14 A. I think that is fair, but I am aware of surveys that
15 identify that the things that consumers have in mind
16 when deciding between an Android phone and an Apple
17 phone, I am not persuaded that security is what is
18 driving people towards Apple. It is not top of mind,
19 from what I have seen.

20 Q. So you have said it is not top of mind. But we have
21 seen that Apple obviously spends a lot of money
22 marketing its devices and the App Store as being secure
23 and safe, and it would be strange, would it not, for
24 a sophisticated company like Apple to spend lots of
25 money on that type of advertising if it was not

1 effective?

2 A. I think part of what the advertising might be doing is
3 creating the impression, rightly or wrongly, in
4 a customer's mind, that there is something insecure
5 about the Android platform. But whether or not, in
6 fact, there is anything insecure about Android is
7 an issue, I think, of dispute, and I think that Google
8 would dispute it vociferously.

9 Q. Can I just be clear about one thing, Dr Singer. Because
10 you are here as an expert economist, and we have had
11 factual evidence from Apple's witnesses but also expert
12 evidence from an industry expert, Mr Howell, called by
13 the Class Representative, and two experts on security,
14 who are all debating the question as to whether or not
15 Apple's system is in fact more secure.

16 Can we just establish that that is not really
17 a question for you, is it?

18 A. I think that is not a question for me. You do not want
19 me to resolve who is more secure. I think that is fine.

20 Q. All right.

21 Then if we see -- if we go to page 13 {D1/1355/13},
22 paragraph 3.3, and look at the second paragraph under
23 that:

24 "Apple has made a particular virtue of the security
25 and privacy of its product offer, explicitly marketing

1 the operating system and app store environment as
2 offering the user a level of protection that they may
3 not receive elsewhere."

4 It talks about the prominence of their stance, and
5 I showed you an advert in that campaign and we looked at
6 the billboard poster.

7 What this research is saying is that Apple makes
8 a particular virtue of these factors, security and
9 privacy, and it does so in a way that is much more
10 prominent than Google; correct? That is the upshot of
11 all of this research, can we agree that?

12 A. But Apple is marketing itself as being more secure than
13 Android, that is true.

14 Q. Yes, and the question of whether it is in fact more
15 secure, we have established, is not a question for you,
16 the expert economist, it is for others in this
17 litigation and for the Tribunal to decide.

18 A. It is not for me, but the thing that I was pushing back
19 on, respectfully, is when you suggested that Google and
20 the Android system is an open system, it is just
21 a free-for-all, everyone is competing with rival
22 app stores. That was very unfair; that is not what is
23 happening there.

24 Q. Dr Singer, I did not put it as extremely as that. So
25 the points I have put to you are that Apple markets

1 itself as more secure and private than Android, and

2 I think we have agreed that, yes?

3 A. That is fair.

4 Q. The question whether or not -- and obviously Apple
5 considers that in marketing itself in that way, those
6 are features that are likely to attract consumers,
7 otherwise it would not bother spending lots of money on
8 this sort of advertising, correct? We can agree that?

9 A. I think that Apple believes it could persuade certain
10 users on the margin to make the move. But you cannot
11 help getting the impression that when you say your rival
12 is insecure, you could be driving people towards your
13 product, you know, despite the fact that your rival is
14 no less secure. I mean, I'll leave it at that.

15 Q. Sorry, are you again trying to wade into an area that is
16 not yours? So are you again --

17 A. No, no, no, I am trying to give you another motivation
18 for what Apple is doing. They are trying to convince
19 users that their system is more secure than a rival's.

20 Q. Presumably the reason they are doing that is to attract
21 consumers, yes?

22 A. That is one reason. It also creates the impression in
23 the viewer's mind that there might be something infirm
24 or insecure with the Android system.

25 Q. That would attract consumers to Apple, correct?

1 A. If you got them to believe that Android was insecure,
2 even if it was just as secure, even if Google imposed
3 the same restrictions as Apple to prevent competition,
4 including the payment restrictions, then you could drive
5 people at the margin potentially over to your product.

6 Q. Okay. Let us go to your third report at paragraph 216,
7 so it is at {C2/15/109}, and I am looking at
8 paragraph 216. If we can scroll so we can get the whole
9 of that. It may be that we need both pages on the
10 page -- on the screen. Thank you.

11 So you say there that:

12 "... Professor Sweeting ... claims that Apple's
13 allegedly superior security to Android (which he says
14 results directly from the app distribution restrictions)
15 allows it to compete for smartphone and tablet buyers.
16 I have not seen any (and Professor Sweeting does not
17 cite) evidence to support this contention. Security is
18 not top of mind when customers are selecting a mobile
19 phone or tablet (ie an iOS Device)."

20 Then we have a footnote, footnote 510, which
21 contains the sources you cite for this claim. I said I
22 would come back to it, because you keep saying security
23 is not top of mind, and to be fair to you, you have said
24 that in your report.

25 Looking at the sources at footnote 510, there are

1 three sources, are there not, and from their titles they
2 look like publicly-available surveys; do you see that?

3 A. Yes.

4 Q. The third of these has the title "Factors influencing
5 customers' buying decisions of mobile phones in Dhaka,
6 Bangladesh"; yes? It is not obvious from its title why
7 this is relevant to the UK, but we will come back to it.

8 A. Right, it is a different market, but it is just another
9 study we found indicating where security ranks.

10 Q. All right. Before we come back to that, I would like to
11 go back to your second report, so {C2/8/36}, and this is
12 in the market definition section of your report. Do you
13 see the heading "Distribution via App Stores"?

14 A. Yes.

15 Q. Then if we go to the next page {C2/8/37}, can I just
16 remind you of what you said at paragraph 60. So you are
17 saying there that:

18 "Switching rates between iOS Devices and Android
19 Devices is low ..."

20 Do you see that?

21 A. Yes.

22 Q. Towards the bottom -- to support that point, you say
23 towards the bottom of the paragraph, are you with me,
24 you say:

25 "Additionally, Apple's ecosystem incentivises users

1 to continue purchasing and using iOS Devices to reap
2 the benefits of cross compatibility with other Apple
3 products."

4 Are you with me?

5 A. Yes, like the Apple Watch, I mentioned this yesterday.

6 Q. We see you rely for support there on a 2022 Apple
7 internal iPhone buyer report. Can you go over the page,
8 please {C2/8/38}. We can see the highlighted, because
9 it is confidential, factor, so I am not going to read it
10 aloud, was considered a primary reason for respondents
11 to purchase an iPhone.

12 So you are here saying that that factor was
13 a primary reason for respondents to purchase an iPhone;
14 yes?

15 A. That is what the sentence says, yes.

16 Q. That is what you are saying in your report?

17 A. I am saying it now too, that one of the things that
18 creates stickiness within the Apple ecosystem --

19 THE CHAIRMAN: Dr Singer, I am sorry to interrupt, I just do
20 not want you to read out the words in italics that are
21 coloured. Would you mind not doing that, please?

22 A. I was not going to.

23 THE CHAIRMAN: I am sorry to interrupt.

24 A. But I am glad you said something.

25 My position is that this is one of several

1 pillars -- I went through all the pillars yesterday,
2 I will not take you back through them, but one of them
3 is the ease of using your phone with other Apple
4 devices, including the Apple Watch, yes.

5 MS DEMETRIOU: Yes. So what we are doing here, if we look
6 at footnote 164, if we scroll down, we can see it has
7 got a reference APL-KENT, I will come to it in a minute,
8 but I just want to show you that you are relying on
9 pages 58-69. So what you are doing is relying on this
10 section of the report, which is an Apple survey, to say
11 the factor that is highlighted is a primary reason for
12 respondents to purchase an iPhone, yes, in support of
13 your position about stickiness. Is that a fair summary?

14 A. Primary, I think it is fair. It is among the important
15 elements, yes.

16 Q. You said "primary". Do you want to retract that now?

17 A. No, but I do not want to give the impression that this
18 is the most important thing. When I listed the elements
19 of stickiness yesterday, I talked about coordinating
20 with your family, I talked about out-of-pocket expenses
21 of buying a new device, I went through a whole list of
22 factors. I think they are all creating stickiness. But
23 I do not want to create -- I can clear this up now --
24 I do not want to create the impression that I would rank
25 this number one. It is somewhere among the important

1 factors that are creating stickiness.

2 Q. So it is a slightly different point that you are saying
3 "primary" for.

4 If we go back to the top of the page, just to be
5 fair to you. So in fact could we put the previous page
6 side-by-side with this one {C2/8/37}.

7 So you say:

8 "In a 2022 Apple internal iPhone buyer report, [that
9 highlighted factor] was considered a primary reason for
10 respondents to purchase an iPhone."

11 So you are saying that the report shows that this
12 factor was a primary reason to buy an iPhone, not
13 a primary reason for stickiness. So that is the point.
14 Do you see what I mean?

15 A. Oh, yes. But it can be the same. It can be a primary
16 reason for retaining, staying with the iPhone. You are
17 having to buy an iPhone every few years when they go out
18 of date, and you are making this decision, and part of
19 it is you are in there deep, and one of the things that
20 makes it deep is you also own a watch, or you own other
21 devices that make it sticky -- (overspeaking) --

22 Q. -- the document you are relying on, and we can see at
23 page 1. Sorry, {D1/1240/1}.

24 So this is the survey that you relied on, yes? We
25 can see, page 1, it is an iPhone buyer survey from 2022,

1 quarter 1. That is what you footnoted; yes?

2 A. Yes.

3 Q. Then {D1/1240/2}, just to contextualise it, you see:

4 "The purpose of this study is to better understand
5 iPhone buyers ..."

6 I am not going to read the rest, because it is
7 highlighted, but I am just contextualising it so you can
8 recall what the report is about.

9 Then we saw that you referred to pages 58-69. So
10 let us go to {D1/1240/58}, if we can zoom in, please.
11 Can you just read the title to yourself? I am not going
12 to read it out loud. Do you see that the factor you are
13 talking about in your report is in three of the four
14 columns towards the bottom; do you see that?

15 So take the second column, "iPhone 13 Mini", yours
16 is the penultimate factor; do you see that?

17 A. Oh yes, I see it. I see it, yes.

18 Q. Do you see that "Security and privacy of your
19 information" is in all four columns? So taking that
20 same column, it is higher up in the column, is it not,
21 than your factor?

22 A. Well, I do not know if this is a ranking of importance.
23 I think these are just the things that are important.

24 Q. Well, we will come to that in a minute.

25 A. Okay.

1 Q. But if you look at the title, security and privacy is
2 one of the ones highlighted. But your factor,
3 stickiness factor, is not, is it, in the title?
4 A. Oh, in the title itself?
5 Q. Yes.
6 A. I do not see the exact word in the title, no.
7 Q. No. Well, that factor is just not reflected in the
8 title, is it, your factor?
9 A. Well, it could -- am I allowed to say what is in the
10 title or -- there is another factor in the title that
11 could be related to how well your phone works.
12 Q. All right. Well, let us go over the page to page 59
13 {D1/1240/59}, and if we zoom in. So just to explain, we
14 are not allowed to read anything out that is in pink.
15 A. Okay.
16 Q. But I can, just to make things a little bit easier, I am
17 going to read "Security and privacy", just the ...
18 If you look at the title, the smaller title:
19 "Importance of features/aspects in purchase
20 decision: extremely important - flagship iPhone".
21 Do you see that?
22 Then if you look at the first column, do you see
23 third is "Security and privacy of your information"?
24 A. Yes.
25 Q. Can I just ask you -- can we zoom in a little bit,

1 please, if that is possible? Can I just ask you to note
2 the figures. The first column in blue is worldwide, the
3 second is US, and the third is UK. So can you just
4 mentally note the figures for worldwide, US and UK; can
5 you read them? That is better.

