IN THE COMPETITION APPEAL TRIBUNAL

Case No: 1403/7/7/21

Salisbury Square House
8 Salisbury Square
London EC4Y 8AP

Wednesday ~~5~~th 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

Wednesday, 5 February 2025

(10.30 am)

THE CHAIRMAN: Good morning, Dr Singer.

THE WITNESS: Good morning.

THE CHAIRMAN: Ms Demetriou.

DR HAL SINGER (continued)

Cross-examination by MS DEMETRIOU (continued)

MS DEMETRIOU: Good morning.

Dr Singer, yesterday we were talking about the position back in 2007 when the iPhone was launched, and do you remember I showed you the article from the Financial Times which talked about all the different smartphone manufacturers at that time?

A. Yes.

Q. I just want to go back to what you said in the hot tub. So Day 14, page 52, line 16, please {Day14/52:16}.

So you say:

"I am going to weigh in on this issue of dominance when the App Store was launched in 2008. I will note that the App Store was launched a full year after the iPhone had been on the market and Apple was the first to market with the smartphone, so I would submit that Apple ... is itself an aftermarket to the device, right?"

Then if we go down, you say:

"So for all these reasons I think it is indisputable that Apple had power from day one in this aftermarket ..."

So you say those are the reasons for your view that it is indisputable that Apple had market power, and the reasons include, you said there, that Apple was first to market with the smartphone; correct?

A. Yes.

Q. But can we agree -- do you accept now, having seen some of the contemporaneous evidence, including the Financial Times article, that it is not right to say that Apple was first to market with a smartphone?

A. No, I still stand by that. I think that what Apple came out with in 2007 was so different and so superior to anything that had prior been on the marketplace that it is fair to say that they were the inventor of a certain category.

I also want to note that the issue of whether Apple was dominant in smartphones in 2008 when the App Store was launched is not pivotal, is not critical, to my opinion to --

Q. Dr Singer --

A. Can I just please finish this point?

Q. Actually, no, because I am asking --

A. Well, because of the high switching costs in devices, once a customer goes down that route, Apple would have dominance in the aftermarket, in the associated aftermarket. My thesis, and everything I have ever written about in these reports, concerned power in the App Store and power in In-App Support Services, and my contention is regardless of how powerful Apple was in the device market -- and I do think they were powerful -- regardless of how powerful they were, because of the switching costs that are associated with going from one phone to another, Apple had power from day one in the aftermarkets, the two aftermarkets that I am studying here, which is the app distribution for iPhone and In-App Support Services for iPhone.

Q. Have you finished, Dr Singer?

A. Now I have.

Q. Thank you. Now could you try and just answer my questions, because it was a short factual question, and if you are going to make a speech every time I ask you a short factual question, I am not going to have time to get through my material, so could I just ask you to try and remain focused on the question.

Now, do you accept that there was intense competition for smartphones when Apple launched the App Store; yes or no?

A. I think it is fair to describe there to have been competition. I think Apple won the competition. You could say there was competition in the early stages, but I think it is indisputable, and we went through that list of competitors that Apple faced in 2007, they do not exist. Apple wiped the floor with them.

Q. In time it did, yes.

Now, when launched, the App Store would not have been attractive to developers, would it, if it was charging an inflated price?

A. An inflated price. Are you speaking for the commissions or for the --

Q. For the commission.

A. Okay.

So can I hear the question again? I am sorry.

Q. So when launched, the App Store would not have been attractive to developers if it was charging an inflated price?

A. No, it could still be attractive. If that is the only pathway to get to these customers, these are very valuable customers, if that is the only pathway, then you are willing to pay a 30% tax, even though that is excessive, in my opinion.

Q. Well, that really is absurd, is it not, because we saw yesterday there were only 10 million customers at that stage. 10 million or so customers at that stage.

A. 10 million very valuable customers that were growing

very quickly. Apple soon came to take over the space.
Q. I am looking at the snapshot in time then, and it was not at all clear, when the App Store was launched, that it was going to be the success that it ended up being, was it?
A. Never -- nothing in life is ever entirely clear. But I think that it would be reasonable to infer that an app developer would be looking forward at the time of its launch and recognising that this is a very valuable footprint, I need to get a foothold in this space, and if 30% is the price, I will pay it.
Q. Now, you are saying, let us go to your second report, {C2/8/37}, and look at paragraph 60. I just want you to remind yourself of what you said there. We looked at it again -- we looked at it for a different reason yesterday. But you say there that switching rates are low because of lock-in which creates high switching costs, and you say:
"Once someone is accustomed to a brand, there can be identity and loyalty factors that inhibit switching to a different brand. There are also coordination problems with a family - not only does one user have to switch, but she would have to convince all family members to do the same. Moreover, once users become accustomed to a particular OS, they may not wish to learn how to use a

different device and may be concerned about the loss of their apps and downloads ..."

I am going to come back to this argument as it arises during the claim period, but on day one of the App Store, none of the factors that you refer to here applied, did they?

A. On day one of the App Store. No, all of the factors would apply. All of these factors for existing iPhone users -- suppose an iPhone user had been a user for, say, a year, then all of those switching costs -- and not just those, of course the out-of-pocket expense of buying another phone would apply. Those would create frictions and impair switching, and that is why we see these low switching rates.

Q. Dr Singer, let us be realistic about it. There were not very many iPhone users at that point in time, so really the game was about attracting new users, was it not? It was not about switching; it was about attracting new people to the device?

A. I do not know if I can agree with there were very few users. In this category, which is this high-end smartphone where Apple had made the category, there were a lot of users and the base was growing very quickly, and it was a wealthy base.

Q. It was growing quickly because almost all the new users were new to the platform, were new to iPhone, correct? So it was about attracting them?

A. I would submit it was growing quickly because Apple came out with an innovative device that made a market. There was no phone like Apple's, ever, when Apple came out. It created a category.

Q. Well, so it created a category, and so what it was doing was it was attracting new users to the device; correct? All the time. It was attracting new users. That was the game at that stage?

A. I cannot disagree with that. Of course Apple was trying to attract users and developers. For the App Store in particular, being a two sided platform, you need both to succeed.

Q. I want to look at another -- and just before I do, just going back to this, so these factors that you refer to here in relation to the claim period, they were much less important at that time, were they not, because it is talking about people being accustomed to the brand, switching within a family. So all of those points have more force, do they not, once you have got lots of customers on the platform than they did at that point in time when the name of the game was attracting new customers?

A. No, I think you are mistaking something. It is a function of how long you and your family have been on the phone. So if you are talking about a customer circa 2009, who was an early adopter in 2007, all the factors are there. They are all present and ready to create stickiness.

Q. So are you saying that those factors were just as present in 2008 as they were during the claim period? Is that really your evidence to the Tribunal?

A. I do not know if "just as" seems too strong, but I think for a customer who was an early adopter and had been with Apple for say a year and a half or two years, those factors of stickiness are already kicking in.

Q. For a tiny share of customers, correct?

A. No, for the installed base of customers.

Q. Which was much tinier than the number of customers during the claim period?

A. I think I will have to agree that Apple grew its customer base over time, yes.

Q. Now, I want to look at another article with you. So if we can go to {D1/40.1/1}. So this, again, is from the Financial Times, and it is dated 6 June 2008, you can see that at the top. So that is just before the launch of the App Store, but three months after the release of the SDK, and you see the title is "Software allowing mix of applications is key". The first paragraph says that

the -- talks about the launch of a new iPhone, but the authors say that "new software is likely to have a more lasting impact"; do you see that?
A. No, I do not. Which paragraph would you like me to go to?
Q. The first paragraph.
A. Okay.
Q. I am just taking you through it.
Then the third paragraph is a quote from a consultant saying that "Apple is redefining mobile computing".
Then if we can go to the sixth paragraph, if we scroll down, we see that Steve Jobs said -- he is saying that the developer community was the "source of fresh impetus for iPhone sales". Do you see that bit?
A. No, I do not. What paragraph do you want me to look at?
Q. So it starts:
"Three months ago, Steve Jobs ... identified its developer community as the source of fresh impetus for iPhone sales."
Do you see that?
A. Yes.
Q. Then in the next paragraph, if we go down, you can see that the developer, Electronic Arts, was showing off a new game that took advantage of an innovative feature of

the iPhone; do you see that?
A. No, I do not. Which paragraph would you like me to look at?
Q. "A group of partners demonstrated applications ..."
A. Okay, I am going to read that. (Pause)
Okay, I have seen that now.
Q. Then in the next paragraph there is a reference to what you call the "restriction". So it says the App Store is "the one place where users could buy software approved by Apple", and Apple's 30% commission.
Then immediately after that, if we scroll we can see a partner at a venture capital firm "announced the launch of a $100 million 'iFund' to invest in companies developing applications and services for the iPhone", do you see that at the bottom of the page?
A. Yes, and just to be clear, when you say "restrictions", there is no mention of payment restrictions there, but it does seem to coincide with the distribution restrictions.
Q. Yes. Now looking at that last paragraph, so the launch of this fund created by venture capitalists, that suggests, does it not, real confidence that the rules and commission level that Apple had just announced were going to be very attractive to developers?
A. Yes.

Q. Yes. Then if we go over the page {D1/40.1/2}:

"Apple has seen more than 200,000 downloads of its SDK since the event, and Kleiner Perkins [the venture capitalist] has received close to 2,000 business plans from entrepreneurs."

The venture capitalist, you see that in the next paragraph, says:

"'It's pretty darn exciting' ... [and there was a] swarm of activity ... going on."

He was right about that, was he not? It was an exciting environment for developers?

A. Yes.

Q. What that suggests is the offer that Apple had put in place was so attractive that thousands of entirely new businesses were springing into existence just to take advantage of it; correct?

A. Apple was creating a very attractive environment for developers to profit and they would be willing to tolerate a 30% tax to partake in that environment.

Q. They did so enthusiastically, did they not?

A. Yes.

Q. Then if we go towards the bottom of the page, we can see that it says that Apple has claimed -- already claimed -- top of the page now -- so already claimed a 5% share of mobile operating systems. So still very small at that stage; do you see?

A. I see that. I do not know if I would agree that mobile operating systems is a relevant market, but I see the statement. I think Apple is in a completely different class.

Now, again, I have not defined a market and the pre-market, and I have not studied Apple's dominance, because my opinions do not turn on Apple being dominant in the device market.

Q. No. Then it says further down:

"Nokia is the dominant force in smartphones ..."

Then if we look a bit further down it says:

"Apple also faces competition from Microsoft and Google ..."

It notes that Google was planning to copy Apple with an app store and Microsoft might do the same, do you see that?

A. Yes.

Q. Then we can see in the next paragraph that Microsoft is saying here that the carriers, that is the mobile operators, have their own limited versions of this, but Microsoft wanted to do the same thing, have a go as well; do you see that?

A. Yes, we know what happened with the carriers. They were completely unsuccessful in that space.

Q. Now if we go to Mr Schiller's cross-examination, so if we go to {Day7/9:1}. Day 7 of the transcript, thank you. Mr Schiller was asked about an interview that Mr Jobs had given, and what Mr Ward did, who is the barrister cross-examining Mr Schiller on behalf of the Class Representative, was showed him an interview that Mr Jobs had given, but I just want to look at what Mr Schiller said.
So if we look at page 9 from line 9, that is referring to the interview, and can you just maybe read this page to yourself so that you see the context?
A. Yes, and can I just ask you again, because you went kind of fast, Schiller is whose expert, I am sorry?
Q. Sorry, he is the Apple factual -- he is the executive that gave factual evidence on behalf of Apple, a senior executive at Apple.
A. Okay. Thanks. Thanks. (Pause)
Okay, I read the question. How far do you want me to read down?
Q. If you just read the page so you can see the context. I do not think you followed his evidence, did you, so I just want to show you the context.
A. Okay. I am halfway through. Hold on. (Pause)
Okay, I have made it to the bottom of the page.
Q. Then if we go over the page, if you just read that as

well to yourself. {Day7/10:1-25}. (Pause)
A. Yes, I have made it to the end.
Q. Then if we go over the page again.
A. You want me to read the next page as well?
Q. Just read up to line 8, and then I will take you through it {Day7/11:1-8}.
A. Okay. (Pause)
Okay.
Q. So then the question is, going back to the interview that Mr Jobs gave, the question from the Class Representative's counsel is, he says -- he quotes the Mr Jobs' interview and says:
"Question: 'I don't know off the top of my head, but the majority, clearly, which is great. Our purpose in the App Store is to add value to the iPhone. Free apps do that just as well as paid apps sometimes. We love free apps.'"
Then Mr Schiller was asked:
"Question: So would you agree that what Mr Jobs is making clear is that what is in it for Apple is selling more devices, that is the business model?
"Answer: That is not the only business model, but that was the main motivation in creating the App Store as a feature of the iPhone.
"Question: Thank you. That still remains the case,

does it not, that that is a key benefit of the App Store?

"Answer: That is a benefit. There are other benefits as well.

"Question: Would you agree that the App Store is a very important feature of iPhones that attracts users?"

Then over the page {Day7/12:1}:

"Answer: Yes, I do.

"Question: Would you agree that it improves the experience of people who use the devices and makes them more likely to buy another one or recommend them to others?

"Answer: Yes, I do."

So you can see from the way the questions were put that that is positively the Class Representative's case, that that is the function of the App Store, it is there, and the availability of high-quality free apps is to attract users to buy the device. So that is the case that the Class Representative is putting.

You can see that Mr Schiller agreed with that, and we will be inviting the Tribunal to accept that evidence, and can we take it that you also agree with that, Dr Singer?

A. What I think I read was that it is one of the business

motivations. So I certainly will acknowledge that a lot of what is motivating Apple is to create stickiness in its ecosystem, and the App Store certainly helped in that regard. The Watch does the same. They bring on peripherals, they bring on accessories, software --
Q. Dr Singer, can I just get you back on track, because I am asking you --
A. No, I am actually finishing the answer to the question.
Q. No, I am going to ask the question again, because I did not ask about stickiness.
A. I am going to give the same answer that I gave again.
Q. Right, well I will let you finish.
THE CHAIRMAN: I think you do need to let him finish. I think he is answering your question.
MS DEMETRIOU: All right, you finish, and then I will come back to my question.
A. When I think about what the value of the free apps were here, yes, they are creating value for the device itself, which I think is one of the points that he is making, but they are also creating value through what we call indirect network effects for the App Store. That is, the more developers that Apple can attract to the App Store, the more users will also go to the App Store. Those are the indirect network effects that we talk about for this two sided platform.

So there are many different benefits that are being created; it is for the device itself, but it is also creating value for its store.

Q. When you talk about indirect network effects, creating value for the store in turn creates value for the device, yes?

A. Fair, yes.

Q. All right. Now let us go, please, to {D1/44.1}. So this is another article from the Financial Times, and this time it is dated October 2008, so three months after the launch of App Store. The title is "Rivals take aim at iPhone's App Store", and you can see the first paragraph says:

"Apple's rivals are making moves to match the ... success of its iPhone platform with their own versions of its store ..."

We see that Research in Motion announced it would open one in March 2009, do you see that?

A. Yes, I bought the RIM, the BlackBerry, and it was a joke, yes, and they died, yes.

Q. Yes, and then Google was revamping its store, do you see that?

A. Yes, and Google has made significant inroads in this market, and now we have reached a duopoly between the Android phones and the iPhones.

Q. Both were said to be trailing Apple, yes, you see that?
A. I am sorry, can you say that again?
Q. I am focusing on the article at the time that this was happening, so I am looking at 2008. At that time, both were trailing Apple's App Store?
A. Right, Google came in after Apple, I do not know the exact delay, but there was a time where Apple did not really -- was not feeling competitive pressures from Android systems.
Q. Then can you see, if we go towards the bottom of the page, do you see it says:

"Following the Apple example, handset makers are exploring how consumers can be drawn to phones by the number and variety of applications available on them."

Then you see that RIM tried to make it even more attractive to developers by taking a smaller cut, a 20% commission instead of 30%; do you see that?
A. Yes.
Q. So what these firms were trying to do was trying to compete by offering an attractive platform for apps for their own devices; correct?
A. Yes, you could say that they were stealing Apple's idea, and Google was really the only one that was able to pull it off.
Q. Are you familiar with Handango?

A. Yes.

Q. So that was an app store for mobile devices such as Palm in the 2000s; yes?

A. Yes, that died out, yes.

Q. Its commission rate was initially 40%; do you remember that?

A. I do not recall. Did we look at that yesterday?

Q. No, so let us look at it now. {D1/919/2}. This is an email -- if we can go to the first page so you can see it, sorry {D1/919/1}. It is an email and it is setting out the text of a Reuters news story, and I just want to show you the quote on page 2 {D1/919/2}.

So you can see, if we go to the fourth paragraph down:

"Bajarin said the App Store's predecessor was Handango, a service that around 2005 let developers deliver apps over cellular connections to users' Palm and other devices for a 40% commission."

He then says:

"With the App Store, 'Apple took that to a whole other level. And at 30%, they were a better value' ..."

Do you see that?

A. Yes.

Q. Now, Handango was an app store for Palm devices, but in 2009 Palm introduced its own app store. If we go to

{D1/67.1/1}, yes, the third bullet, you can see that what Palm did was take a 30% commission; do you see that:

"Developers will receive 70 percent of revenues ..."

So they pitched it at a lower rate than Handango's 40%?

A. This was Palm's offer, was the 30% commission?

Q. Yes. So they thought that was a competitive commission, clearly?

A. They thought that is what they could get away with.

Q. So is your -- do you say that Palm was dominant too?

A. No, we see 30%, you know, we went through this in the hot tub, we see 30% offered on Xbox and other consoles where you were the only store in town. It seems like 30% is -- if you can create a powerful platform, and there are no other choices, it seems like that is what the market will bear, 30%.

I do not dispute that there is still value. Even at 30% there is a lot of value for developers. The only question in my mind was what would the commission be in the absence of the restraint?

Q. So is your position that all of these devices, so all of these platforms, were dominant, because once you have bought them, you are locked in, and therefore 30% is a supra-competitive mark for all of them; is that your

evidence, just so I can understand?
A. No, I do not think I said that every -- I just went back to the Xbox and the other things that showed up in Dr Hitt's comparables, right?
Q. Yes.
A. So I have not taken a position, and I do not know if I am ready to now, to say that Palm was ever dominant, so I do not feel comfortable doing that. All I know is that Palm did not really make a very compelling platform, and so if Palm tried to come in at 30, 40%, and Apple came in at 30, Apple, with the compelling platform, would eat their lunch.
Q. So if Palm was not dominant, then 30% shows that 30% is a competitive rate, no?
A. No, I do not -- I have not studied it, but I do not think I am ready to make any -- just because I have not studied it, I am not ready to speak to what Palm's rate connotes, other than Palm was the only game in town for a while, because they pre-dated Apple, and if you are the only game in town, maybe you can get away with 30%, maybe you can get away with 40%.
THE CHAIRMAN: Ms Demetriou, would you mind if we just pause for a minute.
MS DEMETRIOU: Of course.
THE CHAIRMAN: We have to lower the blinds because we have

got the unusual occurrence of sunshine! (Pause)

Sorry, Ms Demetriou, please carry on.

MS DEMETRIOU: No, no, not at all.

So you do not know whether Palm was dominant or not; is that your position?

A. I have never taken a position on whether Palm was dominant. I know that Palm failed, but Palm was first to market, or at least beat Apple to the space, and so if you are the only one there, it makes sense that you could at least ask for 30, you could ask for the moon, you could ask for 40.

Q. Hang on, Palm introduced its app store in 2009, so that is after the App Store.

A. Sorry, you had shown me one that --

Q. Handango.

A. Handango.

Q. Handango was 40%.

A. 40%, but before Apple, right?

Q. Yes, that is right.

A. So if you are by yourself, if you are the first to market, you can ask for 40. These did not work out.

I testified yesterday, and I will say it again, that I think Apple could get away with more than 30, given the value they are creating, right?

It is not a question about -- the monopolist does not extract 100% of the surplus, the monopolist leaves some surplus on the table, and you are free as a monopolist to do whatever you want.

The question is if you apply an anti-competitiveness restraint, right, what would the increase in surplus look like if the commission were not as high as it is? That is the relevant question.

Q. Yes. So yesterday, in the concurrent evidence, you said that 30% was the maximum that Apple could have charged, and now you are saying it is not. So which is it?
A. No, I did not say that. In fact I said the opposite.
Q. You did.
A. No, I said the opposite.
Q. So your position, just so we are clear, is that Apple could have charged more than 30% --
A. I said two things: Apple charges whatever it thinks it can get away with; and number two, I think Apple could, if it wanted to, go higher than 30. Given the restraints, they certainly could go higher than 30. Those two are perfectly consistent positions.
Q. How are those two things consistent? So you say Apple could charge whatever it could get away with, and number two, Apple could go higher than 30. They are completely inconsistent propositions, are they not?
A. No, because even a monopolist leaves some surplus on the

table. The profit maximising rate is 30%. Now, could Apple go higher? I think they could go higher. Their profits might fall, but a lot of developers would stick through a 40% tax just to be on Apple's ecosystem.