6 So for security and privacy of your information, do
7 you see the figures for worldwide, US and UK?

8 A. Yes.

9 Q. These are the percentage of people that these factors
10 are important to. I am not going to read out the
11 figures.

12 A. Okay.

13 Q. Then do you see your factor, which is "Works well with
14 other Apple products"? If we go further down the table.

15 A. Oh yes.

16 Q. You see that the figures for this factor are lower than
17 for security and privacy. Do you see that?

18 A. On this table, yes.

19 Q. Yes. If we go to page 61 {D1/1240/61}, so again:

20 "Importance of features/aspects in purchase
21 decision: Extremely important - iPhone 13."

22 We see the same picture. So on the left you can see
23 the third factor is "Security and privacy of your
24 information". Can I just ask you to note the figures to
25 yourself for worldwide, US and UK. Then if we compare

1 those with "Works well with other Apple products", which
2 is further down the table, security and privacy is
3 higher, correct? It matters to more consumers?

4 A. Yes.

5 Q. This is all about their purchase decision; yes?

6 A. Yes.

7 Q. It matters in the context of their purchase decision.

8 Then if we can see page 63 {D1/1240/63}, this is
9 the, again:

10 "Importance of features/aspects in purchase
11 decision: Extremely important - iPhone 13 mini."

12 Again, the third one is "Security and privacy of
13 your information", and we can see the figures. Then we
14 have "Works well with other Apple devices", and again we
15 see those are lower, do you see that, less important?

16 A. They are lower. They are still important, but they are
17 lower than security, yes.

18 Q. They are lower.

19 Then we see the same thing, if we go to page 65
20 {D1/1240/65}, this is for the iPhone 13 Pro. Again,
21 these are all extremely important factors in the
22 purchase decision, we see that. If you look at
23 "Security and privacy", do you see the figures again,
24 and "Works well with other ... products", you see again
25 that they are lower?

- 1 A. Yes.
- 2 Q. Then if we go to page 67 {D1/1240/67}, iPhone 13 Pro
- 3 Max, and security and privacy, the figures are very high
- 4 for that, are they not, there?
- 5 A. They are higher than "Works well", for sure.
- 6 Q. Well, they are obviously important for a very high
- 7 proportion of buyers; correct? That is an important
- 8 factor, an extremely important factor, in the purchase
- 9 decision; yes?
- 10 A. Oh, yes, the title of the slide says "Extremely
- 11 important", yes.
- 12 Q. Yes. Then page 69 {D1/1240/69}, which is the final page
- 13 that your report cited, again:
- 14 "Importance of features/aspects in purchase
- 15 decision: Extremely important - All models."
- 16 Then we look at "Security and privacy" and we see
- 17 the figures, and then we compare those to "Works well
- 18 with other Apple products", and same point. So security
- 19 and privacy is an extremely important factor to a large
- 20 number, large proportion of consumers; correct?
- 21 A. Yes.
- 22 Q. "Works well other Apple products" is in the list also,
- 23 so it is also an important factor but it is lower down,
- 24 yes? So it is important to a lower percentage of
- 25 consumers; correct?

1 A. Yes.

2 Q. So if we go back to your third report, please. So it is
3 {C2/15/109}, thank you. So revisiting paragraph 216.
4 So looking, again, at the statement:

5 "Security is not top of mind when customers are
6 selecting a mobile phone or tablet ..."

7 And that you have not seen any evidence to support
8 the contention that Apple competes for buyers on the
9 basis of privacy and security.

10 Then looking at footnote 510 again -- can I just
11 ask, why didn't you refer to the actual market research
12 that Apple had carried out on the reasons its consumers
13 have for buying devices? Why didn't you refer to that
14 research here?

15 A. Are you saying that I have referred to it elsewhere?

16 Q. Well, you did, did you not? You relied on the same
17 market research as support for your point on switching,
18 but then you have ignored the same market research, the
19 very same pages, here, when it is obviously a good
20 source to look at, and you have made the point that you
21 have seen no evidence at all to suggest that privacy and
22 security are important to consumers. You should have
23 referred to that here, should you not, that evidence?

24 A. I think now that you have shown it to me, I should have
25 referred to it, yes.

1 Q. Because it is not helpful, is it? Do you understand
2 your duties to the Tribunal as an expert? Do you
3 understand your duties require you to ensure you are not
4 omitting material facts that could detract from your
5 concluded opinion? Those are facts that you looked at.
6 You looked at that market research, because you relied
7 on it elsewhere, and so you should have drawn that to
8 the Tribunal's attention, should you not, instead of
9 saying there was no evidence for any of this?

10 A. I think "no evidence" was an overstatement. I should
11 have -- had I been cognisant at the time I wrote this
12 footnote, I would have put it in. I just do not think
13 it was top of mind when I was writing this footnote.

14 Q. What do you mean, cognisant of the footnote? Did you
15 not read the footnote, Dr Singer?

16 A. No, but I did not cite that survey in this footnote,
17 correct? You are saying I cited it elsewhere in another
18 report?

19 Q. No, you cited it in your earlier report we just looked
20 at in order to --

21 A. That is what I am saying, yes.

22 Q. So you must have read it, you must have read that
23 research and thought: here's a good piece of research
24 which supports my position on switching. But actually
25 it contained evidence on this issue.

1 A. I had forgotten that when I did this footnote.

2 Q. Then you should not have said, should you, that there
3 was no evidence to support it, and you should not have
4 made the statement that:

5 "Security is not top of mind when customers are
6 selecting a mobile phone or tablet ..."

7 Because it is just not true, is it?

8 A. Can I see what the -- yes, I think security is not top
9 of mind in light of that evidence was an overstatement,
10 but it was not intentional. I had just forgotten about
11 that last survey, it was in a prior report.

12 Q. Right. But in fact there is lots of material and lots
13 of surveys in this disclosure that show that security
14 and privacy are very important factors driving
15 consumers' decisions to purchase iOS Devices. But you
16 say you have seen none of it, and you have made
17 a statement that it is not top of mind and there is no
18 evidence, and that is just wrong, is it not?

19 A. It was not top of mind according to the three things
20 that I cited in 510, right. But I omitted that
21 citation. Typically, if I am cognisant of contrary
22 evidence, I should include "But see ...", and then show
23 the contrary evidence, but I did not do that here.

24 Q. You were cognisant of it, were you not, because you read
25 it when making your previous report, or did you not read

1 the survey at that stage?

2 A. I -- I -- you are telling me that I cited it in

3 a previous report?

4 Q. Well, I just showed you that you cited it. You cited it

5 to say that the survey showed that a primary reason for

6 purchase decisions is "Works well with other ...

7 products". You cited it as a primary reason, in

8 supporting your point, that a primary reason for

9 purchasing iPhones is "Works well with other ...

10 products". So you must have read that research, no, at

11 the time?

12 A. I read it. But you are asking me, did I memorise -- did

13 it stick with me that another row in that survey, which

14 was "Security", did that stick with me as I was writing

15 Singer 3 months later? It did not. Had it been on my

16 mind, I would have said so.

17 Q. Well, Dr Singer, how can you, as an independent expert

18 who is supposed to be assisting the Tribunal, how can

19 you make statements like: I have seen no evidence to

20 support this contention, and security is not top of mind

21 when customers are selecting a mobile phone or tablet,

22 without looking at that kind of primary research

23 material from Apple? It is simply not --

24 A. Oh, I see what you are doing. Can you scroll up,

25 please, to the sentence "I have not seen ..."

1 I want to see what I was saying about ... I think I
2 was saying: I have not seen evidence in support of
3 Sweeting's contention. Let me just --

4 Q. Of course. You read it.

5 A. Okay. (Pause)

6 Okay, it has been a while since I wrote this, but
7 there is a lot in the first sentence, including that he
8 is attributing the superior security to the
9 restrictions. When I say I have not seen any evidence
10 to support this contention, I could be saying I have not
11 seen any evidence that it is the restrictions that are
12 allowing Apple to compete with this allegedly superior
13 security.

14 Q. Well, that is not actually a fair reading of it, is it?
15 Because if we look at it, it says:

16 "... Professor Sweeting also claims that Apple's
17 allegedly superior security to Android ... allows it to
18 compete for smartphone and tablet buyers."

19 Then you say:

20 "I have not seen any ... evidence to support this
21 contention."

22 You go on to say:

23 "Security is not top of mind when customers are
24 selecting a mobile phone or tablet."

25 So reading this fairly, the clear impression that

1 you are conveying is that you are saying that you have
2 not seen any evidence that security and privacy are
3 material to purchase decisions, and then you make
4 a positive statement that they are not top of mind, that
5 they are not important, and that is just wrong.

6 Do you want to now correct this evidence?

7 A. No. No.

8 Q. You do not want to correct it?

9 A. No, because look at what 216 is saying. I will now --
10 what I will grant you is that had I had the other survey
11 in mind when I wrote this paragraph, I should have put
12 in a "But see ...", here is contrary evidence.

13 But when I wrote this thing, I said:

14 "... Sweeting also claims that Apple's allegedly
15 superior security to Android ... allows it to compete
16 ..."

17 Right? I am not seeing any evidence that Apple in
18 fact has superior security to Android, and I do not
19 think the survey you just showed me supports that
20 statement. All you showed me is that Apple's customers
21 think about security, but --

22 Q. But how about --

23 A. Hold on, let me just finish. But Android's customers
24 could think about security too.

25 Q. Of course.

1 A. So I do not think that his statement, "Apple's allegedly
2 superior security", right, "allows it to compete".

3 I have not seen evidence to that effect, and that is why
4 I have not seen any evidence to support this contention.

5 Q. How about where you say, as a positive statement:

6 "Security is not top of mind when customers are
7 selecting a mobile phone or tablet ..."

8 Do you now accept that that is wrong in light of the
9 evidence we have just been looking at?

10 A. I think you have shown me contrary evidence, and had I
11 remembered at the time I wrote this I should have put it
12 in, "But see ..." and give the other survey.

13 Q. Dr Singer, it is not a question of "But see ...". You
14 are asking -- you are making a statement of fact, are
15 you not? You are saying "Security is not top of mind
16 ..." So that is -- you are putting that forward as your
17 view, as a fact that you are asking the Tribunal to
18 accept.

19 You have referred to these other surveys, which
20 I will come to in a minute, but you were not in
21 a position to make that statement of fact, were you?

22 A. I was in a position based on the three citations that
23 I put in that footnote.

24 Q. Well, do you think that is good enough, to look at three
25 surveys, one of which relates to -- we will look at the

1 others in a minute, but one of which relates to
2 purchasing decisions in Dhaka, and not to refer to
3 Apple's consumer surveys, before making an unqualified
4 statement like you have; do you think that that is the
5 best way of assisting the Tribunal on this matter?

6 A. I think at the time I was assisting the Tribunal as best
7 as I could. You are now showing me contrary evidence,
8 and I am accepting that it is contrary evidence. Had
9 I known it at the time and had it been on my mind,
10 I would have put a "But see". I am not disputing the
11 evidence that you are showing me.

12 Q. So what would you like to say now? Instead of saying
13 "Security is not top of mind when customers are
14 selecting a mobile phone ...", do you want to offer any
15 factual evidence on this point, or do you want to
16 qualify it by saying there is mixed evidence? What
17 would you like to say to the Tribunal at this stage?

18 A. How about: according to surveys -- according to at least
19 three surveys reviewed, security is not top of mind.

20 Q. All right. Thank you.

21 Now, let us look at those sources that you rely on.
22 So one of them, the first one, if we can go to the
23 footnote, is a survey by Chase Buckle, and it is
24 a website, GWI Survey. We can see the survey at
25 {D1/649.1/1}, and you can see on page 1 that page 1

1 gives answers to top frustrations with current
2 smartphones.

3 Then we see further down on {D1/649.1/4}, "Most
4 desired smartphone features". So I am guessing it is
5 the most desired smartphone features that you relied on
6 in your footnote, is it, rather than the frustrations;
7 do you remember?

8 A. I would have to go back and look at the footnote. It is
9 been a while.

10 Q. Well, let us look at the footnote again.

11 A. Okay.

12 Q. Because I would like to know. So it is at {C2/15/109}.

13 Thank you.

14 A. So the footnote, it says:

15 "... noting the most important features ..."

16 Q. All right.

17 A. So can we go back to the ...

18 Q. So I think it is that one at page 4, "Most desired
19 smartphone features" {D1/649.1/4}.

20 Then if we look at the question at the bottom:

21 "What features would you most like to see in
22 upcoming smartphone devices?"

23 So it is talking about features in a device,
24 correct? It is asking for a feature of the hardware?

25 A. Yes.

1 Q. So that explained -- it is not a question, is it, that
2 is going to elicit security as an answer, because it is
3 asking for a feature in the hardware?

4 A. No, I disagree with that. Security could be a feature
5 of the hardware.

6 Q. Is it at least reasonable to expect -- it is reasonable,
7 is it not, to expect consumers, who are asked about what
8 features in hardware they would like to see, that they
9 do not immediately think of security, because it does
10 not leap out as a feature in the hardware, does it?

11 A. No, you just -- you took me through 30 minutes of
12 questions on how Apple is competing on devices by having
13 more security, so now you are saying that security is
14 not an element of competition in the device market?

15 Q. We just do not know, do we, whether or not -- no, of
16 course that is not what I am saying. But what I am
17 getting at is how reliable this survey is. We simply do
18 not know, do we, whether or not they were given security
19 as an option. Do you know how this survey was carried
20 out?

21 A. I can only see what the results of the survey was.

22 Q. So you do not know whether or not they were given
23 security as an option?

24 A. I would presume that they are showing you the results of
25 every option. I do not think they are suppressing

1 options that were given.

2 Q. Well, you just do not know how the survey was conducted.

3 So people may have been given a list of options: which
4 of these do you rank most highly? Or they may have been
5 asked an open question.

6 So you are agreeing these are likely to be the
7 options they were given?

8 A. I think that is fair. I mean, the only alternative
9 would be that someone wrote in these answers.

10 Q. Which seems unlikely?

11 A. It seems unlikely.

12 Q. All right. If we look at the next source you refer to,
13 which is at {D1/1627/1}. So this is reporting on the
14 most important factor, and again there is no indication,
15 is there, that respondents were given an option of
16 choosing security or privacy?

17 A. It would have to be subsumed in the "Others" category.
18 But the fact that survey firms are not offering
19 security, you know, if what you are saying is true, that
20 security is at the top, it would be odd, would it not,
21 if survey firms do not even offer it in the range of
22 options?

23 Q. You do not know one way or the other, do you? In terms
24 of helping the Tribunal with this survey, you cannot
25 tell us how this survey was conducted?

1 A. I think it is helpful to the Tribunal to see information
2 from surveys that shows that security is not
3 a distinguishing factor in the minds of consumers
4 between the two devices, the iOS Device and the
5 Android Device.

6 Q. Right. So your evidence is that it was not particularly
7 helpful for the Tribunal to look at Apple's own survey,
8 but that the Tribunal has to read between the lines with
9 other surveys, you do not know how they were conducted,
10 and reach the view that because they were not asked the
11 question about privacy and security, somehow it is
12 unimportant; is that your evidence, Dr Singer?

13 A. No, not at all. I would never tell you to not weight
14 a piece of evidence. You should weight the evidence of
15 Apple's survey however you would like.

16 Q. The third source is a paper entitled "Factors
17 influencing customers' buying decisions of mobile phones
18 in Dhaka, Bangladesh."

19 Are you suggesting, first of all, that that is
20 informative as to how Apple competes in the devices
21 market in the UK?

22 A. Well, you just showed me an Apple survey, how people
23 were ranking attributes in many countries inside and
24 outside of the UK.

25 Q. Including the UK?

1 A. Including the UK, but you kept saying: I want you to
2 look at the US, I want you to look at the worldwide.

3 Q. So I am asking you the question: are you suggesting that
4 the survey in relation to purchasing decisions in Dhaka,
5 Bangladesh, is informative in relation to the UK; is
6 that your position, "yes" or "no"?

7 A. Sure, sure, for the same reason that worldwide that you
8 took me to is important. I do not know why people
9 living in a different country would necessarily have
10 different things that they care about.

11 Q. All right. Well, let us go to {C5/227}. So this is
12 the -- this is the paper that you refer to. If we go to
13 {C5/227/4}, you can see that -- you can see under
14 "Research methodology", that 12 factors, 12 options, are
15 given; do you see those?

16 A. Yes, let me just see.

17 Yes, I see.

18 Q. Again, security and privacy and safety is not offered as
19 an option; correct?

20 A. Not explicitly, no.

21 Q. Then let us look at another Apple market research
22 document, so this is from 2019, so it contains less
23 confidentiality markings. It is at {D1/733/1}. If we
24 go -- we see, again, it is an iPhone buyer survey, and
25 if we go to {D1/733/3}, we can see the methodology. So

1 there it is looking at recent iPhone buyers and it tells
2 you when they bought.

3 If we go to {D1/733/12}, you can see the heading
4 "Security/privacy was extremely important to between 60%
5 and 80% of buyers in the US, UK, Russia, China". Again,
6 important in the purchase decision; do you see that?

7 A. Yes. Yes. None of which are the -- oh, sorry,
8 including the UK, but also three countries outside of
9 the UK.

10 Q. Yes. You say it is relevant to look at other countries,
11 right?

12 A. Yes. Yes.

13 Q. So it would appear that among consumers who purchased
14 an iPhone, Apple's -- oh yes, sorry, and then if we go
15 to {D1/733/37}, this is consumers who considered Samsung
16 smartphones; do you see that?

17 A. Yes.

18 Q. Then if we look towards the bottom, we see that security
19 and privacy appear, and we can see that those numbers,
20 just looking, for example, at the UK and the US, are
21 very low indeed; yes?

22 A. Yes, security falls in the rankings. It is still
23 important for those buyers, but it falls in the
24 rankings.

25 Q. Well, it is important to a much, much lower proportion

1 of buyers; yes?

2 A. Yes.

3 Q. Almost none of them?

4 A. Am I allowed to say ...

5 Q. I think we are allowed to say the numbers. So it is 6
6 and 3%; yes?

7 A. Yes.

8 Q. So there is a huge disparity, is there not? A huge
9 disparity in terms of the number, the proportion of
10 consumers who view this as an important consideration
11 for purchasing an iPhone on the one hand and a Samsung
12 smartphone on the other; yes?

13 A. According to this survey, yes.

14 Q. So ...

15 THE CHAIRMAN: Just whenever is convenient. We have been
16 going for a little while. Is that a useful point?

17 MS DEMETRIOU: That is a useful point.

18 THE CHAIRMAN: All right. Why do we not take 10 minutes
19 now. Thank you.

20 MS DEMETRIOU: Thank you.

21 (2.57 pm)

22 (A short break)

23 (3.07 pm)

24 THE CHAIRMAN: Ms Demetriou.

25 MS DEMETRIOU: Dr Singer, we have looked at privacy and

1 security, but you are aware, are you not, that a major
2 part of Apple's brand is that it provides a safe
3 environment, including for children?

4 A. I think you have shown me some marketing materials that
5 would certainly be supportive of safety, even if it did
6 not mention safety explicitly.

7 Q. Do you know that Apple does not permit porn apps on its
8 App Store because those contravene the App Review
9 Guidelines?

10 A. I am not sure I was aware of that.

11 Q. Now, you are aware, are you not, that under the DMA in
12 the EU, Apple has been required to allow alternative
13 distribution, so competing app stores? I think you
14 mention it in your reports.

15 A. My understanding is that it was required to open up and
16 relax the payment restrictions.

17 Q. Also the distribution restriction?

18 A. I would have to go back and refresh on the distribution.

19 Q. Are you aware that under the DMA, the EU has prevented
20 Apple from applying all of its App Review Guidelines
21 when it notarises apps distributed by third-party app
22 marketplaces?

23 A. I am not aware of that. That they have prevented Apple
24 from doing what, I am sorry?

25 Q. From applying all of its App Review Guidelines. So

1 there are certain parts of its App Review Guidelines
2 that the European Commission has said that Apple cannot
3 apply when it is notarising apps distributed by
4 third-party app marketplaces.

5 A. No, I am not aware of that.

6 Q. So did you know that a competitor app store that is now
7 providing services distributing iOS apps in the EU is
8 an app marketplace called AltStore, did you know that?

9 A. AltStore I have not heard of.

10 Q. You haven't heard of?

11 A. No.

12 Q. I just want to look at an article from today, so
13 {D1/1893/3}, this is a Reuters article, and I will take
14 you through it.

15 So we see here the date, it is today's date,
16 February 4, do you see that? Then the headline is:

17 "Apple raises concern over first porn app on iPhone
18 under EU rules."

19 Then if we scroll down and look at the article, do
20 you see:

21 "Apple ... on Monday criticised a pornography app
22 newly available on iPhones in the [EU] saying that the
23 [EU's] digital policy was undermining consumer
24 confidence in Apple.

25 "Since it first opened the App Store ... Apple has

1 controlled what apps could be downloaded to the devices,
2 with ... Steve Jobs saying in 2010 that keeping porn off
3 the iPhone was Apple's 'moral responsibility' ...

4 "In the EU, Apple's gatekeeper status changed with
5 the ... adoption of the DMA, which required Apple to
6 allow alternative app stores. One of those stores,
7 called AltStore, has begun distributing an app called
8 Hot Tub [hot tub in a difference sense to the one we
9 have become accustomed to over the last two days] which
10 describes itself as 'a private, secure and elegant way
11 to browse adult content'.

12 "In a statement, Apple said it is 'deeply concerned
13 about the safety risks that hardcore porn apps of this
14 type create for EU users, especially kids. This app and
15 others like it will undermine consumer trust and
16 confidence in our ecosystem."

17 Then if we go over the page {D1/1893/2}:

18 "AltStore said it had received backing from
19 Epic Games, the creator of the 'Fortnite' video game
20 that pursued an antitrust complaint against Apple.
21 AltStore said it used that funding to pay fees that
22 Apple charges to alternative app stores that are under
23 investigation by the EU ...

24 "As part of its alternative app store process, Apple
25 still requires apps to undergo a baseline review called

1 'notarisation' that checks for cybersecurity threats
2 such as known malware but does not involve approving the
3 app's content."

4 So you can see here that Apple has effectively been
5 forced to allow this iOS porn app on its devices
6 because it is being distributed by a third-party
7 app store called AltStore. So do you see that is the
8 sequence of events here?

9 A. It is the first time I am seeing it, so ...

10 Q. That is fair. That is why I am taking you through it.

11 If we go to {D1/1891/1}, this is a social media post
12 from AltStore and it is a social media post on X; do you
13 see that?

14 A. Yes.

15 Q. It says:

16 "iPhone turns 18 this year, which means it's finally
17 old enough for some more mature apps ...

18 "Introducing Hot Tub ... the world's 1st
19 Apple-approved porn app!

20 "Try it now on AltStore PAL - just in time for the
21 season of love."

22 Then we see the advertisement, if we can just see
23 the red advertisement:

24 "Introducing Hot Tub. The First Apple-Approved Porn
25 App."

1 Do you see that AltStore, the competitor app
2 distribution marketplace, is actually marketing this
3 porn app as being approved by Apple; do you see that?

4 A. This is an AltStore ad, you want me to accept?

5 Q. This is an AltStore social media post, so this is what
6 it has posted. We can see the landing page, social
7 media landing page, if we go to {D1/1892/1}, and if we
8 zoom in -- so this is the X landing page for AltStore.io
9 and it advertises itself as:

10 "A home for apps that push the boundaries of iOS -
11 no jailbreak required."