Q. What we see here is developers were flocking to the platform because Apple wanted them to, and in order to prompt them to flock to the platform Apple charged a very attractive commission, did it not? It was not charging the most it could get away with; it was charging a very attractive commission to attract developers in their hoards to this new platform?

A. I think developers were attracted even at the 30% take rate. That is my position.

Q. Now, let us go to {D1/28/1}. This is an Apple presentation and it dates from November 2007. If we go to -- let us go to page 19 {D1/28/19}, and can we zoom in. Is it possible to sharpen up the image at all? (Pause)

A. While he is doing that, would you mind telling me the date again, I am sorry?

Q. Yes, of course. It is November 2007.

A. Okay, thanks.

Q. Thank you. That is great. Thank you.

So here we see some checkpoints, and if we look at the margins, so the second to last row; have you got that?

A. I am looking at the margins, yes.

Q. So we see that Nokia is 40-50%. Handango, we have discussed already, was -- had a 40% standard rate. Microsoft, a 40% standard rate. Then we go across, we have the carriers, 55-60% of revenue, AT&T negotiated, and so on.

So it is right, is it not, that the commission Apple introduced was markedly lower than that of other app stores in the market at that time?

A. It looks like it is lower than these. You showed me another one at 30, I think it was Palm. But it is certainly lower than these.

Q. Palm came later. So Palm was seeking to compete with the benchmark that Apple had set?

A. As did Google came later and copied Apple's 30% as well.

Q. Correct, and the point is that when Apple set the 30% rate, it was a competitive and attractive rate, was it not? It was lower than the competitors at the time?

A. Well, the only thing that I will grant you is that it was lower. I am not ready to say it was a competitive rate. It was lower.

Q. Well, if it is lower, and if, as you say, Apple had such an attractive platform that everybody wanted, then it made no sense -- if it was lower and Apple had such

an attractive platform, and if Apple actually was seeking to charge the most it could get away with, it would have charged more than 30%, would it not? It would have charged 40% or something?
A. No, Apple is going to charge the profit-maximising price, and Apple -- as an economist, I think we can infer that Apple chose 30 to be the profit-maximising price.
Q. The reason for that is because it would drive consumers to buy the iPhone, correct? That is why it was an attractive price for Apple, because it would attract lots of consumers -- lots of developers to the platform, and therefore attract consumers to buy the iPhone?
A. What is nice about this pricing from Apple's perspective is that it is not transparent to the consumer; it is a price that hits the developer. Most consumers are not aware the developers are incurring a 30% tax to do business on the platform. So in that sense, it is very attractive to consumers because we, the consumer, do not get to see the pricing. We do not understand how that commission maps back to higher app prices and in-app purchases. So it is attractive to consumers.
Q. It is an attractive price to developers, is it not?
A. They are willing to pay for it, because their willingness to pay exceeds the 30%. So they are getting

surplus, no doubt, right? Economists will say if you are doing something voluntarily, even at a monopoly price, you are earning surplus.

Q. Well, Dr Singer, it is an attractive price because it is well under the percentage commission that all the other people in the market were charging, and so that was a price that was guaranteed to get developers flocking to the platform, was it not?

A. I do not think that what made Apple attractive was -- or what at least exclusively made Apple attractive was the 30% relative to its peers, it is that Apple's device was so superior to anything in the marketplace, and it was attracting this wealthy clientele that could come in and, one day, support future purchases.

Q. Well, do you agree that the 30% was one of the things that made its platform attractive? So it is not the only thing, but is it one of the things, the fact that it was charging 30% as opposed to 40 and 50%, which is what these others were charging?

A. I think the price certainly would be a consideration for developers when they were choosing for whom to write software, yes.

Q. Presumably the reason Apple was doing this analysis was because it wanted to pitch its offering lower than these other platforms; correct? Otherwise why would it even look at them?

A. I think that Apple reasonably wanted to be cognisant of what others who had attempted this space were charging for developers.

Q. Cognisant because it is competing, correct?

A. It is -- at this point in time it is competing, and they ended up taking over, but yes, at this point in time they were competing, they were an entrant.

Q. Then if we go to another news report, at {D1.48.1}, this time it is the Wall Street Journal, and you can see the date there at the top, Dr Singer, 12 November 2008:

"Apple's iPhone Faces Off With the Game Champs".

It says, the first paragraph you see:

"... iPhone has shaken up the cell phone business. Its next target: Nintendo Co and Sony ..."

So this is a story about the iPhone competing with manufacturers of games consoles.

If we go to the bottom of the first page, we see this:

"Developers are being lured by Apple's online method for delivering games, which has lowered distribution costs and made it possible to profit on games that sell for just a few dollars or are given away with advertising."

Then over the page {D1/48.1/2}:

"Apple keeps 30% of the proceeds of software sales through its App Store clearinghouse."

Then there is a quote attributed to the president of Sega:

"But even with that split, 'games sold via the App Store are the most profitable in terms of any of the formats we work on', said Simon Jeffery, the US president of Sega."

So we can see here that the president of Sega regarded the App Store and its 30% commission as highly competitive, yes?

A. But not as economic substitutes; this is key. These developers continue to write code for the Xbox and for PlayStation and other consoles. What they saw was an opportunity to develop a new and complementary distribution channel, sales channel, and a big debate that I am having with Dr Hitt is, when he sees the same developer on two different channels, whether they are economic substitutes, or, in my view, whether they are complementary sales channels. My view is that when you see them both, they did not abandon the other platforms. They continue to write and sell software for the other platforms, they are just saying that the terms that Apple is offering them is superior.

Q. Dr Singer, I was not asking you about devices.

A. You asked me about competition.
Q. No, I asked you a very specific question. The president of Sega obviously viewed the 30% commission as being an attractive commission; correct? Yes or no, do you agree?
A. Yes, attractive, but not so attractive as to abandon the other platforms that he was writing code for.
Q. Right, and --
A. It is a complement. It is a complementary sales channel, that is what this is showing.
Q. What it does is leads to them losing sales on other devices, does it not?
A. No, I do not think any of these guys are losing sales on other devices. What it does is it opens up a new avenue, a new distribution channel, so now they have multiple ways to reach a consumer. Sometimes a consumer owns both a PlayStation or an Xbox and an iPhone, or sometimes they just have the iPhone, but this gives you a new avenue to get to the consumers.
Q. Let us look down a bit. So Mr Young, a longtime executive at games publisher Electronic Arts, says:
"It feels to me like there's a real threat to their [Sony's and Nintendo's] business from the iPhone."
Do you see that?
A. Yes. So now we are shifting over to the platform

competitors. Before, we were talking about --
Q. Can I just ask my question. I just wanted to check --
A. No, before we were talking about the developers, right, and so now you are asking me --
Q. I have not asked a question.
THE CHAIRMAN: Part of the difficulty, Ms Demetriou, is I am not clear, when you are showing him passages in these documents, whether you are asking him to comment or not, and I appreciate you are asking him at times to agree that people have said certain things. But if he does not agree with those things then he needs to be able to say so, and he needs to explain, particularly if he thinks you are putting it in a way that does not properly characterise what is going on.
So I think the difficulty lies, if I may say, partly with both of you, in the sense that I am not entirely sure what you are asking him to agree or not agree with, bearing in mind he is an expert and he is entitled to comment.
Dr Singer, just to be clear, I think there is a bit of a mismatch here of expectation, because Ms Demetriou is trying to move through these articles and get you to agree to certain things, and she will be telling you when she wants you to agree and when she does not, and you volunteering your view is not necessarily helpful.

Now, I appreciate it is a difficult exercise because we are going back in time and we are looking at these articles, but I think some clarity about exactly what it is that is being asked might help.

MS DEMETRIOU: Sir, of course. I will take that on board.

So, Dr Singer, what I want to do is show you bits of the document to make sure you are with me, because sometimes you say "I cannot see that". So when I say "Do you see that?", I am not asking whether you agree with it, I am asking whether you are located in the document. Then if I want to ask whether you agree with it, I will say "Do you agree with that or not?"

A. That is fair.

THE CHAIRMAN: Just so you are clear, Dr Singer, if you are not asked whether you agree with it, then you are not going to be taken by us to have agreed with it. You have been shown it, and Ms Demetriou will have put something to you (overspeaking) --

A. Right. I will make it clear and I will say "Yes, I see it".

THE CHAIRMAN: -- goes no further than that, just to be absolutely clear about that.

A. Okay.

MS DEMETRIOU: So we have seen what Mr Young says. Now, do you agree that Sony's business and Nintendo's business

at the time was in making game consoles?
A. Yes.
Q. So if Apple's success in attracting games developers to the App Store was a competitive threat to games consoles, that would be because it would be drawing consumers to buy an iPhone rather than a console; yes or no?
A. It could have been perceived as a threat by the console maker. But for the purposes of what we are trying to figure out today, is it perceived as an economic substitute from the perspective of developers, and the answer to that relevant question is "No". The developers see these two as complementary sales channels.
Q. So the first part of your answer was: it could have been perceived as a threat by the console maker. Perceived as a threat by the console maker because it was concerned that customers would flow over to the iPhone from these games consoles; yes or no?
A. They could reasonably, at the time, because in 2008, or whenever this article is from, they could not know at that time how people would end up playing games. It turned out that gamers have multiple ways to play games, and some of them avail themselves of multiple channels at the same time. They own a PlayStation, they own

an Xbox, and of course they have a cell phone.

At the time, Sony, Nintendo, could not be sure that that is how the world would shake out. So it was perfectly reasonable for them to say at that time: wow, we are scared, we are scared that Apple could eat our lunch.

Q. So at this point in time, you agree that this other channel was imposing a competitive constraint?

A. On whom?

Q. On each other.

A. I think that, as I stated before, from the perspective of developers, which I think is the relevant perspective here, they were perceived as complementary channels.

I think from the perspective of the platform, the rival platform, in this case Sony and Nintendo, they could legitimately perceive a threat from Apple. As it turned out, I do not think the iPhone became a close substitute for a game console, despite the fact that you can play games on both. They are used for very different purposes.

Q. Well, let us look over the page, at the top of the page {D1/48.1/3}:

"Still, some game developers are choosing Apple over Nintendo or Sony because there are no pricey game cartridges to manufacture for the iPhone and there is no need for a retail distribution network."

If we look down the page a bit further:

"For people like John Sims, a bank teller in Denver, the iPhone is winning out over dedicated portable game players. Though he concedes the Sony and Nintendo devices provide better quality games, most iPhone games cost far less. Plus, he prefers to carry only one device."

So looking at that, what this is showing is that games developers do see them as substitutes, not as complements, yes? So game developers are choosing Apple over Sony or Nintendo, that is what we see at the top of the page?

A. There could be -- it says "some game developers." There could be some game developers who abandon the old platforms, but that is generally not what we see in the real world. In the real world, we see the big game developers being on all the platforms, and the reason they want to be on all the platforms is they want to address as big of a customer base as possible.

Second, it is not clear here that we are seeing economic substitution; that is, substitution being driven by a change in a relative price.

Q. Well, Dr Singer, I am looking at the contemporaneous commentary about all of this, and it is clear from this,

is it not, that at that time developers saw Apple as being a substitute, not a complement, and game developers -- some game developers were choosing Apple over Nintendo or Sony, yes, at that point in time?
A. It says "some game developers are choosing", and I trust these are the -- I have not read the entire story or remember it, but are these mobile -- are these hand-held devices by Nintendo or Sony, or are these the game consoles that stay in someone's home, do you know?
Q. So are you disagreeing -- so is your position that this is inaccurate, this story? Is this your position?
A. No, I am not taking -- no, I cannot attest to the accuracy or inaccuracy. Let us just accept that some developers are, in fact, choosing Apple over these other platforms, right?
Q. Just pausing there, I will let you come back --
A. No, I would like to finish -- I would like to finish what I was saying, if that is okay?
Q. Of course. Go on, Dr Singer.
A. We can have some developers making that choice, A or B, exclusive choices, and still the two not be in the same relevant market. We cannot insist that no developer would perceive them to be a substitute. Of course, some might make an either/or decision. But when we look at the totality of how developers are choosing, they tend

to put themselves everywhere. They want to be in front of as many eyeballs as possible. So you write your code, you write your game for every distribution channel, not just the iPhone. You write it for the place -- for Google's phone, for the Android phones. You write it for consoles, the Xbox, PlayStation. That is why they are not economic substitutes, they are complementary channels.

Q. So do you agree that Apple was competing with the console makers, like Sony and Nintendo, to get developers to make more games for iOS at the expense of those platforms?

A. Not necessarily at the expense, no, because for many, if not most, of the developers they multi-home. They are in many different distribution platforms. These developers are looking at opportunities for incremental sales which would not have otherwise happened. Now you have got a mobile device, so you are not just stuck to playing the game at home in your living room in front of a big-screen TV. Now you can actually take the game with you. This is a new opportunity for these developers.

Q. Developers have a choice, do they not, as to which platform they produce a game for first?

A. Absolutely there is a choice. No one puts a gun to their head. But what they are choosing is they tend to choose to multi-home. They tend to be across multiple devices. They do not see these as economic substitutes, they want to touch as wide a customer base as possible.

Q. Let us look at {D1/67}, and if we look at another type of game, this is Sony and the PSPgo, and you can see the headline, this is an article from August 2009:

"Sony targets iPhone developers and low app prices for PSPgo."

You see the bold text at the start:

"Sony plans to lure iPhone developers to the PSPgo, a revised version of its PlayStation Portable handheld gaming platform, and copy Apple's low App Store prices to create demand for the relatively expensive new hardware ..."

So you can see this does appear to be an example, does it not, of Sony seeking to lure developers away from Apple to its own platform?

A. Sony, the device-maker, might consider the iPhone to be a competitor and something that it is trying to compete against. But the question is from the developer's perspective: are you going to multi-home or are you going to just choose one of these platforms? I contend that they are generally multi-homing. You see the same developer, the same games, across multiple platforms.

Q. So are you saying this does not make any sense, the concept of luring developers away from Apple to its own platform?
A. I think it is a bit naive to lure them away. I think the best that you can do is -- it is going to be very hard to get a developer to leave the Apple ecosystem. The best that you could do, if you want to attack Apple, is maybe you can get the developer to also write code that would be compatible with your platform, which is what the Google Android system did. They got the same developers to come over and write code, right? So in that sense, again, the developers do not perceive the Google Play Store and the Apple App Store to be economic substitutes; they see them to be complementary channels. You are going after two different audiences.
Q. Let us go to page 3 {D1/67/3}. We see here, after the first heading which says "Developers, Developers, Developers", it says:

"Sony must also convince its developers to target projects that can be profitable at such a low price. That will also require a smaller cut of software sales for Sony, which has historically levied a much higher cut from its game developers than the 30% share Apple charges in the App Store."

So what we are seeing there is competition, is it not, to attract developers; competition on the commission between these different platforms?

A. I think if Sony wanted to compete with Apple -- you said this article, just to refresh, is 2009?

Q. Correct.

A. If Sony wants to compete in this mobile space for developers, including game developers, then it makes sense that they would have to be competitive on that commission dimension as well.

Q. Yes, and if we go to page 4, just to see what that says {D1/67/4}, we can see there, second paragraph, first main paragraph:

"Sony currently requires developers to pay for a very expensive ... set of tools and hardware to create PSP games. Despite an 80% drop in the cost of its development tools made this summer, Sony's PSP software development kits still start out at $1000 to $1500.

"After witnessing the success of the iPhone App Store and particularly its appeal to independent small developers, Sony hopes to woo iPhone indie developers into porting their apps to the PSPgo rather than focusing on a few large developers to create gaming titles.

"However, Sony will also face competition for attention from Google's Android, Nokia's Symbian, Palm

WebOS, and Microsoft's Windows Mobile and Zune platforms ..."

A. My screen went blank. I do not know if you did that on purpose?

Q. I certainly did not do that on purpose.

A. All right, I am back.

Q. I am just at the bottom of the page:

"... all of which are actively courting iPhone developers' attention in similar hopes of replicating Apple's success in selling mobile [phone] apps ..."

My question is what we can see here, in these early years before and after the launch of the App Store, is a highly competitive market for development and sale of different devices and operating systems; yes?

A. I think at the very beginning run, 2008 -- I mean, you said this article is from 2008 or 2009?

Q. This one is from 2009.

A. 2009 -- that the market had not resolved in the way that we ultimately know it did. You know, Palm's fate, Nokia's fate, Microsoft Windows fate, and Zune, I do not even know Zune, but it did not resolve it yet. Those guys were still contenders, at least in theory, as of 2009. They quickly would be wiped out and it would go down to two. But in this period of time, I will grant you that they were alive, they were still alive. They

may have been barely kicking, but they were alive in 2009.
Q. So just thinking about all of these documents that I have shown you from 2007 through to 2009, we see the firms seeking to compete by introducing their own app stores for their own operating systems; yes?
A. When you say "the firm", you mean these different --
Q. Precisely.
A. -- operating system makers?
Q. Yes, and we have seen we had RIM for BlackBerry, we have Google Android, we have these that are mentioned here, we have been through Microsoft, we have been through a number of them now.
The question is, at this point in time there was a highly competitive market between them, was there not, for development and sale of different devices and operating systems, and I think you have accepted that?
A. I think that when Apple entered, for certain in 2007/2008, that it was not Apple's yet, that it took time for Apple to take the market. I will grant you that Nokia's Symbian, Palm, you mentioned RIM is not here, and Microsoft Windows were all around in 2009, I will grant you that.
Q. Will you also grant me that these firms we have been speaking about were seeking to compete by introducing

their own app stores?

A. They were seeking to compete, but an app developer -- and it is that developer's perspective that matters here for the question of economic substitutes and defining the relevant markets here, is that had any of them counterfactually succeeded, right, had any of them actually made a run against Apple, the question is do you want to -- do you want to choose one or the other or both, and this is easy.

If there are two successful phones -- it turns out that now we have two, with the benefit of hindsight we basically have two operating systems. But back then we could have had three, we did not know, we could have had four. The question is, do you really want to sit on the sidelines, and, say, Microsoft's customers represented hypothetically 10%, do you want to sit out and not address any of them? The answer is no. You want to be on everyone's phone, right?

So to that extent, the developers see these different platforms as being complementary distribution channels, not economic substitutes.

Q. So I think, before you got into that, your answer was: yes, the developers were competing by introducing their own app stores, yes?

A. I think you made a mistake. Not the developers --

Q. The platforms.
A. These platforms, these different operating systems were in competition, certainly in 2007 and certainly in 2008, and they had not died by as early as 2009, I will grant you that.
Q. The commission was a parameter of competition between manufacturers; correct? We saw that in the documents?
A. I think it is a -- I will grant you it is a parameter of competition, I think that is fair.
Q. Apple's offering, its 30% commission, was competitive, was it not, given what else was around in terms of the other commissions, which were higher, and in terms of the quality of the app store and the quality of the device to which it related; do you agree with me?
A. I think it was at market, I am reluctant to say competitive, but I think it was at market, and I think what we can infer from this is if you can build a platform and if you can attract customers to your platform -- those are big ifs -- you can command a very large tax on the developers.
Q. It was a price that succeeded in attracting developers as a matter of fact, we know that, do we not?
A. No, no, no, they attracted it despite the price. Apple won the war because it came out with a superior phone and because it was able to attract customers, right?

The commission was certainly a part of it, but I would never say that Apple won because of its price, which was I think the question you put to me.

Q. So the price was part of the attractive offering that enabled Apple to compete so successfully?

A. The price, because Apple came in at, it looks like -- you know, the comparables that you gave me are on par or even below some other comparables. The price would just wash away. The way -- if I had to attribute Apple's success in winning over developers is that it won over consumers, and developers want to be where the most and most attractive consumers are, and Apple won on that dimension.

Q. Can I just ask what you mean when you say "the price would wash away", because the comparators I showed you were at 40 to 50%, so are you saying that that differential is not significant?

A. You showed me some at 30% as well. But if you come in at 30, and the incumbents that you try to attack are also at 30, then developers are not going to be choosing on that dimension. Now, if you came in maybe at 20 or you came in at 15 and you said: hey, maybe, Hal, is that the reason why they won? But if you come in on par, then I do not think that we can attribute their success to that dimension.

Q. Well, Dr Singer, I showed you that the incumbents at that stage were charging -- we went to this yesterday. So the initial -- the initial Palm rate, the Handango rate, was 40%, and then I showed you a number of other incumbents that were 40-50%, and then we had the carriers that were 55-60%.

So, first of all, let me break the question down. Do you say that the differential between 30 on the one hand and 40-50% on the other hand is insignificant and just comes out in the wash?