12 Do you see that?

13 So this example demonstrates, does it not,
14 Dr Singer, how lifting the distribution restrictions
15 prevents Apple from competing as it would like to do; do
16 you agree?

17 A. I think that might be a bit of a stretch.

18 Q. In what sense?

19 A. Well, we do not know if knowledge that a porn app
20 available through a rival store is going to impair
21 Apple's ability to compete on the dimension of privacy
22 and security, as it was accustomed to. We do not know
23 that. That is just speculation.

24 Q. Sorry, speculation, what, that Apple has not marketed --
25 I have shown you -- I showed you the excerpt where

1 Steve Jobs said "It is our moral responsibility to
2 prevent porn apps on our devices", do you recall seeing
3 that?

4 A. I recall you showing me that, yes.

5 Q. So what I am putting to you, our case is that one of the
6 ways that Apple competes is by providing a safe
7 environment, including for children, and this is why
8 under its App Review Guidelines it does not allow porn
9 apps. Now, you are not in a position to disagree with
10 that on the facts, are you?

11 A. That Apple heretofore prevented porn apps. I will grant
12 you that that -- if you want me to accept that. I had
13 never focused on porn, I had focused on security and
14 malware and other things that could do damage to your
15 system.

16 Q. Okay.

17 A. I feel like porn is in a different category from
18 malware, or undermining the security of the system.

19 Q. It is a different category. It may be a different
20 category. But the point I am putting to you, and the
21 answer is either: I agree, I do not agree, or I do not
22 know.

23 A. Okay.

24 Q. Is that up until now, one of the ways in which Apple has
25 competed, in which it has presented its ecosystem, is as

1 being safe, including for children, and that is one of
2 the reasons why it has prohibited porn apps.

3 Now, do you agree, disagree or do not know?

4 A. The stuff that you showed me earlier --

5 Q. No, no, it is different.

6 A. -- was that Apple competed on security and privacy. Now
7 you are asking me: have I seen evidence that they were
8 competing on denying porn? I have not seen that.

9 Q. Okay, is the answer "I do not know"?

10 A. No, the answer is "I disagree with your proposition".

11 Q. Okay. What I showed you earlier, you are right to say,
12 was about security and privacy. I am now putting to you
13 another point. So I showed you Steve Jobs saying "It is
14 our moral responsibility not to have porn apps".

15 A. Right.

16 Q. Our case, Apple's case ... Yes, so if we look at
17 today's -- if we go back to {D1/1893/1}, so the bottom
18 of the page, Apple's statement today. Apple is:

19 "... 'deeply concerned about the safety risks that
20 hardcore porn apps of this type create for EU users,
21 especially kids. This app and others like it will
22 undermine consumer trust and confidence in our
23 ecosystem'."

24 So that is Apple's position; do you understand?

25 A. In the midst of litigation, yes, that is their position.

1 Q. Oh, so your position is that Apple is making this up
2 because of the litigation; is that your position?

3 A. I am saying that you are presenting me evidence that
4 came out today and one cannot help thinking that this
5 could be tainted that way.

6 Q. Dr Singer, Steve Jobs' quote was from 2010. He said
7 keeping porn off the iPhone was Apple's moral
8 responsibility.

9 Can I just remind you, you are not an advocate in
10 this case, you are here to assist the Tribunal. So if
11 you do not know whether Apple has marketed itself as
12 being a porn-free safe environment for children, just
13 say "I do not know".

14 A. Apple has -- I am not aware of Apple marketing itself as
15 being porn-free. You have shown me a statement that
16 Steve Jobs intended it to be porn-free, but I am not
17 sure that Apple has ever marketed or advertised itself
18 as being porn-free.

19 Q. Are you aware that Apple has presented itself, has
20 marketed itself, as being a safe environment for
21 children?

22 A. Sitting here, I cannot recall safe environment for
23 children. I remember safe -- safety, security,
24 privacy -- but I am not remembering safe for children.

25 Q. Do you agree with me that if I am right that Apple seeks

1 to present itself to consumers as being a safe
2 environment for children, that allowing -- on
3 a third-party app store allowing a hardcore porn app
4 onto its app store undermines that strategy; do you
5 agree with that?

6 A. Let me just get the connection. If Apple were trying to
7 market itself as a safe place for kids --

8 Q. Yes.

9 A. -- and this rival app store allowing a porn site --
10 a porn app to come down, does that undermine this
11 hypothetical marketing? It could undermine that
12 hypothetical marketing, yes.

13 Q. Okay. If we go to C4 -- and, sorry, just in relation to
14 the ... No, do not worry.

15 Let us go to {C4/2/89}, this is the joint experts'
16 statement, and look at paragraph 141. So:

17 "In the counterfactual ...iOS App Transaction
18 Platforms would be less likely to provide the same level
19 of security and privacy as the App Store currently
20 does."

21 You say:

22 "I see no reason why a third-party could not provide
23 even better security, privacy, fraud detection and/or
24 consumer support than Apple ..."

25 Presumably third-party app stores marketing hardcore

1 porn apps is not what you mean by better privacy and
2 security?

3 A. I do not know if porn apps fit under security or privacy
4 or fraud detection. I think it is orthogonal, it is
5 a different category. I feel like you are opening up
6 a new front. I just do not feel like it has ever come
7 up in any of the conversations I have had with
8 Dr Sweeting.

9 Q. All right, let us leave that there.

10 I am going to address justification, objective
11 justification now, as it is related to the topics we
12 have been considering, and you are aware that there are
13 two legal routes to establishing objective
14 justification, yes? So the first is for the defendant
15 to demonstrate that the restrictions are necessary to
16 meet a legitimate objective, and the second is for the
17 defendant to show that the restrictions give rise to
18 efficiencies that benefit consumers which outweigh its
19 anti-competitive effects?

20 A. Yes.

21 Q. You have addressed only the second of those; correct?

22 A. My memory is that I addressed both.

23 Q. Let us look at your reports. I am not trying to catch
24 you out, I am just trying to establish what you have
25 done.

1 So if we go to {C2/15/96}, paragraph 188. Just
2 remind yourself of what you say there. (Pause)

3 So once you have read that, I will just show you
4 something else in your first report -- in your second
5 report. (Pause)

6 A. Yes, I think that ...

7 Q. Shall I just show you the other paragraph, out of
8 fairness to you? So {C2/8/121}.

9 A. Okay.

10 Q. If you just read the last couple of sentences of
11 paragraph 241. So you say -- well, actually, if we look
12 at the paragraph as a whole. So you say that:

13 "I understand from the parties' pleadings that Apple
14 argues that the app distribution and payment system
15 restrictions (a) are necessary to maintain the quality
16 of Apple's devices ... and/or (b) give rise to
17 efficiencies that benefit consumers and which outweigh
18 any exclusionary effect ..."

19 Then you say later:

20 "The issues I have been asked to opine on relate to
21 part (b) of Apple's argument."

22 A. Right, but I think you skipped over a section I had that
23 speaks to (a), but it is possible that I am deferring to
24 other experts on the issue of (a).

25 Q. I think, going back to the other part we looked at, so

1 {C2/15/96}, I think you are right, I think what you are
2 saying at the end of paragraph 188 is that it is not
3 really for an economist to look at part (a); yes?

4 A. But then you are not letting me read 189 --

5 Q. Please do.

6 A. -- where it does look like I take on "necessary to
7 function".

8 Q. Yes, I think what you have then done is, if we go to --
9 I think if we go back to your second report at
10 paragraph 241, so {C2/8/121}, that is what we just
11 looked at.

12 Then if we look at -- so if we look at the final
13 sentence, you say you have looked at whether or not the
14 app distribution and payment restrictions are
15 indispensable to the achievement of the claimed
16 efficiencies, and then, second, whether the efficiencies
17 result in a net benefit to consumer welfare. So there
18 are two points in part (b), I think.

19 A. Correct.

20 Q. Then if we look at paragraph 242, last sentence, again
21 you have separated route (b) into two points, so
22 indispensability and then net consumer welfare standard;
23 yes?

24 A. Correct.

25 Q. Okay. So let us start with indispensability, and at

1 paragraph 242, which you have got on the screen, you
2 point out here that Apple's case is that the
3 requirements that Dr Kent complains about are
4 indispensable to achieving several benefits, including
5 high levels of security, privacy and quality of
6 performance; yes? That is Apple's case?

7 A. Are you asking me at 242, still?

8 Q. Yes, just the first --

9 A. Yes.

10 Q. I am just showing you what you have put at 242.

11 A. Yes.

12 Q. So you have summarised Apple's case.

13 Then just looking at security. So you address
14 security at paragraphs 251 and following, let us go to
15 that. That is {C2/8/123}.

16 So you have got the heading at the bottom of the
17 page, "Security"; do you see that?

18 A. Yes.

19 Q. So you say -- you summarise there parts of Mr Schiller's
20 evidence. We can see that at paragraph 252 over the
21 page {C2/8/124}. So Mr Schiller's evidence that the
22 centralised model is key to Apple's ability to detect
23 and combat fraud and harmful apps, so you are
24 summarising his evidence.

25 Then at 253 you set out your views. So let us look

1 at 253 {C2/8/125}.

2 So the first point you make -- you give four
3 reasons, and then you say the first point is that
4 alternative app marketplaces could offer:

5 "... similar if not superior levels of security than
6 Apple's own products."

7 Then you say:

8 "There is no reason ... why an alternative app store
9 would not engage in a similar human-assisted review of
10 app contents (to the extent human review is, in fact,
11 superior)."

12 Then what you do is you cite Dr Lee's report, yes?

13 A. I cannot tell, because this clip does not let me see
14 what 480 is pointing to.

15 Q. You are quite right, let us look at what 480 says. If
16 you can scroll to the footnote, please.

17 So you are citing Dr Lee's report; do you see that?

18 A. Yes.

19 Q. Then going back to the body of paragraph 253, you then
20 take issue with something Mr Federighi says in his
21 witness statement, namely that:

22 "... centralised distribution 'allows for consistent
23 and trusted user rating and ... comments' ..."

24 Then you say:

25 "... nearly every app store (outside of Apple's

1 closed ecosystem) has user rating and comment features."

2 Then you footnote several examples. Do you want to
3 look at the examples so you can remember what they are?
4 484.

5 A. Was I pointing to 484?

6 Q. Maybe it was not 484, actually, because it does not look
7 like it is.

8 A. Yes, it looks like it may have been 482. Do you want to
9 go up and ...

10 Q. Yes, I think it is 482.

11 It is 482, you are quite right.

12 Now, did you hear Mr Federighi's evidence on this
13 point when he was cross-examined in this trial?

14 A. No.

15 Q. So let us just have a look at it. So it is Day 8 of the
16 transcript, please, page 110 {Day8/110:24}, and if we
17 pick it up from the bottom of the page.

18 So the question is -- this is the question that
19 Dr Kent's counsel was putting in cross-examining
20 Mr Federighi:

21 "Question: But you do not identify any ... Android
22 App Stores that do not have reviews or user ratings ..."

23 If you go over the page, could I ask you to read his
24 answers on this. Could you read this page, please?

25 A. The whole page?

1 Q. Yes, just to yourself.

2 A. Okay, that is fine. {Day8/111:1-25}. (Pause)

3 Okay.

4 Q. So the point -- what he is saying, as you can see, is
5 that the point is not as simple as saying that other app
6 stores have user ratings and reviews. Do you see that
7 is his evidence?

8 A. That is his thesis.

9 Q. That is his evidence, factual evidence to the Tribunal.

10 A. No, he was pointing to e-commerce sites as his evidence,
11 right?

12 Q. His evidence is what he says to the Tribunal, so let us
13 not quibble about that. But Mr Federighi's view is that
14 it is not as simple as saying other app stores have user
15 ratings; correct, that is what he is saying? I am not
16 asking you to agree with it or disagree, because I do
17 not think it is for you, but that is what he is saying,
18 is it not?

19 A. Which line is he saying that?

20 Q. Let us go back again. So page 110, take it from the
21 bottom of the page. {Day8/110:24}

22 So he is asked:

23 "... you do not identify any ... App Stores that do
24 not have reviews or user ratings ..."

25 Which is the point you made. You said every other

1 app store has reviews or user ratings.

2 Then he says here that there are well-known issues
3 with fake reviews, filtered reviews and misleading
4 reviews, and then --

5 A. You keep skipping over "in the e-commerce world", which
6 does not seem like it is an app store.

7 Q. Sorry, your point is?

8 A. Well, I think that the questioner -- I was not here for
9 it, and this is the first time I am seeing it, but the
10 questioner is trying to get him to focus on app stores,
11 and he seems to be citing examples in the e-commerce
12 world.

13 Q. Then if we go further down, we can see the question is:

14 "Question: ... on the hypothesis that we have been
15 considering, full App Review of all iOS Apps, then the
16 apps that would even be on a third-party website or app
17 store would be those that had been approved by ... App
18 Review ...

19 "Answer: Sure ...

20 "Question: So what we are dealing with [is] either
21 an absence of reviews or fake reviews of apps that are
22 fundamentally safe, yes?

23 "Answer: ... No, we spent a whole bunch of [time
24 talking about an app that will pass review] that is not
25 fundamentally safe and you can bet that the malicious

1 App Store page [so he is talking about an app store
2 here] will have a review saying 'I love Bank of
3 America's app, it is so great, safe, and saves me time',
4 and that will be all completely fake, whereas if it were
5 distributed instead on Apple's App Store, the first
6 review would be a zero star review saying 'This app is a
7 hoax, this thing ripped me off'. That is a big
8 difference in signal to the user before they make their
9 decision to download."

10 So what he is saying is that it is not -- there is
11 a qualitative issue. It is not just a question of
12 whether another app store has reviews, there is
13 a qualitative issue.

14 Really the point I want to put to you is this, which
15 is the truth of the matter is that the Tribunal has
16 heard factual evidence on this issue and it is a factual
17 matter for the Tribunal to assess, is it not? It is not
18 a matter within your expertise as an economist?

19 A. I think that what I can speak to as an economist, the
20 facts are obviously things that you should be assessing.
21 But as an economist, I can confidently say that security
22 will be a dimension of competition among either rival
23 app stores or rival payment processors or in-app support
24 services.

25 Number one, my first point is that I do not think it

1 would make sense to come in with a deeply flawed or
2 deeply insecure either app store or in-app payment
3 processing and try to compete against Apple. I feel
4 like the natural place to go is to try to meet them or
5 even beat them.

6 What this witness admitted in the first -- kind of
7 in the first page, in the middle of the page, you said
8 that: yes, you would have to go through the same
9 process, scrutiny, at the App Store.

10 So presumably the developers are going to be
11 designing their apps to meet the higher Apple standard,
12 even if you assume Apple is going to be higher, so once
13 they meet that standard they will have already satisfied
14 it when they get into the other store.

15 I think the second point I want to make, again it is
16 a competition point that an economist can make, is that
17 to the extent that an app store or an in-app support
18 service comes in at both a lower quality in terms of
19 lower security and a lower commission, then for those
20 customers who voluntarily select into the lower
21 quality/lower commission app store or in-app service,
22 they are telling us that they care more about the prices
23 than they do about security, and so would therefore be
24 better off --

25 THE CHAIRMAN: I am going to interrupt you, because that is

1 all interesting, I am sure we will come back to that,
2 but that is not really the question you were asked.

3 I think the question you were asked was a much
4 narrower question about user reviews, and I think the
5 proposition that has been put, quite simply, is that it
6 is one thing to say you have user reviews on different
7 platforms, but there may be, I think, as counsel put it,
8 a qualitative aspect, which is that the user reviews on
9 a particular platform may only be as good as the fake
10 review detection. That is the point that I think
11 Mr Federighi was making, and I think you are just being
12 asked whether you recognise that point or not?

13 A. I recognise that point. But I heard the question as:
14 can an economist speak to these issues of security, or
15 is it going to be left to the fact finder, and I was
16 trying to identify the things that an economist can say
17 about incentives to compete, and then how users would
18 make choices in the face of those.

19 THE CHAIRMAN: I understand that, but --

20 A. Maybe I interpreted the question wrong.

21 THE CHAIRMAN: No, and it may be you were fair to interpret
22 it that way. I think part of the difficulty, we are
23 making quite slow progress, partly perhaps because there
24 was a degree of second-guessing going on, and I wonder
25 if you could just try and restrict yourself to answering

1 as cleanly as you can the question, and then if you have
2 other things you want to say then of course you should
3 say them. But if we can get to the point where you
4 directly answer the question, and then of course if you
5 have things to say, then say so. That would be helpful.

6 A. Okay. Thanks.

7 MS DEMETRIOU: Thank you.

8 I think we can take this more quickly. If we go to
9 {D1/1355/1}, and so this is the literature review that
10 we looked at earlier. Let us go to page 17. I think it
11 is the bottom of the page {D1/1355/17}.

12 So we see -- so can you read the very last
13 paragraph, and then we are going to go over the page.

14 A. Okay. The last paragraph on this page?

15 Q. So "Figure 10 presents ..."

16 A. Yes.

17 Q. Yes. Read it to yourself. (Pause)

18 A. I have read it.

19 Q. So that is drawing a distinction, is it not, between the
20 Aptoide store and Huawei's app gallery on the one hand,
21 which presents reviews in a less helpful manner, because
22 consumers cannot click through to see negative reviews
23 and cannot see the full set of review comments.

24 Then on the other hand, it says:

25 "By contrast, Google Play and the iOS App Store

1 allow review comments to be filtered according to the
2 review rating."

3 Then if we go over the page {D1/1355/18}, we see --
4 yes, I mean I think that is all I need to take from
5 this.

6 So what we see there is that there are -- the
7 literature review is pointing to differences in quality
8 between different app stores and the way they present
9 reviews; yes?

10 A. Yes. Interestingly, not between the Play Store and the
11 App Store, yes.

12 Q. No, that is not the point I am making at the moment.

13 A. No, it is not the point you are making, but it is a
14 point in the paragraph you showed me.

15 Q. Yes. Dr Singer, you do not have to point to any -- you
16 are not arguing the case for Dr Kent, so if you see, as
17 we go along, points that you think are helpful for her
18 case, do not feel that you need to say them. Your
19 counsel will say them at the end of the proceedings. So
20 if you can just answer my question.

21 Going back to my question, it is not as simple as
22 saying that all app stores have reviews, because some
23 are more helpful than others; correct?

24 A. I will grant you that some review processes are going to
25 be different than others, in the actual world and the

1 but-for world.

2 Q. Now, going back to your report at paragraph 254, so that
3 is -- yes, thank you. So here you are referring to the
4 question whether removal of the restrictions would harm
5 security, and again you refer to Dr Lee and Dr Burelli's
6 reports, and those are the expert witnesses for the
7 Class Representative. But you understand that Apple has
8 adduced expert evidence saying something different, and
9 those experts have been cross-examined. My short point
10 is this is not a question for you, is it; it is
11 a question for the Tribunal to decide, having heard
12 their evidence?

13 A. In terms of the weighting of that contradictory
14 evidence, yes, it is not a point for me. It is for the
15 Tribunal.

16 Q. Then paragraph 255, this paragraph deals with the
17 question as to whether security and fraud protection is
18 improved by users not having to enter their details
19 multiple times, and you refer to Mr Schiller's evidence.

20 If we go over the page {C2/8/127}, you say:

21 "I have seen no evidence to support [his] contention
22 either factually that having multiple payment options
23 requires multiple entry of payment information or that
24 having options for payment systems increases risk of
25 fraud."

1 So you are saying here that you have seen no
2 evidence to support the contention. But, again, we can
3 take this more shortly, do you agree that whether or not
4 that is right or wrong is a matter for the Tribunal; it
5 is not a matter within your expertise?

6 A. Not a matter of my expertise. But when I say
7 a statement like that, I am looking at the evidence that
8 your -- your expert is offering this, I think it was
9 Dr Sweeting, and I looked at his evidence, and I did not
10 find the evidence that he put forward persuasive.

11 Q. Well, it is Mr Schiller's evidence.

12 A. The way that I would get to someone like Mr Schiller is
13 through my reading of Dr Sweeting and what Sweeting
14 cites as his support. On an efficiency defence, that is
15 how I would get there.

16 Q. Sorry, Mr Schiller has made a statement. Can we go
17 back. Can we put the two pages side-by-side, the
18 previous one and this one {C2/8/126-127}.

19 You say here:

20 "... Mr Schiller frames having a single payment
21 option as a benefit for users, because if users are
22 given multiple options for payment, they must enter
23 their payment information multiple times. I have seen
24 no evidence to support the contention either factually
25 that having multiple payment options requires multiple

1 entry of payment information, or that having options for
2 payment systems increases risk of fraud."

3 Then you cite, at 485, the Schiller statements.

4 You are dealing with a factual proposition that
5 Mr Schiller has made, and you are saying you have seen
6 no evidence to support it.

7 Can we agree that this factual question is not one
8 for you? It is not a matter within your expertise, is
9 it?

10 A. I think that is fair.

11 Q. Looking now at paragraph 256, you make the point that
12 Apple does not have a centralised distribution model for
13 macOS; do you see that?

14 A. Yes.

15 Q. I think what you are trying to say is it therefore does
16 not need a centralised model for iOS; is that correct?

17 A. That is the thesis, yes.

18 Q. Then you say:

19 "Apple intends to create a divergence between its
20 smartphone and computers by claiming that iOS ...
21 users install more programs than computer users, but
22 this claim is unsubstantiated."

23 Then just looking at footnote 491 -- we are going to
24 need to scroll to see that, please -- you have footnoted
25 extracts from Mr Federighi's statement where he made

1 that point, and where he also made the point that the
2 value of the data that can be attacked is also more
3 significant on an iOS Device.

4 Now, when you say that his evidence is
5 unsubstantiated, I am not sure what you mean, because it
6 is his evidence, and he is the vice president of
7 software engineering. So what do you mean by "not
8 substantiated"?

9 A. I think that he made a claim -- he made a claim without
10 supporting evidence.

11 Q. Well, it is his evidence. He is the vice president of
12 software engineering, he knows about this stuff, and
13 that is what he is saying the facts are. So what do you
14 mean by "unsubstantiated"?

15 A. We were looking for evidence that he put forward in
16 support of a claim, and we did not find it.

17 Q. So if Dr Kent wished to challenge his evidence, then she
18 needed to cross-examine him on it, right, and he was
19 cross-examined on that point. Have you seen his
20 cross-examination on this issue?

21 A. No.

22 Q. Well, let us go to {Day8/24:1}, and if we take it from
23 line 1. Do you want to just read this page to yourself?

24 A. Sure. (Pause)

25 Okay.

1 Q. Let us look at the next page {Day8/25:1}. If you could
2 read that to yourself as well. (Pause)

3 A. Okay, I have read that.

4 Q. Then if we go to the next page, there is only a very
5 short passage there.

6 So what he is saying is that ... so looking at those
7 sentences at the top, those lines at the top, he is
8 saying that attackers are more interested in the iPhone:

9 "... because they want guaranteed real-time
10 location, they want guaranteed real-time microphone that
11 is with you. These pieces of information to that kind
12 of attacker are considered far more valuable than some
13 of the other information on the Mac."