A. No, it is not insignificant.

Q. No. So do you therefore accept that Apple was coming in with a rate that would have been attractive to developers, and that was part of the attraction of its offering?

A. It was relatively attractive, but I think Apple succeeded not because of its rate, but because it put together the best phone and was able to attract the right customer base.

Q. Well, its rate obviously helped, did it not, because then you see everybody else responding to that competition by lowering their rates; yes or no?

A. The rate -- at the margin, the rate helped. Obviously, let me state it this way, if Apple had come in higher that could have impeded Apple's success.

Q. Then we see that -- we know that in 2008 there were just 10 million unit sales of the iPhone, whereas by January 2021, for example, there were more than 1.65 billion devices in use; right? So there was a huge increase over that period; you agree with that?
A. Yes.
Q. So --
A. Oh, total devices, sorry, or Apple devices?
Q. Total iOS Devices in use.
A. Okay. Okay.
Q. The device can do much more now than it could in 2008; yes? It is a more sophisticated device?
A. Yes.
Q. So, for example, the screen is much bigger than it used to be; correct?
A. Yes.
Q. The chips --
A. They make big screens and small screens, but yes.
Q. The chips are more powerful now than they used to be?
A. Yes.
Q. That makes more sophisticated apps possible; yes?
A. Yes.
Q. Apple has introduced technology, such as LiDAR technology, which has made augmented reality possible, and that has enabled ever more sophisticated apps, yes?

A. Did you say Lidon technology?
Q. LiDAR, so scanning technology.
A. Oh, scanning technologies. Yes, scanning technologies could help. I have not studied whether scanning technologies are pivotal.
Q. Fair enough. The software development tools have also kept pace with the hardware development. So those have improved over time as well, have they not?
A. It is something I have not studied, but I would assume software is improving, hardware is improving.
Q. So would you agree that these changes have made the App Store significantly more valuable to developers than it was in 2008?
A. I think that those dimensions -- it is hard for me to keep them all in my head -- those dimensions certainly create value and add value to the system, but the most valuable one that I think you -- well, maybe it was the first one you pointed out, the 1-point something billion, you had a very big number, that to me is key. If it is a two sided platform and with indirect network effects, so if you can build up customers, that makes the network more valuable and more attractive to developers.
Q. I think we agree on something there, Dr Singer.
You have calculated Apple's average commission as

being 25%, have you not, around 25%?
A. I have it by year and I have it by category.
Q. We will come back to the detail. But the sort of basic figure is around 25%?
A. I do not -- sitting here it is hard to remember, because -- for the initial downloads, I do not think we got much relief from the 30%. I think it depends on -- it depends on which of the three categories we are looking at.
Q. We will come back to that. But anyway, significantly less than in 2008; yes?
A. It depends on who you are. If you are a small business with under a million dollars, I will grant you that 15% is significantly better than 30%.
Q. The average commission is significantly less than 2008; yes?
A. Relative to 2008?
Q. Yes.
A. I would have to look at my table. I remember doing this by category, and I think for in-app the reductions have been fairly slight.
Q. Right. We will come back to the detail. But do you recall that what you have calculated is a reduced average commission now as opposed to 2008?
A. It is certainly lower, yes.

Q. Yes. That itself does not tell the complete story, does it? Because Apple is now taking that lower average commission from a narrower set of revenues, is it not?
A. I mean, we have another agreement here, and the trajectory by itself does not tell us the story. What we want to know is what the trajectory would have looked like in the absence of the restraint.
Q. So just going back to my question, I said that the fact that the commission is lower does not tell us the complete story about how much it is lower, because my question was that Apple -- do you agree that Apple is now taking that lower average commission from a narrower set of revenues?
A. I do not think I follow the question.
Q. Well, because, for example, of the multi-platform rule?
A. Is Apple taking its commission from a smaller ...
Q. A narrower set of revenues. Because take the Reader Rule, you now have consumers consuming material on the iPhone, but Apple does not take any -- that revenue is not subject to commission at all. So when you are comparing the situation now to 2008, the set of revenues that Apple is applying the commission to is narrower than it used to be.
A. I am sorry, I just do not understand what you are asking. I just do not understand.

Q. So the introduction of the Reader Rule and the multi-platform rule --
A. Yes.
Q. -- excludes a certain set of developers revenues from the revenues that Apple is taking a commission from; correct?
A. I would not put it that way. I do not think it excludes it, no. It is just that if you can find this content outside of the iPhone then you will not be taxed on it, but it is not excluding anything from the base.
Q. I think that is the same thing. So it is not applying commission to revenues that developers are making?
A. I would put it differently. It is allowing -- it is allowing for certain qualifying apps. It is allowing the user to bring it over from outside of the App Store without being taxed.
Q. Well, the fact that -- so sticking with the point that we both can agree that Apple is charging a lower commission today than it did in 2008, that fact is inconsistent, is it not, with Apple being a monopolist in a market with massively increasing demand?
A. Not at all. As I just was saying, and the same point about the output too, we cannot look at the trajectory, and it is a fairly slight decline, but we cannot look at the trajectory and say: therefore we are looking at

a competitive rate. The trajectory by itself tells us -- it almost has no economic content, or economic value. What we want to know is what that trajectory would have looked like in the absence of the restraint, and if the trajectory would have been a faster decline then we can attest the restraint, we can attribute that inflation to the restraint, and that delta, that difference, is the overcharges that Apple has imposed on developers and ultimately on consumers.

Q. Well, let me put the point this way. So all else being equal, an unconstrained monopolist, which is what you say Apple is, faced with a significant increase in willingness to pay, because of the increase in value in the App Store, so a significant increase in demand, would be likely to increase prices, would it not?

A. I might have to hear that again, but I think we can infer that the 30% is still profit maximising. That Apple could raise it, and certainly a lot of people would stick through it, because they want to keep access to this very valuable subscriber base --

Q. But let me take the point --

A. Can I just finish my point?

Q. I thought you had, sorry.

A. Given that Apple sticks at 30, we can infer, as an economist, that 30 is the profit maximising.

Q. So let me try my question again. So you say that Apple is an unconstrained monopolist?

A. Did I use the word "unconstrained"? I usually just call them a monopolist.

Q. Well, you do not accept, do you, that there are constraints from these other -- from the device market --

A. I do not --

Q. -- multi-platforms?

A. -- think, for example, that the existence of the Play Store constrains Apple's pricing on the App Store. Yes, that is my position.

Q. So do you think that Apple is subject to some constraints, or not?

A. I think that any monopolist -- ultimately at the monopoly price things start to look closer than they otherwise would. But to answer your direct question, I do not think we could go through the list, but I think the closest would be the Play Store. I do not think the Play Store is constraining Apple's pricing in this aftermarket on its phones.

Q. Right, so you do think that Apple is an unconstrained monopolist?

A. I blanch at the word "unconstrained". Every monopolist faces some outer constraints that prevents it from going

higher, but I do not think that the Play Store, which I think would be the closest candidate, is constraining the commission.
Q. All right, so let us just stick with "monopolist". So your case is that Apple is a monopolist, and you have accepted that Apple is faced with -- that there is an increase in value in the App Store and therefore of demand; yes?
A. The demand for the App Store has been growing over time through these indirect network effects. We have talked about the more customers that Apple brings in, the more valuable it is, and the more valuable it is to the developer, yes.
Q. So normally what you would expect is if Apple were a monopolist, and there is this significant increase in demand, then you would expect Apple to increase prices, would you not, over time, relative to 2008? But it has not done that.
A. I do not -- I do not think that we would naturally expect. We have to infer, as economists, that the 30% is profit maximising. So I do not think that there should be some expectation that prices would have gone up over time, no.
Q. Well, if it is a monopolist, and if it is facing much increased demand, why would it not put its prices up?

Why would that not be profit maximising, to put its prices up?

A. Well, remember, Apple can monetise the value in many different ways. It does not just have to come through the commission. Apple can do it through the user side, through selling more phones. It could do it through in-app purchases. There are a lot of different ways that Apple can monetise and capture the value that is being created. It does not have to come through increases in the commission.

Q. So you agree with me that willingness to pay has increased because the value has increased; yes?

A. I think that the platform has become more valuable over time. I think that -- I think that is fair.

Q. It is right, is it not, that the profit maximising price for a monopolist is higher if willingness to pay increases; that is correct as a proposition, is it not?

A. I mean, in a very simple model, if that was the only thing that was changing you could say there were opportunities to raise prices.

Q. So the only logical explanation for why Apple has not increased its prices, given that the willingness to pay has increased, is that the combined effect of the device and transaction competitive constraints has led Apple to cut its share of developer revenues. It is the constraints that are the reason why Apple has not increased its prices?

A. I think that once you get to the monopoly price, that you cannot do any better, and at that point if you try to go higher, you could suffer some defection from developers.

Q. But your point was that in 2008, the monopoly price was 30%; yes?

A. I think that Apple quickly -- in the aftermarket, I think that Apple quickly acquired dominance, and I do think that 30% is consistent with the monopoly price, yes.

Q. So if in 2008 the monopoly price was 30%, and given that value has increased exponentially, and so willingness to pay is higher, the monopoly price now should be higher, should it not, if Apple were unconstrained?

A. If this were the only price that Apple charges, but Apple charges myriad prices, and it is a two sided platform, they have got prices they can charge to the consumer, and they are making a lot of money from users as well. So I do not think we should instinctively think that Apple should have or is leaving money on the table.

I will say, though, I said this yesterday and I will say it again today, it is conceivable that Apple could try to go up by a few percentage points, it is conceivable they could try, but they know this market and they know what they feel they can get away with, and I think 30 is what they feel is their upper limit.

Q. That is because of the constraints, is it not, on the device market and on the transaction platforms?

A. I think they feel pushback from developers already at 30%. There have been lawsuits, there have been defections, and I think they likely believe that if they were to go higher it would generate more bad than good.

MS DEMETRIOU: Thank you. Is that a convenient time to break?

THE CHAIRMAN: Yes, we will take a ten-minute break. Thank you.

(11.44 am)

(A short break)

(11.56 am)

THE CHAIRMAN: Ms Demetriou.

MS DEMETRIOU: Dr Singer, you refer to -- you have talked about network effects, we have discussed that, and you give an example of that in action in your report as being Apple's introduction of the Reader Rule, so I just want to look at that briefly.

If we pick up {D1/141/1}, this is a document from the time that the Reader Rule was introduced, and we see there it is an email which sets out the text of a Reuters article. If we go to {D1/141/2}, and just go a bit down the page, there is a sentence beginning:

"Like the Wall Street Journal ..."

Are you with me?

A. Yes.

Q. "... owned by Rupert Murdoch's News Corp, the Financial Times has successfully persuaded many of its readers to pay to read its online version."

You can see here the Financial Times was indicating it would not offer subscriptions through the App Store, and they say, if we go to the top of the page:

"'We don't want to lose our direct relationship with our subscribers. It's at the core of our business model' ...

"He said he was hopeful of a positive outcome to negotiations with Apple, but added: 'If it turns out that one or another channel doesn't mix with the way we want to do business, there's a large number of other channels available to us'."

So we can see, can we not, that the view of the FT's publisher, Mr Grimshaw, was that it had other channels, correct?

A. Yes, FT and other large publishers resented paying the 30% and were looking for ways to escape that tax, including, you know, how could they get their readers to subscribe on their own websites.

Q. Then if we go to the bottom of the page, it says:

"Grimshaw said FT.com had far more to lose by giving up its customer relationships to Apple than many other publishers, who had not yet developed a successful online business model."

Then:

"'We have something to lose' ... 'The publishing market as a whole is in a different situation'."

So that is what the FT publisher was saying.

I now want to look at what Mr Schiller says at the top of page 1 when he is attaching the email.

{D1/141/1}

So he says:

"Without creating an exception for reader apps, we will need to take the Financial Times apps (they have 5) out of the App Store, as well as all other publications that say 'no' to our subscription model, this June."

So Mr Schiller thought that Apple was going to lose the FT from the App Store unless it took some action, did it not?

A. Yes.

Q. Then Apple in fact adopted the Reader Rule later in 2011; correct?

A. Yes. I do not know the exact date, but yes, it was in part to try to appease these large publishers, yes.
Q. Because it was so keen to keep these apps available on the App Store that it was prepared to forego revenue from the subscriptions, yes?
A. Yes, some of the largest publishers have countervailing power in the sense that they have such a big brand name, I am thinking Netflix when it comes to video, but here we are talking about newspapers, there are certain newspapers that have such a potent following that they have a credible threat of leaving and compelling their subscribers to re-up outside of the platform to avoid the tax.
Q. Thank you.
Now if we go to -- I want to look again at some of the cross-examination of Mr Schiller, so if we go to {Day7/14}, please.
A. Okay.
Q. So {Day7/14:6}. You can see "Q", that is the question that Dr Kent's barrister was putting:
"Question: When you improve the hardware or the software of the Apple device, that helps make the devices more attractive in their own right too, does it not?
"Answer: Yes, it does.

"Question: So there is a sort of double effect here, is there not? The device is more attractive, so you sell more, and the apps become more attractive and they drive sales of the devices?

"Answer: Yes, I think that those statements can both be correct."

Then the question -- Dr Kent's case that is put to him is:

"Question: All of that is true of both free apps and paid apps; is it not?"

He agrees with that, do you see that?

A. Yes.

Q. So Dr Kent's case, so the case that her leading counsel is putting to Mr Schiller, is that for both free apps and paid apps, the apps make the device attractive to consumers and drive sales of the device, and we see that Mr Schiller agreed. Do you also agree?

A. It is not the theory -- it is not, certainly, the theory that I am putting forward. I, you know, set the device market to the side.

When I talk about the network effects, I am talking about how getting more developers on the App Store makes the App Store more attractive to users, and vice versa. So those are the network effects that I wrote about in my report.

Q. But now do you agree, seeing this evidence, and seeing the case that is being put, that there is also -- that making the App Store more attractive also drives sales of the device?

A. I think that there are synergies in that direction too. But, you know, those are not -- when I talk about my network effects in my report, I am talking about the network effects on the App Store.

Q. Now, Mr Holt in the hot tub agreed that Apple has a strong incentive to ensure that there is a highly attractive range of paid apps on its devices. Can we take it that you also agree with that proposition?

A. Can you give it to me one more time?

Q. That Apple has a strong incentive to ensure that there is a highly attractive range of paid apps on its devices?

A. I just -- I think I would need more context. They need -- they need to attract paid apps, is that what you are saying?

Q. Yes. So what we are seeing, if we go back to what Mr Schiller says, the case that is put to him, you can see that all of this cross-examination, so:

"Question: When you improve the hardware or the software of the ... device, that [makes] the devices more attractive ...

"... there is a ... double effect ... The device is more attractive so ... the apps become more attractive and [the apps] drive sales of the devices?"

He says that is true.

The case that is put to him is:

"Question: ... that is true of both free apps and paid apps ..."

So both free apps and paid apps make the App Store more attractive which drives sales of devices; do you agree?

A. Yes, the free apps -- at least the opinions I have offered in my report is that the free apps -- any apps that come -- any developers that come into the store, whether they charge for their app or they do not charge for their app -- most of them, as you know, do not charge for their app -- that creates indirect network effects and attracts users. It makes the users value the App Store more than it otherwise would.

Q. Yes, and what Mr Schiller is -- the case that is put to Mr Schiller, and that he accepts, is that that is true both of free apps and paid apps. So can I take it that you agree with that too?

A. I think that for the network effects that I spoke to in my report, it does not matter if the developer is selling a paid app or a free app. More developers are a good thing, and they engender these network effects and make the App Store more attractive to users. A developer is a developer.

Q. Okay. So I want to move to consider the question of switching now.

One point you make about device market competition is that there is only limited switching between Android and iOS users; correct? That is a point you make?

A. Yes. Just in the context, I am saying that we cannot count on switching from iOS to an Android system as a constraint that will regulate the commission charged by Apple on its App Store.

Q. Yes. Let us pick up {C4/7/14}, just so that we can see the scope of the debate.

So proposition 27, do you see that at the bottom of the page:

"Competition in the market for devices disciplines App Store commission rates."

You say you disagree because switching rates are very modest.

Then if we go over the page {C4/7/15}, there is a confidential figure --

A. Okay.

Q. But do you see --

A. I will not say that.

Q. Yes, we will not say it, but you can see it. So I just want to remind you of the evidence.

Then we see in Professor Hitt's side of the table --

A. Okay.

Q. -- he has:

"In 2022 ..."

I am not going to read it out, but do you see:

"... [X] percent of Android smartphone users had switched from an iPhone and [X] percent of iPhone users had switched from an Android smartphone."

So we see those figures?

A. I see them.

Q. Right. In that context, I just want to look at some market research carried out for Apple. So if we go to {D1/842/21}, and this is, you can take it from me, from the first quarter of 2020, and if we go to the next page {D1/842/22}. So most of this is confidential, anything in pink is confidential.

A. Okay, I will not say it out loud.

Q. Thank you. So we see the heading "OS loyalty" for iOS and Android. So it is looking at the percentage. It is a little bit unclear on the screen. I do not know if you can see it?

A. Yes.

Q. Oh, that is better. So it is looking at the

percentage -- at smartphone owners who change to another smartphone in each quarter, can you see that?
A. Well, the title at the top, I am going outside the pink, says these are:
"Among smartphone owners who changed ..."
So it looks like we are only looking at the switchers, from the title.
Q. Yes, so if you look ... Yes, so if you look at the bottom part, which is very small, so you are going to be doing better than me if you can read it, so I think it says:
"% of OS owners who remained loyal to the OS, when they changed their smartphone, during each quarter."
A. Okay, can I see the title again?
Q. Yes.
A. Oh, okay. So now I think the title might convey something a little different than what I had in mind. So it sounds like this is just a survey of those who recently upgraded their phones.
Q. Exactly. Exactly.
So we can see, for example, in quarter 2 of 2019, so if we just look at that, the percentages for Apple and Android, and so the difference between those percentages and 100% is the percentage that shifted; do you see that?

A. I am not sure how to interpret this yet, because -- now, we are only looking at the switchers, and we are asking the switchers about their loyalty to iOS?
Q. No. So pausing there, you were right the first time, a few moments ago. So we are looking at people who bought a new phone.
A. Yes, we are only looking at those who upgraded their phones, and we are asking: of those who upgraded ... and what is the question? I do not understand what I ...
Q. How many -- the percentage that remained loyal to the brand they were on, to the platform they were on.
A. Hold on. Okay. Sorry. He took it down.
Okay. Now I think I have it in mind. It is among those who bought a new phone in the last quarter, how many of those remain loyal to iOS?
Q. Exactly.
A. Okay.
Q. So where you have got -- so take, for example, the second quarter of 2019, we have a percentage figure, yes? So that is the percentage that remained loyal --
A. Right.
Q. -- to iOS. So the remaining -- the difference between that and 100% is the percentage that shifted; yes?
A. Right. Which is much, much bigger than the figures that Dr Hitt and I had agreed to in the joint statement, and

the reason why is that you are conditioning on those who just made a switch, right? Whereas the stats that Dr Hitt and I put in the joint statement were anybody who switched, right, in that year, including the non -- including those who did not upgrade their phones.

Q. Who did not upgrade, okay.

A. That is why these are bigger figures.

Q. Right, so these are -- this is looking at people at the point where they would be able to switch because they are upgrading?

A. But not everyone is at that point, that is the problem. I am not at that point right now, I got a phone a year ago. So that is the problem. That is contributing to the low level of switching, is that not everybody is ready to. But what this is showing us is of those who just made a new purchase, just upgraded, which ones remain loyal, which is a different statistic than the ones that Dr Hitt and I put forward.

Q. You are right that it is a different figure, but it is still a relevant thing to take account of, is it not?

A. I do not want to say it is irrelevant, but it is just Dr Hitt and I agreed on a range. We are pretty close in our range. In fact, he -- I am not going to say the number, but he and I agree on a certain number, then he can cite one that is slightly higher, right.

This number, if you take one minus -- and I will not say it -- you will get ... it is almost three times. Three times, right? The reason why is you are only looking at those who have just made the upgrade, right, whereas the stats that you see in the joint statement are of any customer, regardless of whether or not they have just made an upgrade.

Q. Right. So what I am asking you is do you agree that this is another relevant piece of evidence in looking at switching?

A. It could be relevant in looking at switching. It is not so relevant in looking for economic substitution, because none of this is in response to a change in the relative price, and the only price that Apple is charging, of course, is the commission, right.

So none of this really informs the relevant inquiry, in my opinion, which is can you count on any iPhone users leaving the platform in response to a commission increase? None of this can answer that question.

Q. So we are going to come on to that question. At the moment I am just looking at pieces of evidence that are relevant to proportions of people that might be switching.

Can we look at {D1/459}.

Before I do that, can I just check that you agree that when we consider competition between device manufacturers, it is necessary to consider not only those that do switch in a particular period but also those that consider switching. That would be another relevant piece of information; yes?