14 Again, it is the same question, really. So do you
15 accept that whether or not this is right is a factual
16 matter for the Tribunal and you, as an expert economist,
17 do not have any further light to shed on this question?

18 A. I think the ultimate determination of the facts is for
19 the Tribunal.

20 Q. The same is true -- we can take this much more
21 quickly -- the same is true in relation to
22 indispensability in relation to the other objectives
23 that Apple relies on, privacy and quality of the
24 service. Those are all ultimately factual matters for
25 the Tribunal; correct?

1 A. Yes.

2 Q. Now, going back to your second report at paragraph 240,
3 so {C2/8/120}, at paragraph 240 you set out the
4 questions you were asked to consider under issue 11, and
5 one of the questions is:

6 "Do any such efficiencies outweigh any likely
7 negative effects on competition and consumer welfare in
8 the relevant market?"

9 Do you see that?

10 A. Yes.

11 Q. So it is right, is it not, that you -- so on its face,
12 this asks you to consider the respective weight of the
13 efficiencies claimed by Apple as against any negative
14 effects on competition?

15 A. No. I would say that an economist would generally
16 weigh, in dollar terms, the costs and the benefits, and
17 I was responding to Dr Sweeting's attempts to do so,
18 poorly in my estimation.

19 Q. So just sticking with the question that you were asked
20 by Dr Kent to address, that says:

21 "Do any such efficiencies outweigh any likely ...
22 effects on competition ..."

23 It is right, is it not, that you have not attempted
24 to value the efficiencies, have you?

25 A. No, typically it is the case that the defendant's expert

1 offers an affirmative estimation of efficiencies, and
2 then the plaintiff's expert will assess those, and
3 having assessed them now, I do not think that
4 Dr Sweeting has offered a reliable estimate of the
5 efficiencies, owing to the restraints.

6 Q. So why did you not try to weigh them up yourself?

7 A. Oh, for the reason I just told you, that I am typically
8 asked to first assess anti-competitive effects, which I
9 have just done. Then in a monopolisation case such as
10 this one, the defendant's expert typically offers up
11 efficiencies and tries to quantify them, then in a reply
12 I am typically asked to compare the two measures.

13 Q. That may be what you are typically asked to do, but it
14 was not what you were asked to do here, was it? You
15 were asked whether, in your view, any such efficiencies
16 outweigh any likely negative effects. But you have not
17 done that, have you? You have not presented your own
18 analysis?

19 A. I have not presented original quantification of the
20 efficiencies. I offered in my first report some
21 opinions based on economic theory and economic -- and
22 the evidence I had assessed up until that date.

23 I have now subsequently assessed the empirical
24 evidence that Dr Sweeting puts forward, and I do not
25 credit those.

1 Q. All right, let us look at Professor Sweeting's -- let us
2 go through what he did. So if we go to {C3/3/187}.

3 Before I ask you questions, I am just going to
4 establish that we agree with what he has done, which I
5 am sure we will agree.

6 So paragraph 401, what we see is that
7 Professor Sweeting assumes, for the purposes of his
8 analysis, that Mr Holt's estimate of harm is correct,
9 does not he?

10 A. Yes.

11 Q. Then paragraph 402, if we go over the page, he notes
12 there {C3/3/188} that the benefits, which include
13 increased privacy and security, are harder to quantify
14 than an overcharge, because they are not monetary
15 benefits; correct? He is noting that.

16 A. He is noting that, yes.

17 Q. Then you can see here that he recognises that there are
18 challenges, but he says that there are some benefits
19 that he has been unable to quantify the value of, and so
20 his analysis will result in an undervaluation; do you
21 see that?

22 A. He might say that, but his analysis actually results in
23 an overvaluation, because he assumes that the security
24 goes to zero in the but-for world, absent restrictions.
25 So this is very aggressive. I would never characterise

1 it as being conservative.

2 Q. Dr Singer, at the moment I just want to set the
3 framework of what he has done and then I will ask you
4 questions about it. I know that you do not agree to it,
5 and we will come back to that, but I just want to set
6 out the framework, so that we agree with what he has
7 done and what he says, and then I will ask you some
8 questions.

9 So paragraph 404 -- we see, sorry, before we turn
10 over, that he is not able, for example, to quantify the
11 benefits from the reduced administrative burden from
12 Apple, automatically deducting commissions from
13 developer's revenues for developers who would choose not
14 to use IAP, and (b) the value to consumers of having
15 family sharing; do you see that?

16 Then if we go over the page to 404 {C3/3/189}. Here
17 Professor Sweeting points out that the value of benefits
18 is, in part, a counterfactual exercise, because it is
19 necessary to look at the counterfactual value that would
20 be received by consumers if the requirements were not in
21 place; yes?

22 A. Yes.

23 Q. Then 405, he acknowledges the considerable uncertainty
24 of the exercise; correct?

25 A. Yes.

1 Q. Then if we go to page 190, {C3/3/190}, we see his
2 estimate of value of several aspects of the benefits,
3 and we are going to come back to those, but I am just
4 setting out the structure for now of his analysis.

5 Then {C3/3/193}, paragraph 406, Professor Sweeting
6 says:

7 "... it is not possible to add these benefits up in
8 a straightforward way [but] there are many plausible
9 examples in which only some of the benefits combined ...
10 outweigh Mr Holt's estimate of loss ..."

11 He gives some examples of that, and one example is
12 that a small fraction of the value of data privacy is
13 higher than Mr Holt's upper estimate of harm. So that
14 is his analysis.

15 Then if we go to your third report, so {C2/15/105},
16 paragraph 206. So it is right, is it not, that your
17 principal response -- I know you have got other
18 responses, but your principal response to the exercise
19 conducted by Professor Sweeting is you say that he has
20 assumed that a rival iOS App store or payments
21 provider in the counterfactual would not provide any of
22 the benefits of Apple's App Store; correct?

23 A. Correct.

24 Q. If we go to the joint experts' statement at {C4/2/87},
25 proposition 132, and if you just read what

1 Professor Sweeting says there.

2 So the proposition is:

3 "The incremental benefits of the App Distribution
4 Restrictions have been quantified."

5 Then if you just remind yourself what
6 Professor Sweeting says. He says:

7 "Agree with caveats."

8 He says he is:

9 "... not claiming that the value of these benefits
10 would be zero in the counterfactual. I showed that the
11 benefits from the App Distribution Restrictions are
12 substantial and thus the difference between the benefits
13 in the actual world with the App Distribution
14 Restrictions and the benefits in the counterfactual
15 world (ie the incremental benefit) would only have to be
16 a fraction of the total benefit in the actual world to
17 outweigh the harms claimed by the [Class
18 Representative's] experts."

19 So that is his response.

20 So just in a nutshell, he says it is an imprecise
21 exercise, but he has shown that the benefits are
22 substantial and, as he says here, the incremental
23 benefit as compared with the counterfactual would only
24 need to be a fraction of the total benefit to outweigh
25 the harm; yes? That is his position?

- 1 A. He takes that position. I disagree, yes.
- 2 Q. Well, you have not -- it is a perfectly reasonable
3 position to take, is it not, in relation to looking at
4 the incremental benefits in the counterfactual?
- 5 A. No. No.
- 6 Q. It is reasonable, because it is inevitably a difficult
7 exercise to carry out, is it not?
- 8 A. It is not reasonable. Respectfully, it is not. Because
9 what he is doing is he is attributing 100% of these
10 benefits to the restrictions themselves. That is
11 unreasonable.
- 12 Q. But what he is saying is --
- 13 A. He is saying: I am being conservative by only taking
14 a percentage of it. But if you start with
15 an overstatement of the benefits that can be attributed
16 to the restraint, then even if you take a small fraction
17 of that you are still off the path.
- 18 Q. He has recognised, has he not, your point about the
19 counterfactual, and his position is, well, it is very
20 difficult to undertake -- the quantification exercise is
21 already difficult. To undertake a quantification
22 exercise of what would be the position in the
23 counterfactual is even more difficult. But I am
24 satisfied that even if you take a fraction, even if you
25 assume that there would be none of these benefits in the

1 counterfactual and take a fraction of the amount, that
2 still outweighs the harm.

3 That is a reasonable position. You have not
4 suggested any other way of going about it, have you?

5 A. I have not suggested another way of going about it, but
6 it is my position that whilst there are benefits that
7 come from security, that at least Dr Sweeting has not
8 created a nexus between the restraints and those
9 benefits; and certainly it is a stretch to say in
10 a but-for world, where people are competing on quality
11 among one of the dimensions, that these benefits are
12 going to fall to such an extent that they would offset
13 the harms that we have found.

14 Q. Do you accept that it is a difficult -- a very difficult
15 exercise to quantify the benefits flowing from the
16 restrictions?

17 A. I think it is a difficult exercise. I think that what
18 I did was a difficult exercise. Economics is difficult.
19 I mean, we all have difficulties in our lives.

20 Q. Now, let us go back to Professor Sweeting's second
21 report. If we go to {C3/3/190}. I said we would come
22 back to this.

23 So he cites figures there as to the value of fraud
24 prevented by Apple in 2020; yes?

25 A. He cites those, but it is not clear how the restrictions

1 relate to that value.

2 Q. No, but you -- just sticking with what he says. So you
3 have not suggested, have you -- you do not suggest in
4 your reports that those figures misstate the value of
5 fraudulent transactions prevented by Apple?

6 A. No, that is not the central response. The central
7 response is that he is attributing those benefits to the
8 restraints without any causal connection.

9 Q. But the logical place to start in asking that question,
10 so in asking about the causal connection with the
11 restraints, is to quantify -- is to start by quantifying
12 the fraud that has been -- the value of fraudulent
13 transactions avoided by Apple. That would be the
14 logical place to start if you are seeking to quantify
15 the fraud prevention benefits of Apple's requirements;
16 yes?

17 A. No. Respectfully, I do not think that is the logical
18 place to start.

19 Q. So you would not start by looking at the value of
20 fraudulent transactions avoided; before getting on to
21 questions of causation, that would not even be your
22 starting point?

23 A. As an economist that is not how I go about it. I would
24 try to estimate the nexus, if at all possible, between
25 the restraints and the values that are being created.

1 Q. Well, you have not done -- you have not put forward any
2 other methodology, have you, in any of your reports?

3 A. No.

4 Q. Now, looking at subparagraph (b) and data privacy,
5 Professor Sweeting there in his footnote 516 -- I think
6 we will have to scroll to see the footnote -- cites
7 a study by Prince and Wallsten. Can I just ask you to
8 read the footnote to yourself to remind you of what it
9 says.

10 A. Okay. (Pause)

11 I have read the footnote.

12 Q. Then let us remind you of what Professor Sweeting says
13 about this report. If we go to {C2/15/106}, so
14 paragraph -- sorry, this is what you say. So that is
15 fine, we can do it this way. Let us see what you say
16 about Professor Sweeting's reliance on this report.

17 So you say:

18 "For example, his 'value of privacy' metric of
19 £125.40 per user per year is based on a study where
20 individuals shared financial information, such as
21 a person's bank statement or fingerprint information, in
22 exchange for monthly payments. Professor Sweeting
23 attempts no explanation as to which of the two
24 Restrictions provides this alleged benefit. If it is
25 both, he does not explain how much value each

1 Restriction contributes to the whole."

2 Now -- so is this right, you do not make any
3 criticism of the figures in the Prince and Wallsten
4 paper itself, but you criticise Professor Sweeting's use
5 of the figures; is that correct?

6 A. That is fair.

7 Q. Again, you have not -- one of the points you make is
8 that he has not been able to attribute the figures to
9 one or other or both of the two restrictions; yes?

10 A. Correct.

11 Q. Again, you have not attempted to do that either, have
12 you?

13 A. No, I have not.

14 Q. If we go to the Prince and Wallsten study, please, at
15 {C5/258}. So looking at the first paragraph:

16 "The prevalence and value of data in virtually all
17 sectors has grown tremendously ..."