A. Well, I think that what we want to do, ideally, is find data of those who switched in response to an increase in the commission. That would give us the elasticity that we are interested in, right? Is Apple concerned, when it goes about setting its commission rate, that if it goes -- if it raises it above -- or say a hypothetical monopolist was considering raising it above the competitive price, would there be any threat that a consumer would leave the system, a user would leave the system? I submit no.

So if we look at these switching rates, unfortunately they do not really shed light on that question.

Q. Dr Singer, I am going to come on -- I am taking this in stages. I promise you I am going to come on to that point, but at the moment I am just looking at switching rates, and I just want to establish some parameters.

A. Okay.

Q. So we have agreed that what I have just shown you is a relevant piece of information to look at, with other

information too, it is not the only piece of information, but it is a relevant piece of information, do you agree?
A. It could be, it could be important. I do not want to weight ...
Q. Do you also agree in principle that it is necessary to consider not only those who do switch in a particular period but also those who consider switching?
A. Again, not in isolation. What we --
Q. Not in isolation. Take that as a proviso. Not in isolation. But do you agree that is a relevant thing to look at?
A. But relevant for what? At the end of the day on the question of market power and market definition, we are only interested in one thing. Would they move? Would iPhone users leave the Apple ecosystem in response to an increase over the competitive rate in the commission? That is all we are interested in.
Q. Part --
A. So switching -- if you are asking me who I would consider as a candidate in the switch, just in isolation that does not really get us to the answer that we need.
Q. Dr Singer, I am responding to your analysis, and part of your analysis relies on looking at what you say are low switching rates overall. So I am going to come back to

the causation point, but I am trying to grapple with that first stage of your analysis.

So you are the one that says: oh, look, overall switching rates are very low. So all I am doing at the moment is putting to you that there are other pieces of evidence. When we are considering your evidence, a bit like yesterday, when you made a comment about: oh, privacy and security, look at these three surveys, which you then abandoned reliance on. I am putting to you there is other evidence that is --

A. Oh, I did not abandon reliance on those surveys.

Q. Let us not get into yesterday.

A. Yes.

Q. There is other evidence. You have said switching rates are low overall. I am going to come to causation. You have said they are low, and can we just agree that what I just showed you is a relevant piece of information that the Tribunal should take into account when considering your proposition that switching rates are low; yes or no?

A. I do not want to tell the Tribunal to de-weight or not to consider it. So it certainly should be considered. But Dr Hitt and I have, I think, come to an agreement on what the relevant switching rates are, and our agreement would consider everyone, not just those who recently made an upgrade.

Q. Well, getting away from your agreement, and just thinking now afresh about what is relevant, do you agree that what I showed you is a relevant piece of information that should go into the mix?

A. It is a piece of information. It does not -- it does not get at what I am ultimately interested in, which is economic substitution, and it is what it is.

Q. All right. Let us look at {D1/459}.

A. Okay.

Q. "Smartphone buyers", and if we go to {D1/459/3}, "Methodology", we see that the survey was of recent buyers of iPhones; do you see that in the left-hand column? So you can see when the survey was conducted, and you see that the survey was of purchasers of iPhones and Android devices; do you see that?

A. Yes, I see it.

Q. Right. Then if we go to {D1/459/41}, we see a graph of consumers who considered other brands, and so we can see that in the US, 37% of people who ultimately bought an iPhone also considered buying an Android; do you see that?

A. I see the number 37 above the iPhone buyers.

Q. Yes.

A. You want me to assume that what that means is that

they -- that they considered -- these iPhone buyers considered a Samsung?
Q. Yes, so when you look at the bottom, it says:
"B1: when you acquired your [model] did you consider getting a different brand of smartphone?"
So that was the question, and it was iPhone versus Android. So taking -- let us take the UK figure. So Android buyers, so the third column under the UK, you see that 51% of people who ultimately bought an Android had considered buying another brand; do you see that? Because the green is "Yes".
A. So the green is some other brand. That is what the green means? Because there is no label on this thing. Okay.
Q. The green says "Yes", do you see on the right? Green is yes, red is no.
A. Oh, mine was partially covered up. Green is yes to the question.
Q. Yes, and so we see for the UK, 27% of people who ultimately purchased an iPhone considered another brand; do you see that?
A. Let me see if I can find it. So in the UK, you want me to look at?
Q. Yes. So the first column says 27; do you see that?
A. Yes, 27% of new buyers -- or these are recent buyers?

Q. Recent buyers.
A. Recent buyers, including new buyers?
Q. Including.
A. Yes, would have considered a -- some other phone before they ultimately purchased --
Q. The iPhone.
A. -- the iPhone, yes.
Q. Do you agree that those figures need to be considered alongside the figures of people that actually did switch in a particular year in order to get a view of the proportion of customers that Apple could lose or gain?
A. Should it be considered? I do not want to tell you not to consider any evidence, so I am loath to say "Do not give this any weight".
So it is a piece of information. It does not speak to switching -- it does not speak to switching propensities.
Q. Why not? Because if somebody is considering another brand, then that is a person who Apple might potentially lose; no?
A. No, I think "considering" is fairly weak. We are trying to get up to the level of economic substitute. So I could consider a lot of things, but where I ultimately go and how loyal I am to where I ultimately go is what matters.

Q. Then can we look at {D1/1287}, and this is a survey prepared by Accent for the CMA, and you can see the date, June 2022. If we go to {D1/1287/35}, so towards the bottom of the page there is a heading:

"Whether ever owned another [operating system]"

And it says:

"Nearly half of the iOS sample (46%) and about a third of the Android sample (32%) have owned the other OS some time in the past."

That shows, does it not, that there is a relatively large group of consumers who have in fact at some point changed brand as between iOS and Android?

A. It does not -- okay, I am just going to take those stats as they are. The stat that I am interested in is among iOS customers, what portion would be willing to switch to an Android, and I cannot get that, I do not think I can get that from either of those stats.

Q. No. So your question, just responding to what you are saying, you say that the relevant question is that if there is exploitation in your iOS App distribution market, would enough consumers switch to Android to make that unprofitable; yes?

A. I mean, ultimately that is very close. I would say, when you say exploitation, just to be clear, if there was an increase in the commission rate over the competitive level, would this hypothetical monopolist experience so much defection, say, from the consumer side, as to render the price increase unprofitable.

Q. Now, yesterday in the hot tub you said that consumers need to understand the effect that commissions have on the prices of apps; do you remember that? You said that that is because consumers would only punish Apple by switching device if they considered that it was Apple's fault that prices were going up. Do you remember saying that?

A. I remember saying that, yes. If they thought that the developer was doing it on its own, they would likely believe the developer is charging the same high price on the Android system, and therefore it would be a waste of their time.

Q. But actually, Dr Singer, consumers are really only interested in the prices they are paying, are they not? They are not interested in who is at fault or punishing anyone. They are just concerned about the prices they are paying?

A. I think they ultimately are concerned about the prices they are paying. I think that is fair. But if you are looking for an impetus or some stimulant to cause a substitution, the story that you would have to tell is that the consumers are responding to a higher price that is caused by the commission increase and that they understand that mapping, and I am testifying that as long as they do not understand the mapping, it is going to be very difficult to expect that any consumers would defect and leave the iPhone ecosystem in response to, like leading with their feet, in protest, I used the word "punishing" Apple in response to this price hike.

Q. But they do not need to understand the mapping, do they? All they observe are app prices and app quality and variety, and that is what they are going to react to, is it not?

A. The problem is if they see high app prices, and they do not understand that the cause of the high app price is the commission, they are likely to figure that the high app price charged by the same developer is going to be the same high app price in the Google system, and therefore that cannot be a basis of substitution.

Q. So you are assuming that there will be no visibility as to what the app prices are on the competing platform?

A. I think you could try to get some visibility. It would not be easy. Like before you are a Google customer, I should say an Android customer, it is not obvious to me, I guess you could go to the Play Store just through the internet and see if you could detect a difference in prices, but, look, Google is charging 30%, Apple is charging 30%, so there is no strong basis a priori to believe that you are going to see differential prices. You are just going to see high prices, and you are not going to know that the commission is one of the underlying contributors.

Q. Well, if you are someone who is concerned about the prices, it does not take much to find out -- so if you are someone who spends a lot on games and in-app purchases, it does not take much, does it, to find out what the price of those in-app purchases are on other platforms. Your friends will tell you, you can go on the internet, there are all sorts of ways you can find out?

A. It may not take much, but the problem is if you go over there and Google is charging the same 30% rate, then there should be no expectation that the prices are going to be any different. This is going to be a very difficult lever, you know, that we should not count on to discipline Apple for the reasons I laid out.

Q. If Google is charging the same 30% rate, then that is probably because it is a competitive rate, is it not, Dr Singer?

A. That is not what a jury found in the Epic v Google case, but I think the Google commission is also likely to be a reflection of their market power over their subscriber

base.
Q. Let us go to Professor Hitt's reply report, so {C3/8/48}.
A. Okay.
Q. If we look at 92(b), and you will have seen this, but you can see how skewed the spending is on the App Store; correct? So a very small percentage of consumers make up a large percentage of commission, and you do not have any reason to doubt those figures, do you?
A. No.
Q. If we go to {C3/8/88}, so paragraph 168(b), here Professor Hitt is looking at the number of users who spent more than £1,000 on the App Store in 2022 alone; do you see that?
A. Yes.
Q. So they are spending, just taking stock, they are spending more in one year than the full price of their iPhone; yes?
A. Yes.
Q. You can see the percentage of users who do that, it is a tiny percentage; do you see that? It is in pink so we will not read it out.
A. I will not read it out.
Q. It is very small.
A. Yes, I see that.

Q. We can see also the App Store commission, the proportion of commissions that they account for, which is a very substantial proportion, is it not?
A. I am sorry, I will not say it out loud, but you want me to look at the second pink ...
Q. Yes. So that tiny percentage of users accounts for a much larger percent of the App Store's commissions?
A. Yes, I have agreed to that. The stat is not surprising, that you have these super-users who are spending like mad in the App Store.
Q. Then we see, if we go down to the bottom of the page, footnote 301, we can see that these players, so these gamers, are overwhelmingly making small transactions. Do you see that? So they make very large numbers of small transactions. That is what is going on, yes?
A. Yes, they appear to be hooked.
Q. So you are not disagreeing with any of this?
A. No. Unfortunately the end of the story is they are not going to find a lot of relief when they go over to the Android system who is also charging 30%. There would be no expectation to get lower app prices on Android, given that both dominant platforms are charging the same 30% commission.
Q. Well, if Apple was charging too much, Google could undercut Apple, could it not, and get people to switch,

just like Apple did to Nokia and so on?
A. I think -- so this is an interesting question. Could Google lure customers ... I guess it is complicated. Can we start off on the customer side, the developer side? Let us try the developer side, that is easier. Could Google lure developers away from Apple by competing on the commission basis, I think is the question?
Q. That is the question.
A. I think that it would be difficult to, in that the developer wants to have a footprint in both spaces. So it is going to be very difficult for an Android -- for Google, for example, to convince a developer: hey, I want you to give up on Apple entirely, just come over and set up on our space. It would be surrendering too many potential sales.
So I think for that reason, and given these aftermarkets that we talked about, I think that the competition between the two is fairly dull on that dimension.
Q. But your case on incidence, which obviously we do not accept, but your case on incidence is that lower commissions are passed down to consumers; yes?
A. On the same platform. You see, the reason it does not make sense for you right now is you cannot expect

steering by a developer to try and get you to go over to the Google platform. But if there were two -- say there were two payment processors on the iOS system or there were two app stores, then you would expect steering to try to bid down the commissions.
Q. Dr Singer, I think the point I am putting is a more simple one. If Google lowers its commission, and if you are right about incidence --
A. No --
Q. Can I just finish my question.
A. You are not right, because you are going across platforms.
Q. I am really not. You have not heard my question.
A. Okay.
Q. I am not going to go across platforms. I am going to stay on a platform.
So Google lowers its commission to attract developers over, and the developers -- you say that on that platform -- I am not changing platforms. So Google, the developers on Google then lower their prices to consumers; yes?
A. There is only one platform on Google. There is only one app store.
Q. No, you are getting confused. Please just bear with me.
A. Okay, but who -- you are lowering your price to attract

who? I do not understand. There is no competition on the Google --

THE CHAIRMAN: Dr Singer, why do we not just get the question finished. If you need any clarifications at that stage, you can ask for them.

A. Okay. Okay.

MS DEMETRIOU: So I am sticking with Google. So Google lowers its commission. So it thinks Apple is charging too high a commission. If it lowers its commission, and that lowered commission makes its way through to consumers who are buying apps on the Android system, so they are paying lower prices; yes, that is the effect of your incidence?

A. No, you are going across platforms again. You are saying if Google lowers it in order to attract developers away from the iOS? That is not the --

Q. No, I am not --

A. That is not the steering that I have in mind.

Q. I am not saying --

A. That is not the steering-based incidence I have in mind.

Q. Dr Singer, I am not saying any of that. Can you just try and listen to me again. I think you are thinking ahead to some point I am not making, so can you try and listen to the point that I am making. I am not talking about luring at this stage.

A. I am not sure you are making a point, but why do you not try it a third time.
Q. I will try it a third time, and if you will stop interrupting me, I think we will get there.
Now, Google -- I am not talking about luring, I am on one platform. So Google lowers its commission, yes?
A. Yes.
Q. Your case is that lowered commissions would be fed through to consumers; yes?
A. You have not added enough to the hypothetical now. If Google were competing against another app store on the Android system, right, if you give me that, right? You are trying to work across platforms. But if there was competition across app stores on the Android system, and if there was a low-cost platform on the Android system and a high-cost platform on the Android system, developers would have incentive on the Android system to steer Android customers -- their Android customers -- over to the lower cost platform on the Android system.
Q. Dr Singer, can I just try again. It is probably my fault, but you are answering a question which I have not put. Let me just try again. I am sure it is my fault.
Are you saying if Google lowered its commission -- take the Google Play Store. Are you saying if the Google Play Store lowered its commission to developers,

that developers would pass on that benefit to consumers; yes or no?
A. Just so I have the hypothetical. So these are developers on the Android system -- on the Play Store?
Q. Exactly.
A. Would they pass on if Google just unilaterally lowered it? Well, you cannot invoke steering in that example.
Q. No, you cannot.
A. My steering requires competition.
Q. I am not talking you about your steering. I am really asking you a very straightforward question.
A. Okay.
Q. If the Google Play Store lowered its commission to developers on the Google Play Store, is it your case that those developers would pass on that reduced commission to consumers; yes or no?
A. It is -- the incentives have been blunted severely through the example that you have given, because you want me to assume it is still a monopoly platform, so that takes away the steering-based incentives for incidence.
The second thing you have done is you have gotten the direction of the change to be a negative one, whereas we are contemplating what an increase in the commissions did for our counterfactuals.

We already know from the experiments that Dr Hitt investigated, where the small developers enjoyed a reduction, those under £1 million enjoyed a reduction. He cannot seem to detect a bunch of incidence in that experiment. That sounds kind of close to this hypothetical that she is giving me.

So I would say, based on that example, I would not expect to see a lot of incidence. There could be some incidence. But if it follows the pattern of the small business incentives, which were a decline, and did not involve steering, did not allow steering, because we still have a monopoly platform, then I would not expect a lot of incidence in that case.

Q. So you say you do not expect a lot of incidence but you would expect some? So you would expect some lowering of prices to consumers, yes?

A. Yes, Dr Hitt found some incidence, yes.

Q. If there were some lowering prices of consumers, you would expect consumers to gravitate to that platform, yes?

A. So now the best candidates for that story would be those that you have identified, the whales, if I may use that jargon, and I do not use that in a pejorative way.

If Google wanted to, say, drop the commission for game developers to, say, 10 or 15%, and game developers as a result on the Android system dropped their prices materially, that could be attractive to the whales. The problem, of course, is that it would not be attractive to the vast majority of consumers on the iPhone system because they just do not spend enough in a given year to make it worth their while.

Q. No. Okay. But thinking about the whales and thinking about the skewed figures that we saw in terms of spending in Professor Hitt's report, it is right, is it not, that it would take only a very small fraction of consumers to switch to drastically reduce commissions?

A. It could -- it could involve a small -- of course we have not seen that defection to discipline Apple of late -- of yet, and I think that, you know, part of the problem with this hypothetical is that it is assuming in this monopoly context over in Google's platform that developers would, in fact, pass through a large chunk of the commission decrease. They might find it in their interests just to sit on the cost savings. As I discussed yesterday, firms are more inclined to not share costs savings, as compared to passing along cost increases.

Q. So just going back to -- so you think there would be a small amount of incidents. We have seen that a very small fraction of consumers spend a lot of the money.

So it would be a profitable strategy, would it, for Google to reduce commissions in order to attract those whales?
A. I think we have to assume that Google understands profit maximising better than we do. That Google has not attempted this yet, tells us that it would not be profitable to do so.
Q. Well, it tells us it is a competitive price, does it not, Dr Singer?
A. No, it tells us that Google does not think it could do better than 30%. 30% is the best that Google can do.
Q. Now, thinking about the group, the very tiny group of consumers that you and Professor Hitt have referred to as "the whales", that group is likely to be thinking about the quality and cost of the app phone when purchasing their phone; correct? Of the App Store, sorry, of the App Store when purchasing their phone. They spend a lot, so they are going to be most tuned in to questions of the quality and cost of the App Store when they are purchasing their device; do you agree with that?
A. I think you mean to say the price of the apps and the in-app purchases within the App Store?
Q. Yes.
A. Because there is no price to the App Store for

consumers. I am just trying to help that along.

Q. That is what I mean. Yes, that is what I mean. Do you agree?

A. So let me hear it again.

Q. Yes. So that small group of consumers who spend a lot of money on small transactions are likely to be thinking about the quality of apps and the cost of apps, including in-app purchases, when purchasing their phone; correct?

A. I think that for the whales, they would be more likely to look forward and see what their prices would be across the two platforms when they are making the purchasing decision. I think that is fair.

Q. Okay. If we go back to Professor Hitt, so {C3/8/86}.

A. Okay.

Q. So paragraph 167, we see that Professor Hitt refers to the Accent survey for the CMA we looked at a moment ago, finding that:

"... 10 percent of iPhone owners considered the price of digital content available on the device as important in their decision to purchase the device."

Yes? You do not disagree with that figure, do you?

A. I am just trying to digest. Hold on. (Pause).

Yes, so 10% considered it. 90% did not even consider it.

Q. The 10% that considered it are likely to be those users who spend a lot of money on in-app purchases; correct? The whales.
A. We do not know. It is a reasonable -- that is a reasonable inference, but I do not think we know that.
Q. They would be most incentivised to be --
A. If we could help them, they should be, but we do not know if that is the same 10%.
But, you know, when they look out at the prices on the Android -- on the Play Store, I would expect they are not going to see significant savings as the same developer is facing the same commission.
Q. Now, when we are considering the position of this group of consumers, can we look, please, at {C3/4/172}. Again, the figures are confidential.
A. Okay, I will not say them.
Q. What we see here are the figures for the top 25 apps and they are in three categories. So we have all apps, game apps, and video streaming apps; do you see that?
A. There is a lot going on here, so let me just try to --
Q. Yes, we have app category on the left, and that is subdivided into "All apps", "Game apps", and "Video streaming apps". Then if we focus on the "Top 25 by consumer spend".
A. Okay, that is the first row, okay.

Q. We see the figures in the first column for those that offer digital content, do you see the "In iOS App" column? Then we see in the third column how many of these apps allowed digital content to be purchased outside the iOS App; do you see that?
A. I do. I still do not know if I understand yet what these figures mean, and I do not want to say them out loud.
Q. No. But what we see here is that, without saying the figures out loud, that for these top 25 apps by consumer spending across all categories, and across gaming, in fact, and across video streaming, transferring content between iOS and other platforms is ubiquitous.
    Look at the last column, so:
    "Paid content can be transferred from outside of iOS App to iOS App."
    We see the percentage figures there. This is for the top 25% of apps. Again, you are not in a position, or you do not disagree with these figures?
A. If I am understanding the table right, this would include a big developer, like Netflix, who has got the power to demand that they be able to evade the tax and bring subscribers back to the phone by making purchases outside of the App Store.
Q. Yes, include Netflix but also 24 other video streaming

apps?

A. It just says "top 25". Are these just video streaming?

Q. No, the third category, do you see?

A. The third category, yes. But the top 25 would be the biggest ones, they would include Netflix.

Q. They would.

A. These are the ones that are able to effectively achieve a workaround and evade the tax by virtue of their power to get their customers to follow them over to their website. Now, the biggest ones can do this because they have big brand names, but as I say in my report, the Reader Rule and the multi-platform rule are in part weakened by Apple's insistence that they still prevent in-app communication. They prevent the steering from inside of the app.

So what happens is large developers like Netflix are able to induce and get their customers to follow them over to the Netflix website. But if you and I were to create an app, we would have a very difficult time, in the presence of this prohibition of in-app communication, in-app steering, to hope that one of our users would follow us over to one of our websites.

So it makes sense that for the biggest, say, video streaming apps in the category, they are successfully able to take advantage of the Reader Rule.

Q. Yes. Let us just look at -- because you have mentioned now anti-steering a few times, so let me just go on to that, and then I will come back to what I was going to do, but let us just take it slightly out of order.

So you ... yes, you in your report -- let us start by looking at the way you characterise the anti-steering rule in your report. So if we go to {C2/8/72}, and if we look at your footnote 313, you refer to clause 3.1.1(a) of the guidelines, and we can see that you quote from it there; do you see that?

A. Yes.

Q. Now, we know that the multi-platform rule came into effect in 2018, but aside from that particular change, is it your position that this kind of prohibition on buttons and links and calls to action within the app itself has had essentially the same effect throughout the whole period?

A. Oh, it is my contention -- I do not know if it still reads the same post 2018, but it is my contention that in the presence of prohibitions of in-app steering that the multi-platform rule cannot be counted on to discipline Apple's pricing of its commission. That is, it would be more potent if not only the biggest players but also the mediums and the smalls could avail themselves of this option.

But they are prohibited from steering the customer to their website inside of the app. They could go and buy a billboard on the road, but they cannot communicate inside. So that gives a real advantage to someone like Netflix who has so much power and brand loyalty over their customer base that they can avail themselves of this rule -- of this exception.

Q. Dr Singer, can I just ask you, because I am really doing badly with time. I know you want to make all of your points, and your barristers will make the points at the end, but I did just ask you a really simple factual question. Every question I ask is not an opportunity, I am afraid, to repeat all the points in your report, because we are going to be here for days if that is what you do.

Can we go, please, to {E/7/11}, and I just want to look at the version of the guidelines that was in effect -- that is in effect in April 2024. So you submitted your report in May 2024. This is the provision that you referred to in your report.

So if we look at the first bullet and the final sentence:

"In all other storefronts, apps and their metadata may not include buttons, external links, or other calls to action that direct customers to purchasing mechanisms other than in-app purchase."

That is the provision you cite, correct?

A. I cannot go back and forth between documents, but if you want me to accept that this is the one, and this is the document I cited from, I can accept that.

Q. All right. Then if we go over the page {E/7/12}, 3.1.3 "Other Purchase Methods":

"The following apps may use purchase methods other than in-app purchase. Apps in this section cannot, within the app, encourage users to use a purchasing method other than in in-app purchase, except as set forth in 3.1.3(a). Developers can send communications outside of the app to their user base about purchasing methods other than in-app purchase."

So the last sentence specifically provides that developers can send communications outside the app about other purchasing methods; correct?

A. Yes, through a less efficient channel you can try to signal to your customer base that you have got lower prices outside of the app.

Q. That is not something that you have addressed in your reports at all, is it?

A. No, I think I did address this in my report. The thesis in my report was that the anti-steering --

Q. I know the thesis, Dr Singer. But did you address this particular point, that developers can, outside of the app, steer consumers to pay to use other channels? Have you addressed that particular point and, if so, where?

A. Well, I have always been cognisant of it, which is why I was saying you could do it on a billboard, if you would like.

The point is that this is a less efficient way of communicating with your customer base. You would like to alert them inside of the app, this is how you have developed a relationship with the customer, you would like to do this, but you cannot, because of this rule.

Q. Then if we go to -- if we look at -- if we look at the reader apps in -- so we need to scroll up, please.

3.1.3(a), so:

"'Reader' Apps":

"Reader apps may offer account creation for free tiers, and account management functionality for existing customers."

So pausing there. The reader app may allow for the user to create an account with free tiers. So that is a means, is it not, by which the developer, within the app, can set up a user with an account; correct?

A. Sorry, so what is the question?

Q. So the question is that this provides a means by which the developer can, within the iOS App, set a user up with an account?

A. I can only read the language that I have in front of me, and it says:

"Reader apps may offer account creation for free tiers ..."

Q. Yes. This is not something you have addressed in your report, unless I am mistaken?

A. I do not think I have invoked this line in the report.

Q. No.

Then we see again under "'Reader' Apps":

"Reader app developers may apply for the External Link Account Entitlement to provide an information link in their app to a web site the developer owns or maintains responsibility for in order to create or manage an account."

So just pausing there again. Within the reader app, a developer may apply for an external link account entitlement, and that allows the developer to provide within the app a link to an external website where the consumer's account is managed; yes? Do you agree?

A. That is what the language says. I am not sure if this was the -- that this was the same guidance from the introduction of the Reader Rule. You said this is the 2024 version?

Q. This has been in place since at least September 2020.

Sorry, this is February 2023, this one. This has been in place since at least February 2023.

A. Right. I have not followed every permutation of how the exceptions worked for the Reader Rule over time.

Q. That is all right. But can we agree -- can you agree now that this is another way within the app that the developer can steer consumers to subscribe to paid content outside the app?

A. Well, he can apply for it. I do not think there is a guarantee that you are going to get accepted. But you can apply for it, at least as of 2023.

Q. Well, you have got no idea about whether or not a developer would be accepted, have you? You have not looked --

A. The language just says "may apply for it".

Q. Are you again -- is this -- are you making a lawyer's point?

A. I think you are vastly overreacting. I am just reading back the plain language. It says "may apply".

Q. But then you said "I have got no idea whether they are going to get accepted". But this is not something that you can help the Tribunal with at all, is it?

A. Help them read? No.

Q. Right, okay.

So can we -- just going back to my question, do you agree that this is another way within the app that the developer can steer consumers to subscribe to paid content outside the app?

A. What I would agree to is that, starting from the date that this exception was allowed, that -- just reading the plain language, that if you were to apply and if Apple were to accept your application, then you could -- let me see what it says:

"... provide an informational link in their app to a web site ..."

Q. Yes. So if a developer wants to steer a consumer to pay for content outside the iOS App, this would be a mechanism for doing it; yes?

A. It could be a mechanism as of 2023, yes.

Q. Now, I want to just ask about some different types of apps in turn, and start with games, and let us start --

Oh, I do need to go back, do I not. I missed some material.

We will come back to this, but I got distracted by your reference to steering, so I am going to go back to what I was on before.

A. Okay.

Q. I just want to consider the practicalities of moving apps and moving purchased content, and the first question I think will be non-controversial, which is

that virtually all apps are free to download; correct?
A. I give the statistic in my report, but a very high percentage, and that is because the developers have figured out that you want to get the person hooked on your product first and then charge them later, after they have become accustomed and familiar, and hopefully addicted to whatever you are selling. If you put a price on the front end, it creates a friction, and it might make it difficult for you to get a foothold in the space --
Q. So is the answer "yes"?
A. Well, you said "virtually". I just want to -- I gave the exact statistic. I do not know -- I do not know what the exact statistic is, but a very small number of apps charge for download.
Q. All right. Now subscriptions, such as with Netflix or Disney Plus, or the FT, they are tied to a user's own account and so they are transferable across platforms; yes?
A. I am not sure what you mean by "transferable". But Netflix and these other subscription services now enjoy exceptions because of the Reader Rule, and they also enjoy lower commissions in the second year of a subscription.
Q. You can transfer them across platforms. So if you

switch phone to an iOS phone, you can transfer your subscription over easily?
A. I do not know about easily, but I think you can transfer your plans over, for certain plans across -- there are certain apps and purchases that will be stranded when you make the switch. There are others that will come over when you make the switch.
Q. It is easy, is it not, to move data from one device to another?
A. I just cannot --
Q. You do not know?
A. I cannot agree or disagree. "Easy" is just -- I worry about that word. I think for me it could be very hard, but for someone who is technically savvy it might be easy.
Q. The question of thinking about how much is transferable -- in fact, let us go to your report at {C2/8/39}. So paragraph 63, you cite the Goldman Sachs report here, do you see that, and the figure of $79.85.
A. Let me just ...
Q. So you say:
"Further evidence of Apple's incentive and efforts to increase lock-in can also be found in various financial analyses conducted by outside investment firms."

Then you refer to a 2013 Goldman Sachs report that calculates the explicit switching cost of $79.85; do you see that?

A. Yes. I presume these are out-of-pocket switching costs. Yes.

Q. Well, you relied on it. So do you know?

A. Well, I do not think that Goldman Sachs is necessarily taking into consideration all of the switching costs that I had in mind in terms of time value, one's time value of money, learning the new system, coordination costs. I think these are the ones that they could quantify.

Q. Right. Now, did you see, or have you seen the transcript of Mr Schiller's evidence when he was asked about this?

A. No.

Q. So let us look at that. So that is {Day7/124:16}, and if you take it from line 16, so I was re-examining him at this stage, and I went back to the Goldman Sachs report. Can you just read from line 16 to over the page, and then we will go over the page once you have finished.

A. Okay. (Pause).

I see it. Okay. I am finished.

Q. Then if we go over the page, thank you. {Day7/125:1}.

If you read that page. (Pause).

A. I have read it.

Q. Then I am afraid there is another page for you to read.

A. Oh. Would you mind going back? I did not know that I was going to keep going. Just one second, I ...
(Pause)
Okay, I am ready to go. {Day7/126:1}.

Q. So just taking it up from line 14, so I say -- I asked him:
"Question: So can you comment on how the cost of replacing apps for someone switching to Android might have developed since 2013?
"Answer: I believe, for the vast majority, it has minimised to near nothing. Applications either are not paid for upfront or they are available on both and you can log in and get what you already paid for because now there are cross-platform Multiplatform Rules on all platforms. So I think that category has ... gone away."
You are not in a position to dispute that factual evidence, are you, from the Apple executive?

A. As to whether, say, the $25 -- I am not sure I am following the $50 one. I had the $25 one in my head.

Q. So the $50 one -- so the largest component of the $79 in the Morgan Stanley report was a $50 cost, and that was of replacing apps that had been purchased.

Mr Schiller's point is, well, that has disappeared because most apps now, unlike in 2013, are free to download. That is one of the reasons why that has disappeared. So paid apps have almost entirely disappeared, so we agreed that that was correct.
A. No, but --
Q. So he is saying that figure has now disappeared.
A. I think the relevant question is at what point in time did it disappear relative to the Class period?
Now, the period that we are looking at for damages here, 2015, right --
Q. To now.
A. To now. So I cannot -- I do not know when he thinks that cost went away, from that testimony.
Q. Well, Dr Singer, it is really your evidence that I am challenging, because you refer to the Morgan Stanley report without distinguishing between different time periods, and what Mr Schiller has said is: well, none of that is really relevant now because these costs have disappeared. So when is it you say that the costs have disappeared?
A. Well, I did not try to withhold the date of the Morgan Stanley report. If we could go back to my report.
Q. Yes, it is at {C2/8/39}. Sorry, the Goldman Sachs report.

A. Oh, Goldman Sachs report.
Q. Yes, it is my mistake.
A. Right. So this is from June 2013. I mean, I think it can both be accurate as of that date, and it can -- that component can be smaller as of today. I think those both can be true.
Q. The truth is that there are not any more, really any switching costs that are material in the context of a device that you are paying £1,000 for?
A. No, that is not true. He was -- your testimony, or Mr Schiller's testimony, spoke to those two components of the out-of-pocket cost that Goldman Sachs estimated in 2013.
Q. Yes, and one --
A. But then you wanted me to go from that to there are no more out of -- there are no more switching costs. That is quite a leap.
Q. Well, it is not much of a leap, when you think that the biggest --
A. No, because it is one component. These are the out-of-pocket expenses, right, and that is one component of multiple components that I listed, the switching costs.
Q. So you are referring to the explicit -- you are referring to explicit switching costs being $79.85, so

you rely on Goldman Sachs for that. The largest component of that figure was a 50% cost of replacing apps that have purchased, but that has gone. A further $25 was payment for a program called iTunes Match, but that is now irrelevant since music is streamed.

So the totality, or near totality, of that figure has now disappeared, has it not?

A. Well, according to Mr Schiller, I am not really in a position to say yes or no, but I think a relevant inquiry, follow-on, would be when did that cost disappear relative to the Class period? Did it disappear in 2015? It is not clear to me from the testimony. He says "now it is gone". But to me the relevant question is: okay, were those costs real in 2015, 2016, 2017, et cetera.

Q. You do not know, do you?

A. I certainly do not know from Mr Schiller's testimony. He is the one who is trying to assert that they disappeared. I think it is relevant to ask, crediting his testimony, when does he think they disappeared?

Q. No, Dr Singer, I am looking at your testimony, and you have put forward the Goldman Sachs report from 2013 as indicating that there are switching costs of $79.85. You have not qualified that. So you have referred to it as relevant evidence. You have not said: oh, it is now out of date. So did you investigate at all whether that figure remains relevant for any of the claim period; yes or no, did you investigate it?

A. I think it was a reasonable inference for me to cite a 2013 study to speak to the claim period, given that the claim period started in 2015. You are now confronting me with an assertion by one of your witnesses that it went away. I am saying, fine, I cannot really contest that, but it is relevant to know when it went away.

Q. So I am asking you whether you investigated that question yourself; yes or no?

A. I could not -- I cannot roll back time and go back and investigate it now. This is the first time I heard Mr Schiller make that --

Q. I am not asking you to. I am asking whether you investigated --

A. I think you are. Because I am hearing for the first time that Mr Schiller disavows that. He says it has gone away. I do not remember Dr Hitt saying it went away. If Dr Hitt had said it went away, I would have investigated it.

THE CHAIRMAN: Ms Demetriou, it is 1.05.

MS DEMETRIOU: I am so sorry.

THE CHAIRMAN: No, no, it is fine, and I did not want to stop you, but I am not sure you are going to get an awful lot further. I think we can understand where the battle lines are. So if that is convenient?

MS DEMETRIOU: It is convenient.

THE CHAIRMAN: Then it might be useful to take the break now.

Just in terms of how you are doing, and as you said before, you might not be going as fast as you would like. As far as we are concerned, it does not really matter terribly, other than that you have got your time in the timetable and there is not going to be any or much more than that. So really, it is an indication of how much of a problem you think that is at the moment.

MS DEMETRIOU: Well, I think if we carry on with lengthy answers it is going to be a problem, and I would ask if Dr Singer could just -- where the question is a straightforward question, if he could refrain from trying to ventilate his evidence more generally.

I took the point earlier about the lack of clarity when I am going to documents, and I hope I have responded to that.

THE CHAIRMAN: Yes. I think part of the difficulty is that where it is clear that you are making a point for a purpose, the question really is whether Dr Singer is entitled to respond to that purpose. Obviously there is a bit of a grey area there. You might well say that is something that can be picked up in re-examination, but we cannot pick everything up in re-examination. So if he thinks he has been put in a position where his evidence -- an acceptance of something from you is actually curtailing or impinging on views he is expressing, then he may want to make that clear, and I think he must be entitled to do that.

MS DEMETRIOU: No, of course. Of course he is entitled to do that. But what I am finding is that equally when I am asking relatively uncontroversial questions, which are the building blocks to a proposition, that that is taking much longer than would be desirable.

THE CHAIRMAN: Yes. I think, to be fair to everybody, it is a difficult exercise to do on the --

MS DEMETRIOU: Yes.

THE CHAIRMAN: -- is it not, and obviously there are lots of ramifications for some of the points you are making, but I think we all understand we need to get through it as quickly as possible.

We obviously have heard the points you have made, Dr Singer, there is no need to repeat them, and if you want to say "Subject to a point I have already made", then do that, and there is no need to repeat it once you have made it. That might help a little bit. We probably do need to try and move it a bit faster, Dr Singer, but equally if you feel that your answer is going to be taken out of context then you need to say so, and we will just have to manage that.

MS DEMETRIOU: Thank you.

THE CHAIRMAN: All right, we will resume at 2 o'clock.

(1.08 pm)

(The short adjournment)

(2.01 pm)

THE CHAIRMAN: Yes, Ms Demetriou.

MS DEMETRIOU: Dr Singer, you made some points in your report about switching. A couple of points you made were about repurchasing apps and also learning to use a new operating system.

I just wanted to show you -- you cite in your report the CMA's market study, but I want to show you the Accent consumer survey done for the CMA at {D1/1287/71}.

If we look at figure 37, that says:

"Overall, how satisfied or dissatisfied were you with your experience of switching from an iPhone/Android smartphone to an Android phone/iPhone?"

You can see that the majority, so 54%, were very satisfied, and the vast majority were satisfied. So either very satisfied or fairly satisfied; yes? So only a very few were dissatisfied?

A. Possibly -- I will just note that this is combining all switchers, so it is looking at surveying both those who went in the direction that we care about, iPhone to Android, and the switchers who went from Android to iPhone. So I would expect that if you upgraded, you went from Android to iPhone, you would be happier. So I do not know how informative this particular graph is.
Q. Well, there is nothing in here to suggest that people find it difficult to switch. It is quite the opposite.
A. Difficult? I think this is with your experience.
Q. Let us look at figure 38.
A. Okay.
Q. {D1/1287/71}. So the main reasons given were "Easy process", that is 26%, "Phone is user-friendly/easy to operate", and "Phone is better quality ..." 16%. You can see there "Easy to transfer data", 14%.
Then we see "Locked in to new/previous system" is only 3%; do you see that? So, again, this is showing that in fact people view the process as easy and very few people see themselves as being locked in to a system; correct?
A. I do not think so. If I am understanding it right, we are only looking at those who gave a satisfaction rating. It says "Reasons for satisfaction rating". It does not seem like of all those surveyed.

Q. No, it is of those who switched. So it is not those who were satisfied, because obviously we see some are dissatisfied. It is those who switched. So it is looking at those who switched and it is asking them: when you switched, were you satisfied with the process or dissatisfied? The vast majority say they were satisfied and that it was easy; correct?
A. Oh, I am now seeing the red. I had only looked at the first -- so the red also include why they are dissatisfied.
Q. Exactly.
A. Okay. The question again, sorry?
Q. So the question is that the vast majority who switched found it to be an easy process, found it easy to transfer data, and only a small minority found themselves -- felt that they were locked in to the previous system?
A. I am just looking, it says "Easy process" 26%, and you want me to accept that that is the vast majority?
Q. No, I want you to look at both charts in combination, Dr Singer. So going back to figure 37.
A. Okay.
Q. We see that the vast majority were very satisfied or fairly satisfied; yes? So that is looking overall at whether or not they were satisfied with the switch.

Then we break it down into the reasons, and so they give, within those -- within "very satisfied", you then see why they were very satisfied. We see the reasons over the page.

So the question I am asking you is: you accept, I would have thought, that these charts show that of people who switched, the vast majority were satisfied with the experience of switching and only a very small minority were dissatisfied; yes?

A. I think I will grant you, in 37, the first figure, because the one on the right is switched to iOS, which I am not as interested in, but I will grant you that the one on the left, which is the combination of switch to Android or switch to iOS, and if you sum up "very" and "fairly", you get to the majority, for sure.

Q. Looking at both of them, the proportions are not very different, are they?

A. Right. But we do not get to see the ones who switched to Android exclusively.

Q. Then over the page again {D1/1287/72}. Just, sorry, before we do that, switching to iOS is relevant, is it not, because Apple can win business?

A. Not from the perspective of the SSNIP or the HMT. We are thinking about where people would go if Apple were to exercise market power. So we are not interested in what drives people to come to iOS from Android or what Android sensitivities are, that is the wrong direction.

Q. If we look at this page here, so can we scroll so we see figure 39. So:

"How satisfied or dissatisfied were you with the following when switching from an Android phone/iPhone to an Android phone/iPhone."

So the first one:

"Transferring music from my old phone."

That is not really relevant now, is it, because everyone streams music?

A. I would suggest that transferring music has become less important over time. I do not know what fraction are actually still downloading music, but ...

Q. Yes. No, that is fair. Then:

"Transferring data from my old phone."

We see again the vast majority of people were satisfied with that process and only a tiny proportion were dissatisfied, yes?

A. I think if you add the "very", if we are looking at the same row, the "very" of 43 to the "fairly" of 26, you get to the majority, yes.

Q. Then:

"Using a new operating system."

Again the vast majority on that basis, if you add

the "fairly" and "very", were perfectly happy with that experience; do you see that?
A. Yes. Now these were, of course, among the actual switchers. The problem, of course, is if you ask those who have not yet switched or would not even contemplate switching, you might get very different answers. That is, they might just be afraid of a cost that could be exaggerated, in their mind, from what the actual cost is going to be.
Q. No, but the point you have made in your report is in fact it is costly and difficult, and this evidence contradicts that, does it not?
A. No, I do not think it contradicts it. I think I stand by what I said in my report: it is costly and difficult.
Q. Right. Now, can we go, please, to {C3/8/95}. Again, this is confidential, so neither of us are going to read out the figures, but I just want to look at what -- so looking here, we are looking at percent of developers, do you see that at the bottom? What we see here from this chart is that tiny numbers of developers are associated with very significant proportions of the commission that Apple collects; do you agree that that is what this is showing?
A. Yes. Yes, this comports with my understanding that -- yes.