18 Perhaps read that paragraph to yourself.

19 A. Is it okay if I see the authors real quick?

20 Q. Of course.

21 A. Because I know one of them.

22 Q. Exactly.

23 A. Yes, okay, I know Technology Policy Institute. Okay.

24 So good. Good.

25 Q. So if you read the first paragraph to yourself. (Pause)

1 A. Okay.

2 Q. Then if we look at the bottom of the page, it says:

3 "With much disagreement on best public and private
4 practices, and much at stake, it is unfortunate and
5 perhaps surprising that so little empirical evidence
6 exists on how people value different elements of data
7 privacy. The evidence that does exist is often
8 qualitative in nature ... Most relevant to our analysis,
9 very little existing empirical evidence is suitable for
10 determining relative valuations of different types of
11 data privacy, much less how those values differ across
12 countries."

13 So the points that are being made so far is that
14 while privacy is regarded as important and valuable,
15 there is very little, if any, quantitative analysis of
16 the financial value of privacy; correct?

17 A. That is their point. I respectfully disagree. I just
18 happened to be involved in a data privacy case and I am
19 aware about literature involving conjoined surveys to
20 get at these values.

21 Q. You have not put any of that before the Tribunal?

22 A. No, I have not. I took the position -- well, we have
23 been through this before. I did not see the nexus. It
24 is typically on the defendant's expert to carry this
25 burden. He put forward a model, and I do not credit

1 that model for the reasons I spell out.

2 Q. So you are taking a burden of proof point, are you? So
3 you did not think it would be helpful to conduct your
4 own analysis and explain to the Tribunal how you would
5 have gone about it?

6 A. I did not think it would be helpful, no.

7 Q. Now, if we go to page 8 of this document {C5/258/8}, and
8 take the first -- take this table, we see that
9 respondents to the survey that was conducted were being
10 asked about how much they would need to be paid to share
11 data with their phone carrier, and we see some of the
12 data -- what some of the data is, so location data, for
13 example, browsing history, and the contact list; do you
14 see that? On the left, in the first column, under
15 "Attributes"?

16 A. Yes.

17 Q. Then table 1b, payments from the bank, so respondents
18 are being asked how much they would pay for the bank to
19 have access to their balance information or the amounts
20 of cash withdrawals; yes?

21 A. Yes.

22 Q. So just pausing there, respondents are not being asked
23 how much they would need to be paid to provide
24 information as to, for example, account numbers, that
25 sort of information. So this survey is underinclusive,

1 is it not, by comparison with the range of potential
2 threats to the privacy of mobile device users?

3 A. That is not something I have studied. I am not prepared
4 to give an answer about over/underinclusive.

5 Q. Well, it is logically underinclusive, is it not, because
6 it is asking about what information would you share with
7 your bank. So the money someone pays -- is prepared to
8 pay to share information with their own bank is going to
9 be less, is it not, than a situation where they would be
10 prepared to share very secure information with some
11 malware actor?

12 A. I mean, it sounds reasonable. It is just not something
13 I have studied.

14 Q. So you have not -- is this right, because this was cited
15 in Professor Sweeting's evidence -- you have not
16 actually grappled with these figures or reached any
17 assessment of the use of this particular survey?

18 A. No, because my bone of contention is not the underlying
19 figure here, it is Dr Sweeting's methodology.

20 Q. Now, if we -- let us look at the transcript, a related
21 point. If we look at the transcript from Day 8, please
22 {Day8/75:1}. So, again, this is from the
23 cross-examination of Mr Federighi by Dr Kent's counsel.

24 A. Okay.

25 Q. If we look at line 7:

1 "Question: If the App Distribution Restrictions were
2 removed for the United Kingdom, it would be technically
3 possible for Apple to continue to review all iOS apps
4 for distribution in the UK against the full set of App
5 Review Guidelines, yes?"

6 Then he gives an answer.

7 Did you see any of this evidence, or are you seeing
8 it for the first time now?

9 A. I think this is the first time I am seeing this.

10 Q. So the counterfactual that Dr Kent was putting there,
11 through Dr Kent's counsel, was that the so-called
12 distribution restriction is gone, and you have
13 distribution of apps via third-party app marketplaces,
14 or via developer websites, but that Apple would be
15 continuing to review all iOS apps against the full set
16 of App Review Guidelines; do you see that? That is the
17 counterfactual that is being put.

18 A. Yes.

19 Q. You would expect, would you not -- you would expect in
20 such a counterfactual for Apple to charge for the
21 service of conducting that App Review; correct? That
22 would be a reasonable and commercially commonplace thing
23 for them to do since they are providing a service to
24 competitors?

25 A. Charge, for example, in the \$99 to get onto the store

1 and be approved?

2 Q. No, charge a competitor app store for conducting App
3 Review for apps distributed via the competitor
4 app store?

5 A. Would it be reasonable for Apple to charge a competitive
6 app store for Apple's reviews?

7 Q. Yes. If Apple were providing that service to
8 a competitor app store, you would expect it would be
9 reasonable, would it not, for them to charge for that
10 service?

11 A. That is the first time that that has been put to me.

12 Q. Well, I am putting it to you now, Dr Singer.

13 A. I do not think that the existence of the rival app store
14 is necessarily raising the cost of Apple performing the
15 review. So there is no cost basis for a charge.

16 I could -- I can see an anti-competitive basis,
17 which is to try to impair the ability of the rival
18 app store to compete.

19 I am trying to figure out what the basis would be.
20 I presume that the rival app store would be conducting
21 its own reviews.

22 Q. Well, the counterfactual that was put by Dr Kent's
23 counsel would be that Apple is continuing to review all
24 iOS apps that are distributed in the UK against the
25 full set of App Review Guidelines.

1 So let us say in the counterfactual you have got
2 a competitor app store that is distributing apps which
3 are not on the App Store, right? So they are competitor
4 apps that Apple would not otherwise review. According
5 to this counterfactual, Apple is going to nonetheless
6 review that app against its Guidelines. It would be
7 commercially reasonable for it to charge for that
8 service, would it not?

9 A. Oh, these are apps that are not in the App Store. Is
10 that what you want me to assume?

11 Q. I am asking you to assume that, yes.

12 A. Okay, so they are not in the App Store. Okay, I had
13 assumed that they were in the App Store.

14 So if they are not in the App Store and now Apple is
15 having to review them afresh because of the advent of
16 competition, would they have a basis? At least they
17 would have a cost basis, if there is a fresh cost. I am
18 not sure if there is an incremental cost, given the
19 fixed cost nature of App Review. But I do not know if
20 you have to hire additional reviewers for the
21 incremental apps. But at least there is a cost basis in
22 that assumption.

23 Q. Also a commercial incentive to charge?

24 A. Well, you could have -- you could have anti-competitive
25 incentives, as I mentioned before.

1 Q. If Apple -- let us assume Apple were charging for that
2 service, this would be a cost borne by developers, yes?

3 A. Not necessarily, no. Borne by developers, no. It is
4 a cost borne by the rival app store, you said.

5 Q. By the rival app store, which it would not pass on to
6 developers; is that your position?

7 A. It is not obvious that it would. The rival app store
8 charges developers through the commission it charges.
9 So this is not -- if the question is, is it
10 an incremental or a marginal cost in the sense that the
11 rival app store incurs the cost at the margin when it
12 brings on additional developers for these fees, it is
13 just not obvious to me. I am hearing it for the first
14 time. It is just not obvious to me.

15 Q. If it were a cost borne by developers, then when we are
16 considering whether Apple's requirements produce net
17 benefits, we would need to take it into account; yes?

18 A. If it were a cost -- you know, and I am having a hard
19 time accepting that, but hypothetically if it were
20 a cost in the but-for world, then those costs would have
21 to be weighed against the reduction in commissions that
22 come about that I have estimated.

23 Q. So is the answer "Yes", to my question?

24 A. Yes. If one were to accept that, you know, this chain
25 of logic that Apple charges a fee, the fee gets passed

1 on to the developer, then -- and if someone could
2 establish that credibly --

3 Q. Yes.

4 A. -- you could argue that is an offset. You know, you
5 could argue that that ought to be included in a netting
6 of harms to the developers.

7 Q. Okay.

8 Then let us look at the transcript for Day 10 at
9 page 183, and this is from the cross-examination of
10 Dr Lee {Day10/183:22}, and take it from line 22. If we
11 just read from line 22, and then it is really over the
12 page, page 184. Let us go on to {Day10/184:1}.

13 Can you read that page to yourself?

14 A. Just starting from line 22?

15 Q. Yes. No, sorry, from the top of this page. If you just
16 read this page to yourself.

17 A. Okay. (Pause).

18 Q. Again, what Dr Lee is talking about here are apps being
19 downloaded and paid for in rival app stores in a world
20 without the restrictions, and what he is saying is that
21 Apple can review all of those, and should review all of
22 those. He says:

23 "... Apple has a ton of money. Why can they not
24 just pretend to be a user and download all the apps and
25 see what happens? They could, every day."

1 Then the question that Mr Kennelly put is:

2 "Question: Download all the apps and make all the
3 purchases?

4 "Answer: Yes.

5 "Question: What about a spike in refund requests?

6 "Answer: To me, those are minor things. To me,
7 that is a minor thing to Apple. They have so much
8 money. If security is so important, they should pay for
9 it.

10 "Question: You mean get it from the third party app
11 stores and the third party payment providers?"

12 Then if we look at {Day10/198:1}, please, this is
13 picked up again, line 1:

14 "Question: You [are] saying here that Apple needs to
15 do continual sweeping of every app that is downloaded
16 continually?

17 "Answer: You bet it, yes, and they can do it. We
18 have been doing this for 20 years. People have been
19 doing this web search for 20 years.

20 "Question: You have not assessed how much that would
21 cost in your report, have you?

22 "Answer: Whatever. Apple has plenty of money to
23 support it I bet you."

24 I just want to put the same question to you. So you
25 see what Dr Lee is positing in the counterfactual; that

1 where you have rival app stores and rival payment
2 processors, Apple will continuously review all of those
3 apps by pretending to be a purchaser, downloading them,
4 and keeping a constant check on whether or not those
5 apps are safe.

6 Can I just ask first of all, is that how you also
7 view the counterfactual?

8 A. I had not viewed it in that kind of granular detail.
9 I was thinking of it from a competitive perspective or
10 a competition perspective, that the rival app stores
11 would have incentives to engage in their own review
12 process, and to compete on the dimension of security at
13 or above Apple's level of security.

14 Q. So -- if this were the counterfactual, so if this were
15 the counterfactual that Apple was doing this, all of
16 this, there would be no competition on that parameter,
17 would there? Because Apple would be doing it all.

18 A. I think that if you -- if you assume equal app review
19 process -- and there are many ways to get there: one is
20 that Apple is in charge of it all; another is that
21 competition forces rivals to compete on that dimension,
22 then --

23 Q. Just pausing there. I am asking you to look at that
24 assumption.

25 A. Okay.

1 Q. So you say one is that Apple does it all, in charge of
2 it all, because that is what Dr Lee is assuming.

3 A. Yes.

4 Q. If that is right, there would not be any competition on
5 that parameter, would there?

6 A. Well, this is the first time I am hearing that. But
7 I am loath to say there would not be any competition.
8 I think there is always competition on that parameter.
9 The App Store rival does not want to develop the
10 reputation that apps downloaded from it would somehow
11 expose users to security risks.

12 Q. Have you sought to estimate the cost of Apple
13 continually sweeping the internet for every iOS App
14 that is available for download from every other app
15 marketplace?

16 A. No.

17 MS DEMETRIOU: Thank you, Dr Singer.

18 I am going to turn to a different topic now. Is the
19 Tribunal happy for me to continue, or would you prefer
20 for me to stop and start tomorrow?