Q. Now, so it is right, is it not, that even if just a handful of the biggest developers switched a small fraction of their commerce away from iOS, that would have a large impact on Apple's commissions?
A. It could, but it would make no sense for them to do so, as I said before. They would be abandoning this very wealthy subscriber base.
Q. But if they did, it would have a big impact, yes?
A. If they made a bad decision, in my view, they could inflict not only pain on themselves, but pain on Apple.
Q. Yes. So what I am asking you is not whether they abandon Apple, but whether they switch their commerce to a different platform, so, for example, under the multi-platform rule. So if a handful of the largest developers switch some of their commerce to a different distribution platform, that would have a big impact on Apple's commissions; correct?
A. You might have to help -- I am just struggling. Which distribution platform are you speaking of? Are you not talking now --
Q. Their website, for example.
A. Oh.
Q. So under the multi-platform rule, if you have a big gaming company, and it switches -- it steers consumers to their website to make in-app purchases, you would not

need many developers to do that. You could take -- just some of the big developers doing that, even for some of their commerce, would have a big impact on Apple's commissions?
A. I mean, in theory anything could happen. We have actually looked at what happened in in-app activity on the App Store under the multi-platform rule when big developers left and we saw there was no diminution in activity.
Q. That might be because the price is the same on those other platforms; yes?
A. Oh, it could be for a lot of reasons.
Q. Now, and just like with consumers, those developers that pay the largest commissions would have the most to lose, would they not, from an increase in the commission, and so the most reason to switch, if they can do that, to switch transactions away, if they can do that?
A. Just to be clear, switch transactions to, say, their own website?
Q. Yes, for example.
A. If they could -- if they could pull it off, certainly you would like to go to your own website. It is difficult to do that, unless you have a certain amount of brand loyalty and name recognition.
Q. Now, some of these games companies are really big

businesses, are they not?
A. Yes.
Q. So Supercell, which is the developer of Clash of Clans and Brawl Stars and Clash Royale, Tencent, the Chinese technology company, acquired 81% of Supercell in 2016 for $8.6 billion. It is a huge company, is it not?
A. Yes.
Q. Tencent is the world's largest video game vendor, is it not?
A. I know it is up there. I do not know the rankings.
Q. Take it from me that in 2023 it had revenues of $86 billion, and that does not surprise you, does it?
A. No.
Q. Clash of Clans is available on Android, iOS, and PCs, is it not?
A. Yes.
Q. It generates revenue for the developer by selling in-game currency; yes?
A. Most likely. Yes. Yes.
Q. If we look at Professor Hitt's report at {C3/4/62}, so paragraph 89, the figures are confidential --
A. Okay.
Q. -- but we see here:

"... Supercell's Clash of Clans ... generate revenue through the purchase of in-game currency ... generating a respective ..."

It is the second figure, so that is just the UK in consumer spend on the App Store since 2008.

Are you aware that Clash of Clans offers its in-game currency both on iOS and on other platforms?

A. Yes.

Q. If we go to {D2/256.2}, so this is the preview page for Clash of Clans on the App Store, and just while we are on this page, can you see at the top that it says:

"... Offers In-App Purchases."

So information about in-app purchases is presented on the App Store itself; correct? Do you see that?

A. I do not -- I am sorry, I just do not understand the question. All I can say is that it says it is free for download but it offers in-app purchases.

Q. Exactly, and we see that on the landing page in the App Store. But if we go to {D2/256.2/4}, we then see the in-app purchases that are offered, and we see Pile of Gems is £4.99 and Pocketful of Gems is £0.99, do you see that?

A. Is this the price for the in-app on the App Store?

Q. Precisely.

A. I just want to make sure. I am sorry.

Q. Then if we look at an extract from the Clash of Clans website taken in January of this year, so {D2/965.2/1}, and if we go to {D2/965.2/2} and can we zoom in. So we see the same purchases at the same price, and so Pocketful of Gems is 99 pence, Pile of Gems is 4.99. So those purchases are the same price on the website and on iOS, yes?

A. This particular developer did, yes, and I know that Dr Hitt identified a handful like this as well.

Q. So this large developer is able to sell precisely the same product in different channels; correct?

A. Yes.

Q. It really could not be easier, could it, Dr Singer, for a consumer to see exactly what they are paying for and to compare prices?

A. Well, there is no way for this developer to communicate to the user inside of the app what the prices are outside of the app. They would have to go looking for it.

Q. No, but it is a huge company, and so there is every possibility -- a huge company, no doubt with a huge marketing budget, so it has every opportunity outside the app, does it not, if it wanted to sell these products for a lower price, to advertise that fact.

A. They could advertise that fact. It would be a less efficient way of letting them know. It would be a less potent way of letting them know. But I will grant you that given the rules of the game, the opportunities for this type of steering are greater for the large developers than for the small. This would have brand name recognition.

Q. The large developers account for almost all of the commission; yes?

A. Yes.

Q. Now, let us go, for completeness, to {D2/965}. This is the Clash of Clans website in February 2024. If we go to the bottom of page 2 {D2/965/2} and can we scroll. Can we have {D2/965/2-3} side-by-side, please. See if that works.

So there is a promotion, do you see, 10% more. So the prices are the same as we have seen before, but there is a promotion of 10% more?

A. I have got two panels. Which panel would you like me to look at? I am sorry.

Q. It is difficult -- it is actually cut off. I do not know if we can scroll to see the bottom of page 2 or whether it is just cut off in the piece.

Never mind. So my point is that there are -- there is a promotional offer here where the developer is offering 10% more of the coins for the same price.

A. On which -- on the App Store or on its own site?

Q. No, on its website.

A. Its own website. It is offering -- it is making a more attractive offer --
Q. A more attractive offer.
A. -- on its own website?
Q. It is.
A. Okay.
Q. So presumably, by doing that, it decided it could drive revenues by offering a promotion, right?
A. It could try. It could try to get people excited. It could inform them, if it could steer them off the App Store they would be rewarded.
Q. Now, Roblox is publicly listed on the New York Stock Exchange, is it not?
A. I believe so.
Q. Let us go to its Form 10-K for 2023, so that is at {D1/1806.1/97}.
A. Okay.
Q. We can see -- I think we need to scroll to the bottom of the page. Sorry, {D1/1806.1/191}. Thank you. This is the start of it and then I want to go to page 191. Thank you. Yes, this is the one.
So we can see that the 2023 revenue, we can see that at the top, is nearly $2.8 billion; yes?
A. Yes.
Q. Then if we go to {D1/1806.1/124}, so halfway down the

page, we can see that under the second of the bold headings, for the year ended December 31, 2023:

"30% of our revenue was attributable to Robux sales ..."

So that is their virtual currency; correct?

A. Yes.

Q. So 30% was attributable to Robux sales through the Apple App Store:

"... and 17% of our revenue was attributable to Robux sales through the Google Play Store."

So that is about $1.3 billion through these two stores, I think you can take it from me on the maths.

A. Okay.

Q. So that is just under half of their revenue.

If we go to page 105 of this document {D1/1806.1/105}, we can see, when you look at the last pie chart, that 80% of usage is on mobile; do you see that?

A. No, I do not. Where is -- oh, 80% of it is on mobile.

Q. Via platforms on mobile.

A. Yes, which means they have a footprint on desktops as well. Consoles. So they are selling in lots of different complementary channels.

Q. They are. We can infer that a lot of usage on mobile is being funded by transactions that are not through the

App Store or the Play Store, because we saw that, combined, Apple and Google have about 40-something percent of Robux purchases?
A. Well, this is a breakdown of our users. I do not know if this is revenue-weighting. This is number one. I just want to see. I just want to make sure you are doing an apples to apples, no pun intended, comparison.
Q. So this is percentage of users.
A. Right, which may not reflect the percentage of revenues.
Q. I think that is the point I am trying to make. So what we see is that Roblox has succeeded in creating a way to transact with iOS users other than through the App Store and IAP; yes?
A. Other than through the App Store and ... Did you mean to say IAP, did you mean Android?
Q. No, the App Store.
A. Okay, other than the App Store.
Q. Yes.
A. Yes, well, we saw that they also do it through the Play Store, right, that was the previous page, I will grant you that.
Q. No, no. Sorry, my question was: they found a way to transact with iOS users other than through the App Store; do you see that? Because we have seen that -- if we go back, let me take it more slowly.

So if we go back to page {D1/1806.1/124}.
A. Okay.
Q. So we can see here that 30% of the revenue was attributable to Robux sales through the App Store and 17% through the Play Store, yes? So together that is 47%.
A. Right.
Q. So that is about 1.3 billion through those two stores. Then we take the figure of 80% of usage is on mobile. So lots of usage on mobile must be funded -- must be people buying prepaid cards or a subscription from the website, correct? Because 80% of the usage is on the mobile, and only 47% of the in-app transactions are through the App Store or the Google Play Store.
A. Well, so, again, you are comparing apples and oranges. But for the hypothetical, I can just assume that these numbers can be mushed up against one another. They cannot, necessarily. But I can just assume that you have got statistics showing that Roblox is able to consummate some transactions among iOS users outside of the App Store. I can just assume that for your hypothetical if you want me to assume that.
Q. Well, it is not a hypothetical, I am just looking at the figures. It looks like quite a high proportion of what is going on is -- so there is a high proportion of

usage, which is on mobiles. But quite a high proportion of that is not transactions on the App Store or the Play Store, and so the reasonable inference from those figures is that people are playing the game on the App Store or the Play Store, but paying for the in-app -- paying for the purchases on the website or somewhere else; correct?

A. I think somewhere else. I think it is reasonable that some of them are, for sure. I do not know if we can do the maths with these stats, but some of them are. I do not dispute that you could do it. The question is, what is the most natural way to do it? If someone is playing on their iPhone and they want to consummate a purchase of a sword, it is a bit of a pain to say: hold up, stop what you are doing, go get the sword from the website, right? They would just prefer to consummate -- that is the most natural place to consummate the transaction.

Q. Well, we have seen that consumers can actually purchase large bundles of Robux, right? So they do not have to purchase an individual sword each time. They can purchase large bundles of Robux, and they can even subscribe to a monthly subscription. So it is not actually very difficult to persuade them to log onto a website to make a large transaction, is it, if that saves Roblox lots of money?

A. Apparently users continue to make these purchases through the App Store even at the higher commission rate, and that is telling me it is more natural, it is just easier to do it inside of the app when you are on your iPhone.
Q. Well, until very recently Roblox chose to charge the same price for Robux, irrespective of what platform you buy from. So it was not even trying to shift commerce away from the App Store. That suggests, does it not, that Apple's 30% was a competitive price for it to pay?
A. No. No.
Q. Well, it is a huge company. Let us look at its marketing budget. So {D1/1806.1/191} of this document, and if we look at sales and marketing. So for 2023 alone, that is a few lines down, "Costs and expenses", it is the last item, "Sales and marketing", it was nearly $150 million in 2023 alone. It is a company with a big marketing budget, is not?
A. Yes.
Q. So if Roblox thought it was going to be profitable, if they thought that Apple's commission was too much to pay, and they could make lots of money by persuading iOS consumers to pay for those transactions on its website, then that is something that it would have -- it has the budget to advertise and persuade consumers to do

that?

A. It has the budget to advertise. They are just prohibited from advertising from within the app. When I say "advertise"; they are prohibited from informing the user there is a lower cost option outside of the app.

Q. Now, very recently, in November of 2024, Roblox began offering lower prices, so a 25% discount, online for Robux. If we go to {D1/1806.1}.

A. I am sorry, is that 25% lower than what they were charging on the App Store?

Q. On the App Store.

A. Okay. Well, that is at least consistent with an effort to steer.

Q. So it is consistent with an effort to steer, and presumably the reason why they have done this is because they think they can make money in doing it; yes?

A. That is a reasonable inference. Whenever a firm does something, I like to assume that they think they can make money, yes.

Q. Now, let us go to -- now, it is right, also, is it not, that game developers can substitute between monetisation strategies that attract commission and monetisation strategies that do not attract commission; yes?

A. They can substitute, they can do both, and they can do neither.

Q. So let us go to {C3/4/280}, and this is an exhibit to Professor Hitt's -- in Professor Hitt's report. So I am not going to read the figures, but you can see for games, the percentage -- this is the top 20 -- this is the top 20 games.

A. Okay.

Q. You can see the percentage of the top 20 games that are monetised through ads only; do you see that?

A. Yes. I will not say it out loud, but I see the number, yes.

Q. Yes. Then the very final number is through ads and other monetisation strategies. So most big games are in a position, are they not, to substitute between these two ways of raising revenue?

A. Well, you have put it as if they are -- "substitute", as if they are an either/or. But that is not necessarily what the data is telling us, right? The data is telling us that you can go in-app, it seems like that is where they started, and then once you feel like you have tapped out the amount of sales that you can do off the backs of customers, you can try to find a new payor, which would be an advertiser.

So they do not necessarily -- this is not evidence, not yet, at least, and I did not see anything in

Dr Hitt's, of economic substitution, that is developers doing this in response to an increase in the price, right? Sorry, an increase in the price of consummating an in-app transaction.
Q. Well, they can shift more revenue from one to the other by increasing the prevalence of ads, yes?
A. They can try to shift around by increasing the prevalence of ads. I mean, there is a limit to that too, of course. At some point the user is going to get tired of being bombarded with ads, so you have to be sparing in your ad exposure.
Q. Or they could increase the price that consumers have to pay to get rid of ads. That would be another way of doing it?
A. Yes, I know that Netflix has played around with ad-free and ad-full offerings and have set their prices in such a way as to try to cause you to avoid ads, yes.
Q. Netflix monetises without paying Apple any commission at all, does it not?
A. Yes, that is true, and that is because they are Netflix.
Q. It is because it is a big, powerful company; yes?
A. Yes, there is countervailing power among a handful of apps in the actual world, and there would be countervailing power among those same apps in the but-for world. They would just be getting off at a

lower base headline rate.

Q. Did you know that on Steam, game developers are not allowed to use in-app advertising at all?

A. I have not studied in-app advertising opportunities on Steam; just I have looked at the commissions.

Q. So let us go to {D2/939}, and if we go to -- well, let us look at the first page, so you can see what it is. So this is Steam's own documentation.

If we go to page 9 {D2/939/9}, so at the bottom:

"Q: Does Steam pricing support games with paid ads?

"A: No."

Then in the second sentence there is a suggestion:

"Steam does not support paid ads or referral/affiliate revenue from showing ads to other games and/or products or services. If your game's revenue relies on advertising on other platforms, you will need to find a new model to ship on Steam. However, if you have a game that is ad supported and you want to ship it on Steam, you could consider having your game be a single purchase or making it free to play with microtransactions or additional content as DLC."

So the point Steam is making is that for lots of types of games that you get on platforms like iOS and Steam, you could realistically monetise them in different ways; yes?

A. Yes.
Q. Then let us go to {D1/216.1}. So this is an article from 2013, and if we go to {D1/216.1/3}, we see that Vserve provides an application for developers and can be downloaded on the site. So it provides in-app advertising services to developers, and do you see that the revenue-sharing model is 60/40 between the developer and the ad provider; yes?
A. Yes. I am not sure what Vserve is, but do you want me to just interpret the 60/40? For whatever service they are selling, 60 of it goes to the developer and 40 of it goes to the ad provider.
Q. Exactly.
A. Okay.
Q. So the question that I am putting to you is that we see here that a dollar on in-app purchasing revenue on iOS is cheaper than a dollar of in-app advertising revenue with Vserve; correct?
A. Let me just see if I follow the math, and I still do not know what Vserve is. But Vserve is getting -- is keeping -- I cannot tell.
Q. It is keeping 40%.
A. Oh, they are the ad provider?
Q. Yes.
A. Okay. So they are keeping 40, whereas Apple is keeping

30 on an app. So 40 is definitely greater than 30.
Q. What mix the developers go for will depend on their business model and will be determined by consumer preferences; yes?
A. The mix will be determined by the business model, yes.
Q. Now, can we go to your third report, exhibit 2. It is at {C2/15/43}. This sets out the results of your tests where you look at whether volumes of iOS in-app purchases for 10 apps changed following the introduction of the multi-platform rule; yes?
A. Correct.
Q. You referred to it earlier, I think, in that discussion.
A. Yes. Yes.
Q. Your point here is that there is not any apparent change in volumes, and so as you say at the top of the page, you say:

"This result suggests that the multi-platform rule did not affect quantities sold for [these] top ten [apps]."

Yes?
A. "... top ten in-app game purchases", yes.
Q. Yes. But you have not said anything here about whether the price of the in-app content was the same or lower on different channels, have you?
A. No, I am looking at activity through the App Store or

through the ASPS before and after the adoption of the multi-platform rule.

Q. Yes. One of the examples is Roblox. But we just saw that until the recent change announced in November 2024, Roblox pricing was the same across different channels, so that was likely to have been the position in 2018; yes?

A. You want me to assume that there is no difference in pricing for the entirety of 2018?

Q. Well, do you know? Do you know one way or the other?

A. No, I do not -- I did not -- this is it not a regression model controlling for changes in pricing, this is looking at just in-app activity running through Apple's system before and after the multi-platform rule.

Q. So if the prices were the same, then the fact that the volumes do not change just reflects the fact that from the consumer's perspective, there was no reason, based on price difference, to switch channel; correct?

A. I think that all we can infer from these graphs is that we do not see a big shift away from in-app purchases after the multi-Reader Rule for these apps.

Q. I think you accept that consumers have grown accustomed to a single point of iOS distribution and provision of aftermarket services for many years?

A. Have they grown accustomed to it? That is all they have

ever known. I do not know if I would use the language "grown accustomed", but I will grant you they have never known anything otherwise.
Q. That is your language, but I do not think there is any difference between us.
A. Okay.
Q. You accept, I think, that consumers value convenience when making purchase decisions; yes?
A. Yes.
Q. You also accept that consumers prefer what they already know; correct?
A. Yes.
Q. So these would be further reasons, would they not, why volumes might not change? So consumers on iOS find it a highly convenient channel for making purchases and they are familiar with it, yes?
A. Yes, it is hard to get people to change out of their ways.
Q. There is nothing anti-competitive, is there, in Apple offering consumers a service they find convenient and familiar?
A. No, that is not the anti-competitive offence.
Q. Now, consumers tend to own multiple devices -- still looking at games, consumers tend to own multiple devices that are capable of playing these games, do they not,

such as a PC or a laptop and a smartphone, and quite a few have consoles too; yes?

A. I cannot remember the exact percentage, but it is true that some have both, yes, and play games on both.

Q. Let us look at some evidence from Mr Sweeney, the CEO of Epic Games. So if we go to {H2/18/195}, and we see halfway down the page a question:

"Question: ... your analytics group reported for the week -- on February 4, 2020, that Fortnite players who play on mobile are the most likely to play on other platforms then (approximately 38 percent).

"Do you see that?

"Answer: Yes."

A. Can I just ask, is this from the Epic v Apple litigation? What is this from? I am sorry.

Q. Just bear with me for a second. (Pause)

It is in the US, but let me just find out whether it is the Apple litigation. I think it is. (Pause)

It is the Epic v Apple litigation in the US.

A. Thank you.

Q. So that is what we are looking at. So this is Mr Sweeney's testimony in those proceedings.

Over the page {H2/18/196}, he says he would expect that information to be accurate.

A. What information, sorry? Can we go back?

Q. Yes, of course. So {H2/18/195}, so:

"Question: ... your analytics group reported for the week -- on February 4, 2020, that Fortnite players who play on mobile are the most likely to play on other platforms ..."

So 38% play on other platforms?

A. Okay, I see that, the Q&A, yes.

Q. Then if we go to {D1/508/1}, and if we start at {D1/508/6}, do you see there is an email dated January 9, 2018; do you see that? It is confidential, but you see who it is from and who it is to; yes?

A. I see. I see, yes.

Q. Yes. So we are allowed to say the developer of Fortnite and Microsoft, we are just not allowed to say the names.

A. Okay.

Q. The subject is "Fortnite going big".

Then you see:

"Folks from the Xbox team are in North Carolina today, and we had a productive discussion in which we disclosed the following highly-confidential plan:

"We're bringing Fortnite Battle Royale to iOS and Android in late February. Not a dumbed-down version, but the full experience ..."

So the developer of Fortnite is here saying that the version of Fortnite that would appear on iOS would be the full experience running at 30 frames per second. So it looks like the developer's view is that the version of the game on iOS would be equivalent to the experience on a console; yes?

A. The line you want me to go to for that proposition is where?

Q. The second paragraph.

A. The second paragraph, okay. "We are bringing ..."?

Q. Yes, so:

"Not a dumbed-down version, but the full experience ..."

A. Okay.

Q. So I am just observing that it looks like the version of the game on iOS would be equivalent to the experience on a console.

A. That is a fair interpretation, yes.

Q. Then if we go to {D1/508/2}, this is later on in the thread, you see an email dated 6 March, again from the developer of Fortnite, and he says, so I am looking at the third paragraph now:

"Full cross-platform [interoperability] is critical for the mobile launch. Though only 3% of Fortnite console players have played on multiple platforms, we expect the number will rise to 35-40% with iOS/Android given pervasive smartphone ownership."

As we have then seen in the testimony from Mr Sweeney, that prediction turned out to be correct, because we saw the evidence he gave in the US Epic proceedings; yes?

A. I do not know if it turned out to be correct, but this appears to be a prediction, and if you want me to assume it turned out correct, that is fine.

Q. It is the evidence we looked at previously that he said was correct, the evidence in his testimony in the Epic proceedings, he said it was approximately 38%.

A. Okay.

Q. So the question is, this example shows, does it not -- this example of Fortnite shows that different platforms can be substitutes for one another?

A. Apparently it is not that easy. Epic is suing Apple, or just sued Apple, for violating the anti-trust laws, allegedly violating, because it cannot get the low prices that it wants. So if it were as easy as you are trying to suggest, why would you have to go into an anti-trust court? You could just move all your transactions off the platform.

Q. Dr Singer, this sounds like a legal submission. I am just asking you to look at the facts, and what we see is that at that time he was saying 3% of Fortnite console players have played on multiple platforms. They are

predicting a rise to 40% with iOS and Android. It turned out to be around 38%. All I am putting to you, I am not asking you about litigation, I am just saying those figures show that different platforms for Fortnite turned out to be substitutes; correct?
A. No, I am not going to use the word "substitute" either. These are complementary channels. What he is saying is: there is a lot of overlap now between iOS users. They also can access our games through other complementary channels, including consoles. Not substitutes. I think you are using the word as an economic substitute?
Q. Let us go to {D1/1377/1}. So you can see that this is a consumer study dated 2023. If we go to {D1/1377/13}, and if we look at that little Venn diagram on the left, we see that 79% of players are using mobile; do you see?
A. This one is hard. Can we speak about this one?
Q. No, can you just answer my questions, and then if you have got --
A. I just do not understand. I am genuinely confused.
Q. Oh, I see. Do you mean is it confidential or not?
A. No -- yes. Maybe you can give me a number. There are just so many numbers here, and you have said a number that I do not see, I am sorry.
Q. Sorry, let me take it slowly.
A. Okay.

Q. Do you see the total is 79%?
A. Ah, now I see. Okay, 79 is off to the side.
Q. It is off to the side.
A. 79 in the sentence, what does that mean?
Q. 79% of players are using mobile.
A. Okay. Whose players?
Q. The game players.
A. Game players. Okay, 79% of game players are using mobile.
Q. Yes.
A. Okay, I can accept that.
Q. Okay. Then do you see that 16% of players use mobile and a computer; do you see that?
A. Yes, the pink indicates a computer?
Q. Yes. Do you see at the bottom it says 43%, there is a little picture of a computer.
A. Okay, I am going to take your word for it. So yes, 16 looks like the overlap.
Q. It is the overlap.
A. Yes. Good.
Q. Then do you see the console, again there is a little picture of a hand-held thing. So that is 41%. Do you see that 13%, the overlap, use a mobile and a console? Yes?
A. Yes.

Q. Then 15% use all three, do you see that? All three, 15%.
A. Yes.
Q. Really these numbers are more than enough, are they not, to create competitive pressure on Apple for the terms that it offers to gaming app developers?
A. No. Respectfully, I do not think it provides competitive constraint. Developers do not see these as economic substitutes, they see these as complementary channels.
Q. Now, I am just going to ask you very briefly about something you debated in your evidence with Professor Hitt, which is the Epic Hotfix experience. Do you know what I am talking about?
So Epic, as you know, implemented a version of its Fortnite game that allowed customers to bypass Apple's IAP functionality, which was a breach of Apple's rules, yes?
A. Yes, I think, if memory serves, they got kicked off the App Store.
Q. Exactly, so Apple responded by removing Fortnite from the App Store, and what Professor Hitt looked at was how much of -- that obviously caused a significant decrease in spending on Fortnite on iOS, yes?
A. It becomes impossible afterwards. But this is not

a change in the relevant price, you have just literally eliminated one of the possibilities, yes?

Q. But what Professor Hitt shows is that nearly 42% of the decrease in spending on iOS went across to other platforms like PCs; yes?

A. Oh, I cannot remember his exact distribution. I thought he was trying to demonstrate that traffic moved off of iOS, and of course it had to move off of iOS because the option was literally taken away from consumers.

Q. Well, it indicates, does it not, that switching platform for the same game is a realistic and practicable option for large numbers of gaming app consumers?

A. A realistic ...

Q. Practicable.

A. Okay, is it practicable? I do not know. It is certainly possible. But at the end of the day what we care about is, is it a close enough substitute, from the perspective of consumers and developers, so as to instill price disciplining power against Apple? That is what matters.

Q. Let us look at what Apple thinks internally about closeness of competition. If we go to {D1/732/1}. So this is an August 2019 document about Apple Arcade. Did you read any of Mr Schiller's evidence about this to the Tribunal?

A. No. Mr Schiller testified about this prior to me coming?
Q. Yes.
A. Oh, I did not read that, no.
Q. Do not worry.
A. Okay.
Q. So let us go to {D1/732/2}, and I will just give you a moment to have a quick look at this slide.
A. Okay. Is pink confidential?
Q. It is, I am afraid, yes.
A. Okay, that is fine. (Pause)
Q. So if you just read the introduction and background section to yourself, then we will go through it.
A. Okay. (Pause)
Q. So you can see that Apple here is considering the price at which it will offer Apple Arcade, and under "Approach", the second bullet point says:

"International pricing considers competing game subscriptions from ..."

I will not read out the words, but you see who is mentioned; yes?
A. Yes.
Q. So Apple internally regards those firms as its competitors in offering this type of transaction, which is gaming subscriptions; do you see that?

A. Yes, Apple -- this is an Apple document?

Q. It is, yes.

A. So Apple perceives these to be competitors, or competing game subscription platforms, yes.

Q. Yes, and if we go to {D1/1318/1}, that is it. If we go to {D1/1318/2}, this is a document from July 2022, and the title is "App Store". Can we go to page 18 {D1/1318/18}.

Ah, sorry, I should point out that this particular document appears to contain multiple versions of the presentation in its notes with some mark-ups on some of the slides, just so that you know.

But if we go to page 18, the point that is being illustrated here -- so if we look at "Games Software Industry by Revenue", and the point that it is illustrating is that there is a growth in games software revenues, and each bar on the chart, do you see on the right, is the sum of mobile, console and PC; do you see that?

A. Right. Can you help me, whose graph is it?

Q. So this is an Apple document.

A. It is Apple.

Q. Yes, an app Store document.

A. These are ...?

Q. So this is looking at -- if you look at the legend at the bottom:

"Looking at the overall games industry, in 2021."

A. Okay.

Q. Then we can see the games industry by revenue by year, and it is broken down into mobile, console and PC.

A. Right. So this is not just Apple's system; correct? It is just Apple's estimate, like worldwide game sales across these channels?

Q. That is right.

A. Mobile, console and PC?

Q. Exactly.

A. Okay.

Q. Then if we go to page 19 {D1/1318/19}. Again, this is in pink, so it is confidential, but we see it is headed "iOS Market Share". So I just want you to note what this is at the moment.

Then we see a further version of this at page 67. So if we can go to that {D1/1318/67}, we see:

"... Apple is driving this growth in mobile. Our total market share last year was over [and I am not going to read the figure] and has continued growing, making iOS the biggest gaming platform in the world ... by far."

Just pausing there. Internally, this is another example of iOS -- of Apple internally regarding iOS as being part of the gaming industry sector, which includes other mobile, PC, and consoles; yes?

A. Yes.

Q. Can we go to {D1/1318/73}. We see here information being given on efforts to get new apps launched, and a lot of this is confidential, but we can manage it, I think, by not referring to any names or details.

So at the very bottom of the page there is an app referred to, and the ... Yes, so at the very bottom is an app referred to, and it says -- the point is made that the developer is looking to give the player the same quality as they expect from PC and console on iOS; do you see that at the very bottom of the page?

A. Yes.

Q. Then over the page {D1/1318/74}, so the third app on that page, so I am not going to read the name, but we see there -- so:

"... we have been actively working with [the company] to ensure that we get the best representation of [this game] on our platform as possible."

So, again, this is another example of Apple regarding these platforms as competitors, yes?

A. Yes, Apple would like -- for a developer who has got its game on three different platforms, a console, a PC, and the iPhone, Apple would like the most amount of that activity to occur on the iPhone, obviously. That would generate more money for Apple.

But the question, the relevant question here, of course, is: does that constitute an economic substitute? To an economist, the answer is no. If you are in all three, you are not substituting across. Your users just might be using more of the game while they are on the iPhone.

Q. All right. Now, video streaming apps. So I think we can agree, can we not, that a transaction to purchase a game or some digital content in a game is not substitutable with a transaction to purchase content on a video streaming app?

A. You said that word again, "transaction".

Q. Sorry, take it back. Your way of putting it.

A. Okay.

Q. So services provided in your markets, they are not substitutable with each other?

A. The -- the services that, say, Apple and Google provide in their separate markets are weak, distant substitutes, but not close enough to constrain each other's power, and therefore not close enough to be in the same relevant market.

Q. The commission -- so taking video streaming apps, the commission is very different, is it not, to the

commission for in-app purchases on games, because Apple charges -- you calculate the weighted average commission that Apple charges on subscriptions to be just 20.4% across the claim period, yes?
A. Yes, it is lower, because as soon as you get into that second year, you get down to the 15% rate.
Q. Yes, and in fact if you are a member of the video partner program, then it is actually just a flat 15%, yes?
A. I think recently they went to a flat 15, yes, for a video partner.
Q. So if a developer wants to steer consumers to paying for those subscriptions on another platform, like its own website, it should be even easier to do that than in the gaming context, because you are only asking them to make one transaction, yes?
A. Shoot, I am sorry, I did not follow that. So if a developer ...?
Q. So if a developer wants to steer a consumer to pay for the subscription to the video streaming service, for example, wants to steer them to another platform to pay for it, then it is pretty easy to do, is it not, because it is only one transaction you are talking about?
A. I think ... compared to another transaction that requires a series? I am trying to figure out ... What

is the reference?
Q. Compared to games. So you put it to me that it is different on games, because every time you want to pay for a sword it is inconvenient to go to another website, and I am saying that point does not hold, it does not hold, does it, for subscription services?
A. Well, for subscription services it seems like one transaction could get you going.
Q. Yes.
A. So it is certainly relatively easier, but it is still difficult to induce from -- at least inside of the app, it is difficult to induce the customer to go off site.
Now, I will note, I will acknowledge, that starting from a point of 15, Apple has come down to 15 in the second year, so now the incentive to engage in such steering, you know, is mitigated.
Q. In fact a video streaming app does not even need to allow users to transact on iOS at all, does it?
A. Under this new program?
Q. Well, at all. We have looked at the example of Netflix. Under the Reader Rule.
A. Okay, thanks. Under the Reader Rule, I think that you ...
Can I just hear it back? I think I agree with you, but ...

Q. Yes. So under the Reader Rule, the developer does not require the consumer to transact on iOS at all, to pay anything?
A. It is no longer required by Apple, that is correct. How about that? The developer was never doing the requiring, it was Apple.
Q. Well, and there are examples of video streaming apps that have made that decision, and Netflix is the big one that you refer to?
A. Yes. Yes.
Q. Yes. I think, thinking about Netflix in a bit more detail, so it was in late 2018 that they decided to take away the option of subscribing on the App Store; yes?
A. Yes.
Q. I think you and Professor Hitt have had a bit of a debate about whether this had any impact on the number of new users downloading Netflix on their iOS Device. I do not want to get into the detail of that, but I think you both agree, do you not, that very large numbers of new users have continued to download Netflix on their iOS Devices ever since?
A. A large number? I cannot remember -- I think his hypothesis was there was no change, and I think that we saw some evidence of change. But we do not have to relitigate that thing.

But if you are asking me if they are large, regardless of whether there was a drop. I think they started off large, yes, I will grant you that.
Q. They must all be paying for their subscriptions through Netflix's website or through some other channel, yes?
A. Yes, unless they are pirating it, yes, but they are getting it, yes.
Q. So Netflix has definitely managed to switch very large volumes of business from the App Store to other channels; correct?
A. Yes, I think a party like Netflix uniquely has that power, so I am not moved significantly by that example. I do not think Netflix is at all representative of an app -- of a developer.
Q. Spotify would be another example, would it not, where a big player chooses not to allow transactions over the App Store at all, would it not?
A. Yes. I mean, you are going with the bigs, but yes.
Q. Now ... sorry, just bear with me a minute. I am just seeing if we can cut some of this. (Pause)
Now, you rely heavily, do you not, on your HMT to show that Apple is a monopolist; correct?
A. I certainly rely on it in part. I do not think that it is the only proof but it is a part of the proof, yes.
Q. What that does is it involves -- essentially it involves

comparing Apple's actual commission to what you say are the competitive commissions you found in your benchmarking analysis, yes?
A. So I found the competitive in two different ways, right? I do it through the benchmarking analysis and I do it through these economic models.
Q. That is true.
A. They both take me to roughly the same place. That is the starting point. Then I ask, could a hypothetical monopolist raise its commission over those competitive rates and do so profitably, yes.
Q. What you are doing essentially is saying: well, I have found my competitive rates. The fact that Apple's actual commission is higher means it is dominant.
A. No, you have skipped an important step. It is that if -- it depends on which market we are speaking of. But if, say, 12% were the competitive rate, then we are asking could a hypothetical monopoly provide or only control these assets -- distribution on the iOS, In-App Support Service on the iOS -- were to raise its prices, say, 5 percentage points above that competitive rate, could they do so profitably? I would point to Apple as someone who has done that.
Q. Yes, I think we are saying the same thing. So you are pointing to Apple in the real world and saying: Apple

charges more than that, therefore it is dominant?
A. Correct. Well, that a not so hypothetical monopolist could actually successfully effectuate that price increase over the competitive level.
Q. You are also relying on what you call Apple's foreclosure of competition to establish that Apple is dominant, yes? The restrictions.
A. I think that an economist has direct ways of measuring market power. The HMT is for an indirect approach, you know, define a relevant market and see if they are large in the relevant market. There are direct methods of getting to market power as well, which is, one, the ability to exercise pricing power, or two, the ability to exclude rivals.
So Apple's ability to exclude all rivals, whether in distribution or in In-App Support Services for such a long period of time within this market, is direct evidence of Apple's market power.
Q. What you are really doing in both cases is you are relying on the same analysis, based on Apple's conduct, to prove both dominance and abuse, are you not?
A. No. For abuse -- for abuse, I take that to mean anti-competitive effects. Maybe we are speaking past each other. But when I think about dominance or market power, you could think about it going down two different

branches. The direct approach of these two tests I just mentioned, you know, ability to exclude, ability to raise prices profitably, or the indirect approach, which is high shares, a relevant market with entry barriers. Those would be the two approaches that would complete the proof on dominance.

On abuse, I am looking to see whether or not the leveraging of this power has been used to raise prices anti-competitively.

Q. Well, do you agree that if you are wrong on your counterfactual analysis, your benchmarking and your model, then your HMT is also wrong?

A. So let us see. If you are telling me that everything is wrong, the comparator is wrong, the benchmarks are wrong, and the economic models are wrong, so I am starting from the wrong competitive price (overspeaking) --

Q. Yes. Then I think it just follows that the HMT is wrong, right?

A. -- if you kick the two legs of the chair out from under me, I would fall to the ground. So, yes, those are pretty essential building blocks of the test.

Q. All right. I thought we could agree on that point.

A. Good.

Q. Then if that is right, I think we can also agree your

conclusion on dominance would also fall away, yes?
A. No, because remember I think the direct approach, I consider the direct approach to be independent of the indirect approach. So under the direct approach, you have the ability to exclude rivals or the ability to raise prices significantly, that is to exercise market power, pricing power. Those are the two prongs under the direct approach. So I do not think that I am entirely relying on the HMT to reach the conclusion that Apple is dominant.
Q. That looks a bit circular to me, Dr Singer. So you are saying the ability to exclude rivals shows that they exercise market power. Is that not circular?
A. No, the ability to exclude rivals is one of the two prongs of what is called the direct approach to showing market power, right? Market power is quite literally defined as the ability to raise prices over competitive levels or exclude rivals.
So if you have direct evidence that can be brought to bear, you can analyse the defendant's market power directly. If you want to go down the indirect route, you have to define a relevant market and see if they have a large share and they are protected by entry barriers. None of it is circular.
Q. I think it might be easier to come back to that

particular topic in the context of the benchmarking, so I am going to move on to the counterfactual, so I am off market definition. There are some further points that Mr Piccinin will ask on that tomorrow, but I was going to move on to counterfactual.

THE CHAIRMAN: Shall we take ten minutes, is that a convenient point?

MS DEMETRIOU: Ten minutes now. Yes, thank you.

(3.07 pm)

(A short break)

(3.20 pm)

MS DEMETRIOU: Thank you. Dr Singer, we are moving on to the counterfactual, and you put forward what you call your primary counterfactual and a delayed counterfactual, yes?

A. Among others. It keeps going, it keeps going.

Q. Among others. We are going to cover them all, but not all this afternoon.

A. Okay.

Q. Now, the primary counterfactual assumes that there would have been no restrictions from the day the App Store launched; correct?

A. Correct.

Q. The delayed counterfactual assumes that the restrictions were in place until the beginning of the claim period

but were then removed at that point; yes?
A. Correct.
Q. So 1 October 2015.
A. Yes.
Q. You understand, I think, that Dr Kent has not pleaded a case that Apple acted unlawfully before the start of the claim period. So the allegation of breach of competition law is from 1 October 2015; yes?
A. That is roughly consistent with my understanding, but I think that is a legal construct.
Q. That is a legal point. In fact we can short circuit this, because Apple's position is that your primary counterfactual is not one that is open to Dr Kent for that reason, but I think we can agree that is a legal question and it is not for you?
A. Right. I am aware the CMA has weighed in on that matter. I have read what they have said about it. It seems like they have sided with the plaintiff. But that is fine.
Q. But that is a legal question, we can agree that?
A. Yes, I do not think that an economist can resolve that one.
Q. No. Good.
Now, you say, if we go to {C2/8/92}.
A. Oh, okay.

Q. This is just to frame the debate that is going to come.
A. Okay.
Q. So paragraph 192, you say that your:
"... Primary Counterfactual is best modelled by the Epic Games Store or the Microsoft Store with 12 percent commissions."
Yes?
A. Yes. But remember we get to the same place, roughly, with Rochet and Tirole. It depends on which of the two markets we are speaking of.
Q. Yes.
A. But yes, those serve as the -- as the comparables, but I also look at where Rochet and Tirole would get us for the primary and Landes and Posner for the aftermarket.
Q. We are going to look at that separately. But looking at the comparables, the primary counterfactual, you say, is best modelled by the Epic Games Store or the Microsoft Store with 12% commission.
Then 193, you say your delayed counterfactual is best reflected by the Aptoide iOS App Store with 20% commission, yes?
A. For the comparables, yes, for the comparables.
Q. We can short circuit this point by saying I am only going to be asking you about comparables, and Mr Piccinin has the pleasure of dealing with the

modelling.
A. Okay.
Q. So do not talk about the modelling to me, because I am not going to be able to help much with it.
A. Okay. Okay.
Q. Now, you -- so the reason for the difference between those two figures, so the 12% and the 20%, is that in your delayed counterfactual, Apple begins from 100% market share position, and it would take some time for its market share to be eroded; correct?
A. That is one way to provide the insight or the intuition. I mean, I could give another intuition if you are interested, but that is --
Q. Go for it, Dr Singer.
A. Just that, you know, at that time the prices would have been calibrated, the app prices would have been calibrated around the 30%, and that would have existed from 2008 to 2015, and so it would take some time for a recalibration and for competition -- competitive forces to work their magic at lowering prices.
Q. Okay, thank you. In each case -- so for the primary and the delayed counterfactual, what you do, your approach is to compare those figures with Apple's effective commission rate; yes?
A. Correct.