21 THE CHAIRMAN: I think if it is convenient for you to keep
22 going, that is fine. We may as well make use of the
23 time.

24 MS DEMETRIOU: It is. Okay.

25 So I am turning to market definition and dominance,

1 and could we start by looking at the joint experts'
2 statement, please, at {C4/2/91}, and I am looking at
3 proposition 144, topic "Device Competition" and the
4 proposition is:

5 "Differentiation between mobile device ecosystems
6 ... is beneficial for device competition."

7 You say:

8 "No opinion."

9 Because you have not studied competition for
10 devices.

11 Then the next proposition, 145, also on the topic of
12 device competition, and the proposition is:

13 "One way that Apple differentiates iOS from
14 Android is through its emphasis on security and
15 privacy."

16 Again, you have not looked at that either, have you?

17 A. Correct.

18 Q. It might be helpful if we look at paragraph 46 of your
19 second report, so {C2/8/29}. This is your primary
20 report. So at paragraph 46, you say that you:

21 "... do not consider Apple's competition in any
22 pre-market (what Apple calls the 'device markets')
23 further."

24 You say:

25 "Doing so would imply that iOS Device users make

1 device purchasing decisions while considering the
2 secondary prices of apps on each platform. Indeed,
3 I have seen no evidence that iOS Device users
4 understand the complicated mapping between Commission
5 rates ... and the prices of iOS Apps in the App Store,
6 and of Relevant In-App and Subscription Purchases
7 within iOS Apps."

8 So just locating the discussion, this was your
9 reason for not considering competition in the device
10 market; yes?

11 A. It is a reason. Yes, I think there are a host of
12 reasons, but this is a reason I point out in
13 paragraph 46.

14 Q. Okay. What I want to look at with you now are the
15 economics of mobile apps before the iPhone; yes?

16 So can we go, please, to {D1/4.1}, and this is
17 an OECD paper, and you can see that it is OECD Digital
18 Economy Paper 97, and if we go to the next page
19 {D1/4.1/2} we can see the date is 3 May 2005. So
20 pre-iPhone; correct?

21 A. Yes.

22 Q. Then if we go to page 39 of the bundle {D1/4.1/39}, do
23 you see the heading "Games"?

24 A. Yes.

25 Q. This explains, if we look at the first paragraph, that

1 the history of mobile games begins with Nintendo in the
2 1980s and 1990s, and on mobile phones specifically with
3 the classic Snake which was embedded on Nokia phones
4 from 1997. Do you see that?

5 A. Yes.

6 Q. Then the next paragraph you see that the market is
7 beginning -- this is back in 2005 -- to develop with
8 third party downloadable games; yes?

9 A. The paragraph that begins "Today"?

10 Q. Yes, so you can see:

11 "... the market is ... beginning to develop to
12 include more sophisticated downloadable and multiplayer
13 games."

14 A. Yes.

15 Q. Then the paragraph after that, beginning "At present
16 ...", you can see that there are:

17 "... major game developers ... only just entering
18 the mobile ... market ..."

19 Do you see that?

20 "... led by THQ Wireless, Sega Mobile and Disney.
21 Activision, Atari, Electronic Arts, and Microsoft have
22 licensed their content for mobile games."

23 A. Yes.

24 Q. Then if we look at the bottom paragraph, if we scroll,
25 please, we can see from the bottom paragraph that one

1 obstacle to growth is the technical capability of the
2 device; do you see that? So:

3 "... more sophisticated games have been hampered by
4 limited capabilities of mobile devices."

5 A. Which paragraph -- I am sorry, which paragraph is that?

6 Q. The bottom paragraph.

7 A. The bottom paragraph.

8 Q. So it is the one beginning, "Despite the success ..."

9 (Pause)

10 A. Okay.

11 Q. So mobile devices at that time were not great for games,
12 we see.

13 Over the page at page 39 -- page 40 {D1/4.1/40},
14 that is it, the second paragraph we see:

15 "Recently, however ..."

16 Some manufacturers were starting to develop devices
17 that could do better, and there is a reference to Nokia
18 with N-Gage; do you see that?

19 A. Yes.

20 Q. Then there is the heading "Embedded and downloadable
21 games" and if we scroll, please, to the second
22 paragraph, do you see the paragraph that says:

23 "In contrast to embedded games ..."

24 It explains the basic model. It says that mobile
25 operators earn revenue in two ways, so I am about five

1 lines down, do you see that?

2 "... raise revenues for wireless carried in two
3 ways: through per minute charges and download charges on
4 the transmission of games."

5 Are you with me?

6 A. Yes.

7 Q. You see the reference to:

8 "Sprint reports game sales of 3.5 million games ...
9 between USD 1 and USD 6 [per download]."

10 It had a store called the Game Lobby.

11 Then if we go over the page to page 45 of the bundle
12 {D1/4.1/45} do you see the heading "Dividing the revenue
13 stream", and if you scan that paragraph, you can see
14 that the revenue split varied wildly, but you can see
15 that publishers:

16 "... not unusual for game publishers to take 50-60%,
17 mobile operators to receive 20-25%, licensors to get
18 15-20%, and game developers take 10-15%."

19 So what we are seeing is quite a long value chain,
20 and the game developers were getting a very small slice;
21 correct?

22 A. According to this stat, yes.

23 Q. Then the second last paragraph here about single player
24 games, if we can scroll, please. So we can see in that
25 paragraph that:

1 "Developers that partner with operators through
2 revenue-sharing arrangements typically receive 20-50% of
3 the revenues."

4 Again, so much less than today; correct?

5 A. Yes.

6 Q. Then native OS games have a shorter chain, but again the
7 aggregators, who could be a handset manufacturer or
8 someone else, typically only passed on 15-50% to the
9 developer; yes?

10 A. Yes.

11 Q. So this is roughly the world into which Apple launched
12 the iPhone in 2007, and then the App Store in 2008; yes?

13 A. These are the years leading up, yes.

14 Q. It is your view, is it not, that from day one of the App
15 Store, Apple was dominant in your proposed iOS
16 distribution market?

17 A. Yes.

18 Q. It is also your view that the 30% commission was
19 inflated since day one; yes?

20 A. It reflected their market power since day one, yes.

21 Q. So it was an anti-competitive rate, was it, at day one?

22 A. I am loath to say an anti-competitive rate. I could say
23 it was a supra-competitive rate. To get to
24 anti-competitive, you would have to establish the causal
25 nexus with some restraint.

1 Q. All right, so it was a supra-competitive rate, is your
2 evidence. When Apple launched the App Store, the iPhone
3 had only been on the market for one year; correct?

4 A. Correct.

5 Q. Now, let us go to {D1/47/44}. So this is an Apple 10-K
6 filing. If we look at the -- if we scroll up, please,
7 and look at the third to last bullet. So net sales of
8 the iPhone, do you see that, third to last bullet? You
9 see that in the 12 months to September 2008, Apple sold
10 just 11.6 million iPhones; yes?

11 A. Yes.

12 Q. Then if we look at another 10-K filing, so {D1/29/44},
13 and if we look at the final row, we can see that in the
14 first quarter of 2007 we can see 1.4 million iPhone unit
15 sales; do you see that?

16 A. Yes.

17 Q. Now, let us go to {D1/1780/1}, and here we have data
18 from Statistica on iPhone shipments as a share of global
19 smartphone shipments. I am not getting into any precise
20 market definition here, but just to get an indication of
21 sale. If you look in the timeline, you can see in the
22 period up to March 2008, when Apple announced the App
23 Store, Apple's share of shipments hovered between 2.5
24 and 5%; do you see that?

25 A. Yes.

1 Q. It really got going with the launch of the next iPhone,
2 the 3G one, in Q3 of 2009; do you see that?

3 A. The first jump, it looks like third quarter of 2008, the
4 first high bar, but maybe I am misreading this.

5 Q. Yes, if you count the quarters along ...

6 A. Oh. It looks like there are more bars than ...

7 Q. All right. That is fine. Let us not get too worked up
8 about that.

9 A. Okay.

10 Q. Now, I just want to look at some press commentary from
11 the time to put this into context. So if we go to
12 {D1/28.1}. This is from the Financial Times and it is
13 an article dated November 7, 2007; do you see that at
14 the top?

15 A. Yes.

16 Q. "Smartphone makers eye mass market of new users."
17 Then the first paragraph:
18 "Competition in the market for smartphones ... has
19 never been fiercer ..."

20 Then if we look at the fifth paragraph, that refers
21 to -- so you see:
22 "Only about 5 or 6% of the total 1.1 billion mobile
23 phone sales this year will qualify as smartphones.
24 These include Windows Mobile phones, BlackBerrys, Palm
25 OS phones [and so on] and Apple's OS X-based handsets,

1 such as the iPhone."

2 Then if we look at the final paragraph on this page,
3 we see that the smartphone market has been dominated by
4 a handful of manufacturers. So RIM with its
5 BlackBerrys, Palm's Treo line and Nokia with its
6 Communicator family. So not Apple at this stage, yes?

7 A. Not Apple yet. Certainly none of those made it, none of
8 those survived against Apple. But at the point in time
9 this was written, I remember BlackBerry, I used to have
10 a BlackBerry mobile.

11 Q. Me too.

12 A. They died. I recount some horrific experiences trying
13 to use the interface.

14 Palm OS phones, Windows Mobile phones, these all
15 lost to Apple, that is pretty clear.

16 Q. That is the process of competition, Dr Singer.

17 Then if we go over -- let us go on to {D1/28.1/3}.
18 Sorry, {D1/28.1/2}. So page 2, that refers to some
19 important new devices by those manufacturers.

20 Then the third paragraph -- you can see that in the
21 third paragraph:

22 "RIM introduced the slim BlackBerry Pearl [and so
23 on]."

24 So these are the new devices at that stage from
25 these other manufacturers, correct?

1 A. Yes, I have kept the BlackBerry Pearl, the response to
2 the iPhone, as a paper weight, it was a joke, and it
3 quickly died. Yes, there were other people who tried to
4 compete and failed.

5 Q. Then the fourth paragraph, you see:

6 "Other makers, including HTC, have launched Windows
7 Mobile-based devices, many of them, such as the
8 HTC Touch, which has sold over 800,000 units, targeted
9 at consumers. Windows-based handsets are now offered by
10 48 manufacturers."

11 So Windows at that stage was a real contender as
12 a platform; yes?

13 A. Windows was a contender at that stage before it died
14 out, yes, but at that stage it was a contender, yes.

15 Q. It was. Then four paragraphs up from the bottom, you
16 can see that RIM was taking market share at the expense
17 of its rival, Palm, and Palm was fighting back; yes?

18 A. Yes.

19 Q. So at this stage, there was intense competition between
20 different smartphone manufacturers; correct?

21 A. I think that at the stage when Apple entered there was
22 competition, there was competition in the device market,
23 yes.

24 THE CHAIRMAN: Is that a convenient time, Ms Demetriou?

25 MS DEMETRIOU: It is. It is a convenient time.

1 THE CHAIRMAN: So we will resume at 10.30 tomorrow morning.

2 Dr Singer, the usual rules. Please do not discuss
3 your evidence with anybody else.

4 THE WITNESS: Okay.

5 THE CHAIRMAN: Thank you.

6 (4.31 pm)

7 (The hearing adjourned until 10.30 am the following day)

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

INDEX

MR DEREK HOLT (continued)1

DR HAL SINGER (continued)1

PROFESSOR LORIN HITT (continued)1

PROFESSOR ANDREW SWEETING (continued)1

Questions by THE TRIBUNAL (continued)1

DR HAL SINGER (affirmed)68

Examination-in-chief by MR HOSKINS68

Cross-examination by MS DEMETRIOU71

- 1
- 2
- 3
- 4