Q. So for in-app purchases, the rate that you calculate -- we can look at this at {C2/8/118}. So for in-app purchases, the rate that you calculate is 25.2; yes?
A. Right. That would be the weighted average.
Q. Yes.
A. That is correct, yes.
Q. So I want to start with your primary and delayed counterfactuals and look at the benchmarking analysis.
A. Okay.
Q. If we go to page 79 of this report {C2/8/79}. So this is the start of the section on the counterfactuals. What you do in this section is consider what the counterfactual would look like, do you not?
A. Yes.
Q. In doing so, you take account of the evidence of Mr Howell, the app industry expert; correct?
A. In part. We are on footnote 343 at this point. But I think I cite to Howell, perhaps, in this section. I do not see it yet, but ...
Q. Let us show you perhaps a few examples. So {C2/8/80}, paragraph 165, you cite Mr Howell; do you see that?
A. Yes.
Q. {C2/8/86}, top of the page. If we look at footnote 358, if we go down to the bottom, again, Mr Howell.
{C2/8/93}, paragraph 194, you say:

"As Mr Howell notes ..."

Towards the bottom of the page.

So my only point, really, is that on matters requiring knowledge of the app industry, you have relied on Mr Howell's expertise. You have not made it up for yourself?

A. Correct.

Q. Now, you have a table at {C2/8/87}, and here you set out various other companies, so those are the benchmarks, with what you say are their comparable commissions; correct?

A. Yes, let me just -- give me one second to get my bearings.

Q. Of course.

A. App distribution benchmarks. Yes, I am looking at quite a few in this table. I guess that would be -- that would take you in the direction of a more competitive rate.

Q. I think, is it right, that you are using these data points to model both Apple's App Store's counterfactual commission and the commission that its competitors would charge in the counterfactual?

A. Not so much. Not so much. I think that for the purposes of damages, I am focused on overcharges that customers incurred by virtue of consummating transactions on the App Store, or in-app transactions via an app that was downloaded on the App Store.

I do not think that I am making predictions necessarily about what a rival would charge. These are Apple's commissions. I know you do not want to talk about Landes and Posner, but it is pretty clear that in a dominant fringe setting Apple is going to command a premium over the fringe, over the entrance. So there I am explicitly rejecting the idea that Apple and the entrants will be charging the same.

Q. Okay, so just to make sure I understand that. To take your 12%, which is your benchmark in your primary counterfactual, are you saying that 12% is what Apple would charge in the counterfactual without the restrictions?

A. I believe so. Is 12 -- it is hard for me to see where we are in the report, but is this for the app distribution market, or the in-app ...?

Q. Yes, so it is for distribution.

A. Distribution. Okay, sorry, I just wanted to get my bearings. Okay.

Q. So we looked at the 12%. So you say your primary counterfactual is best modelled by the Epic Games Store and the Microsoft Store that charge 20% --

A. 12.

Q. Sorry, 12%. My mistake. So are you saying that in your primary counterfactual, Apple's commission would be 12%?

A. Yes, for this run, yes, I am.

Q. Are you also saying that Apple's rivals' commission would be 12% in the counterfactual?

A. Not necessarily. I think I have been a bit agnostic as to what the rivals would be. I am trying to come up with a benchmark for Apple. These are competitive rates, so it is reasonable to assume that the rivals are close. But I think certainly in the in-app aftermarket where Apple is going up against a fringe of smaller firms, it is reasonable to believe that Apple would command a premium for comparable services, in light of the fact that Apple is a brand name that everyone knows and loves.

Q. So just thinking about your damages calculation which you mentioned, you apply the counterfactual rate to all of the commerce, so whether, in the counterfactual, that happens on Apple or a rival store; is that right, that is what you have done?

A. No, I am only looking at overcharges that could be tied to the Class members.

Q. Now ... Yes, sorry, let me ask that question again.

In your damages calculation, so taking the rate in the counterfactual, which you say is the benchmark rate, so the 12% ...

In fact, if we look at this in your report it might be easier.

A. Okay.

Q. So {C2/8/153}.

A. Okay.

Q. So in calculating the overcharge, what you have done is you have taken your counterfactual rate and applied it to all of the commerce, have you not, whether that is on the App Store or on rival platforms, in the counterfactual?

A. No. No. That is not what we are doing. We take the transactions that occurred either -- on the App Store. This is for app distribution?

Q. In the real world.

A. In the real world. That is our volume of commerce that is affected, and we are asking: what were they charged in the actual world? What would they have been charged in the but-for world? It is that difference, right? Then you have to do pass-through, and then you get to the overcharge.

So I reject, respectfully, the idea that I am going off of the App Store to look for volume. The volume that drives the analysis is just the actual volume that went over the App Store.

Q. Yes. But then in the counterfactual, you are assuming that that volume is going to be -- some of it is still going to be on the App Store and some of it will be on rival platforms; yes?
A. That is fair, that in the counterfactual world some of the volume will move over to the rivals' store. But for the purposes of calculating overcharges, right, we are going to assume that even if you would have made it on a different place, that is a real savings that you would have enjoyed. So we are just going to use the difference between what Apple charged and what Apple would have charged on every transaction.
Q. Okay, I think that is all I was getting at, so we can agree --
A. That is the standard way of doing it.
Q. No, I am just trying to figure out what you have done. I think we agree on that.
Now, you agree, do you not, that the degree to which benchmarking is reliable depends upon how similar the proposed benchmark is to the target?
A. I think that is fair. You are looking for similarities, yes.
Q. Where there are differences, they need to be factored in and controlled for; yes?
A. If you could factor in differences, that would be nice.

I mean, a lot of times from benchmarks we do not have that luxury, but I am open to making corrections if necessary.

Q. No, no, it is not a correction. I just want to make sure I am reflecting your evidence correctly.

So if we go to {C2/8/86}, so footnote 361.

A. Okay.

Q. Yes, so:

"... necessary to control for as many differences ... as possible ..."

So you accept that, yes? Where there are differences, then where you can, you need to factor in the differences and control for them.

A. That is fair.

Q. Now, going back to the table. So was it page 86? Sorry, page 87 {C2/8/87}. You have identified 16 firms and what you call the comparable commissions, and you say that these firms are other two sided platforms that connect software developers to users; yes?

A. Yes. You said "either", so I suspect an "or" is coming?

Did you say "either", sorry?

Q. No, I did not say "either". I am just setting the scene for what you have done.

A. Okay.

Q. Looking at the table, you list various online platforms

as benchmarks, and looking at some of them, so Etsy is a platform for people who make crafts and other things like that, is it not?
A. Correct.
Q. Poshmark is a platform for the sale of clothes and beauty products, et cetera, yes?
A. I think so.
Q. Amazon, eBay, and Google Shopping, they are platforms for the sale and purchase of physical goods, correct?
A. I am just pausing on Amazon, because I know there are some digital products available on it, but that certainly includes physical products as well.
Q. I think you have put the Amazon Appstore separately, further up the table.
You say for Amazon -- just looking at "Online Retail: Amazon" you say 8-15% commission plus various other fees.
If we go to {D2/54/5}, you see "Category Referral Fees", and if we look over the page{D2/54/6}, we can see that there are varying commissions. If we look at the top one "Amazon Device Accessories", that one is actually much higher, do you see, 45.9%?
A. Yes.
Q. Did you consider why that rate is higher, or not?
A. No, I did not consider why, no. But I do not think that

I end up using Amazon in my damages calculation, I think it is just there for -- to corroborate and to show what other competitive platforms are charging.

Q. So the more -- the more useful comparators are some of the others; is that right?

A. Well, I think I end up going with the PC games category, because, one, it is the closest in terms of the product that is being offered; and, two, it is an episode of invasion by attackers who came in with lower commissions and induced the incumbent, Steam, to lower its own. So for that reason, I think it has a lot of value.

Q. I think you accept, do you not, that Apple makes investments in software, such as machine learning and augmented reality, software which benefits developers when they make apps; yes?

A. Sure.

Q. Then looking at some of Mr Howell's evidence on this, if we go to {Day8/174:1}, and look at lines 1-8. So he is there -- so the point being made there is that he is accepting that ...

So I asked him:

"Question: ... the devices were essential to Avatron's apps?"

You may know that Avatron was a company that he founded, a software company.

It is right, going back to what you said previously about all of these APIs and frameworks, they created a position whereby:

"... small companies like Avatron did not have to invest as much in software engineering because a lot of the work had been done by Apple."

He says that he did not need -- the fact that Apple -- the work Apple had done meant that he could sell a product without needing a marketing team or production staff or any investment in media production.

Then if we look at {Day8/176:1}, please. So if we take it from line 9:

"Question: So one point that you are making here, as I understand it, is that developers can use an API [that is an API from Apple] without doing their own coding, correct?

"Answer: Yes.

"Question: So they do not even need to understand how it works from a technical perspective, do they?"

He agrees with that.

Then you see:

"Question: ... the upshot is that a developer can use Apples frameworks, to create their own iOS Apps, by using very simple code, correct?

"Answer: I like to think that it is not too simple, but simpler than it would be without these frameworks."

There is more evidence on this. But I think you do not disagree, do you, that Apple has invested significantly in frameworks and software that create value for developers?

A. I do not disagree.

Q. It follows from that, does it not, that Apple's investments in its proprietary technology enhance the value of the digital products that the developers are creating and monetising; yes?

A. It enhances the value. In this case, it might allow them to escape certain costs that they would otherwise have to incur.

Q. I think we agreed yesterday that every time Apple produces something like augmented reality technology, that creates value for developers that use that technology to provide apps that are more attractive to consumers; yes?

A. Yes, that could -- for certain apps that could add value at the margin. I think the biggest thing -- the biggest source of value is bringing a particular subscriber base to the table. That, to me, is the primary source of value.

Q. You accept, I think, that Apple captures the value of its proprietary technology and services through its commission, as well as through the flat fee of £79 and device sales; yes?

A. Well, I answer that one: partly agree. You are talking about on a joint statement, and I explained that it is capturing not only that but any other investments that it made, and not just through the commission but through all of its fees. All of its fees and charges are meant to recover investments that Apple has made. That is what I will grant you.

Q. Yes, so you will grant me, then, I think, that through its commission to developers, it is capturing the value of its proprietary technology; and other means, and through other means as well, but it is capturing that value through the commission it charges developers?

A. Right, but I am trying to amend the answer just a little bit. Set aside the other charges that it is making, it is just -- it is getting a return on all of its investments. The fees are helping it recover and earn a return on all of its investments; not just its investment in whatever particular technology that you are citing.

Q. Now, it is right, is it not, that in your counterfactuals, if any competing app marketplace were to provide distribution services to a developer, the developer would still need access to Apple's proprietary

technology to develop and publish their iOS apps; yes?
A. I think that is fair. I think that even if there is a rival app store, that every developer, with very few exceptions, is going to want access to Apple's App Store as a starting point. So to be able to work on Apple's App Store and to work within its system, it is going to have to acquire these technologies, or at least access to these technologies.
Q. Yes, and if a developer were to create an app marketplace, so a rival app store, in the form of a native iOS App, that developer would also need access to Apple's proprietary technology; yes?
A. Would a rival app store -- I will just make sure I understand the question -- need access to some of Apple's technologies or APIs in order to run?
Q. As a native iOS App.
A. It certainly sounds reasonable, but I do not think you want to ask an economist that question. It sounds like a very technical question.
Q. Think everybody agrees, I think, in the case, that any native iOS App requires access to Apple's proprietary technologies. I do not think that is contentious?
A. But you are going back to an app. I thought the question pertained to a rival app store.
Q. A rival app store that is itself an iOS App.

A. I do not understand that. Sorry, but I see it one of two ways. You can be the store or you can be the apps within the store. It is hard to think of one as both.
Q. Yes, but the App Store is itself an app. So if you have a rival app store on iOS, then it is itself a native app, so it requires access to Apple's proprietary technology.
A. I am going to defer to you on whether a rival app store is itself an app.
Q. All right, do not worry.
Now, none of the firms -- going back to your table, so {C2/8/87}. I think we can agree, can we not, that none of the firms in this table provide access, in the real world, to Apple's proprietary technology, do they, because they do not own it?
A. Not to Apple's, but provide access to their own technology.
Q. No, I am asking about Apple's.
A. I think that is fair, I do not know what the sense -- but, yes, if we are talking about a different platform, I do not think you would expect them to provide access to Apple's technology for Apple's platform.
Q. So the product they are providing to developers does not include the use of Apple's proprietary tools and proprietary technology; correct?

A. I think that is fair. When you go outside of Apple's ecosystem and you are looking for comparables, you are not going to be applying Apple's technologies.

Q. So in that sense, the fees they charge are not comparable to Apple's, are they, because Apple is providing, through its commission, the right to use its tools and tech?

A. No, I respectfully would reject that. The mere fact that you step into a different app store, say in the PC game world, does not mean they are not providing something comparable. It is not an Apple technology, but it is access to their own technology.

Q. Let us look at it this way. A developer publishing an iOS App on a different app marketplace, in the counterfactual, would need a licence, would it not, from Apple for the use of Apple's proprietary technology? In order to publish an iOS App, it would need a licence from Apple for using its technology?

A. It would need whatever it needs today, and so I keep going back. In the counterfactual world, the developer wants to be in Apple's App Store, and whatever you need to function and to work on Apple's phone, you will need that, but now you will have this extra option of being available in a rival app store.

Q. All right, let me just take it in stages. So you are

agreeing with me that a developer in the counterfactual, publishing an iOS App on a different app marketplace, so an iOS App, would need a licence from Apple for the use of its proprietary technology?
A. They would need whatever licences they have currently, because they are going to also be, in addition to being in the rival app store, they are also going to be in Apple's App Store. So whatever you need to work currently inside of Apple's ecosystem, I think it is safe, as a non-technical expert, that they would need access to that to function. That is not going to change.
Q. Yes. I am just looking at your answer. So you say they would need whatever licences they have currently because, in addition to being in the rival app store, they are also going to be in Apple's App Store.
    But let us take a hypothesis where, in your counterfactual, you have a developer that only wants to be on a rival app store but publish an iOS App for the iPhone --
A. We can assume anything. We can assume there is no gravity either. I can make any assumption you want.
Q. Can you just bear with me and answer my question?
A. Yes, sure.
Q. So if this developer publishes an iOS App on a rival

app store but for iOS, not on the App Store, just on the rival app store, it would need a licence from Apple, would it not, to use its proprietary technology to publish the app?

A. So if you are asking me, hypothetically, that an app developer says: I do not want the 50-60% share of transactions going through the App Store, I am going to abstain from the App Store and only go exclusively through this rival app store, whatever access to certain APIs and other technologies that were needed to run on the iPhone would still be needed.

Q. So either way, whether it is on the App Store or not, either way, if they are going to go through a rival app store, either only or as well as the app store, it would need a licence from Apple?

A. It would need -- it would need whatever it currently has. So I think Apple and the $99 charge upfront is capturing, at least in part, its licence to be in the store.

Q. Also the commission, yes?

A. Also the commission, yes.

Q. Yes. Now, your table is not accounting, is it, for what developers would have to pay in the counterfactual for the right to use Apple's proprietary technology?

A. It does account, in the sense that whatever they are paying today, right, to be in the App Store, and to function on an iPhone, they would have to pay in the but-for world. It is a wash. There is no added charge to the developer. You have not laid out a counterfactual yet, at least in my mind, that suggests there is a new charge to the developer, at least I do not see it.

Q. You say whatever they are paying today. But what they are paying today is the 30% commission, and the 30% commission gives them the right to use Apple's proprietary technology.

Now, what you are saying is, look at all these comparators that show that the rate would be 12% in the counterfactual, and what I am putting to you is that those rates do not account for the charge that they would have to pay to use Apple's proprietary technology, and that is right, is it not?

A. No, it is not right. So in the counterfactual world they are going to pay the same $99, whatever, upfront, as currently paid -- there are so many acronyms, SDK, you have got some name for the upfront charge. Then they are going to want to be in the App Store. They would not want to cede 50-60% of their sales on iPhone. So when they get downloaded through the App Store, they will continue to pay whatever Apple is now charging in

this competitive environment to Apple, and all of those payments are going to be contributions to Apple's investments in its technologies.
Q. So let me just rewind a little bit. These firms are not providing access to Apple's technology; correct?
A. Sorry, when you say "these firms"?
Q. These firms in your table that charge --
A. Oh.
Q. So you are relying on, for example, the Epic Games Store which charges a 12% commission, and you are saying that is what the competitive rate would be in the counterfactual. But that does not include any charge for Apple's technology.
A. We have -- I mean, I have been asked this and I have answered, and I will give you the same answer to it: Epic is not charging for Apple's technology.
Q. No. On Monday -- on Monday in the hot tub, Mr Holt accepted that Apple, in the counterfactual, would have an incentive to charge for use of its technology in the counterfactual, and you would agree with that; yes?
A. Charge a new fee, or to charge its existing fee? I am sorry.
Q. To charge any fee in the counterfactual for its technology; you would agree with that?
A. I think that to the extent that Apple is compensated

through both its upfront and its commission, it will continue to earn the upfront and the commission in the counterfactual world. These apps are not going to just cede 50-60% of their potential sales and exclusively list themselves on a rival store. They are going to want to play these stores off of each other and it would make sense to be in both, and all those times they get downloaded from the App Store, they will be contributing to the returns to investment that Apple has made in its technology.

Q. Dr Singer, from Apple's perspective, do you agree that in the counterfactual world with rival app stores, Apple would have a commercial incentive to charge developers for using its proprietary technology? That is the only question I am asking you at this stage, taking it in stages.

A. Okay, that is a new one, but I am happy to answer that one.

Q. It is the same question I have asked you now three times.

A. You asked me about whether Mr Holt said something.

Q. It is the same point. Mr Holt accepted this. In the counterfactual, with rival app stores, do you agree that Apple would have a commercial incentive to charge developers for use of its technology?

A. Not a new charge. It is the same way that it is recouping investments in its technology in the past. It would do it through the commission and through the upfront.
Q. Through the 30% --
A. They would collect that -- excuse me?
Q. Through the 30% commission? That is what it is doing at the moment.
A. No, no, no, because, sorry, in the counterfactual, remember, they are they able to charge 30 because they are no longer monopolists. So whatever the commission will be, that will be the way in which Apple will be remunerated for these wonderful technologies.
Q. Now, are you saying -- so you are not saying, are you, that in the counterfactual, Apple would have to give away its proprietary tools and tech for free. That is not your position?
A. Giving it away to whom?
Q. To developers.
A. To developers? No. I think the way they are compensated currently is through the $99 upfront and the commission charge, and they would continue to be compensated in that way, just no longer on 100% of all the transactions and not for eternity.
Q. The only thing that has changed in this counterfactual

is there are now alternative app distribution marketplaces, yes, that is the only thing that has changed? So in your counterfactual.
A. Sorry to be difficult, no, because just remember in the primary counterfactual both restrictions disappear, right? So we no longer have monopoly in the distribution and we no longer have monopoly in the in-app support systems.
Q. All right, so that is the only thing that has changed. There are alternative app marketplaces and payment processors, yes, in the counterfactual?
A. Correct.
Q. The developers and the app marketplaces -- let us just take the developers. The developers will still need access to Apple's proprietary technology in the counterfactual, yes, we have agreed that?
A. I think we have agreed to that, yes.
Q. None of the other app marketplaces can provide that; correct?
A. None of them can provide that; that is correct. You have to get that from Apple.
Q. We know that developers are currently willing to pay Apple what they currently pay for its tools and tech in the form of a commission on sales; yes?
A. Not just the commission, I have told you it is the

commission plus the upfront, and they are willing to pay it because their willingness to pay exceeds the current prices. What I am contemplating is that the willingness to pay does not fall but just the prices fall in the but-for.
Q. The price for distribution might fall in your counterfactual world, but there is absolutely no reason why the price for Apple's tools and tech should fall because they have no competitors. None of these other firms can provide the tools and tech, so --
A. What is the price you are pointing to? Which price are you referring to, the $99?
Q. No, I am referring to the commission. So you have accepted that Apple monetises its tools and tech in part through the commission, so that accounts for the 30% rate, that is how Apple monetises its tools and tech. We know that developers are willing to pay that for access to Apple's tools and tech, and so we know that developers would equally be willing to pay the same amount in the counterfactual for Apple's tools and tech as they currently pay: 30%?
A. Right, but because of the benefit of competition they will no longer have to pay the monopoly price.
Q. Where is the competition for Apple's tools and tech? Because none of these firms in your table are able to

provide it.

A. They are going to pay Apple for this technology through, as I have said now several times, the commission that Apple charges, albeit a lower commission in the but-for world, plus the upfront fee. So every time a developer in the but-for world wants to be on Apple's website, which in my opinion would be on every occasion that they were in the actual world, you pay the $99. So we do not have to take differences in the $99. Everyone pays that. In the actual and but-for world, it is awash.

Now, for every time you get downloaded, the developer gets downloaded in the but-for world from the App Store, the developer will compensate Apple at the commission, right? The commission is lower, and I realise Apple does not like that, but that is -- that will be the compensation that Apple gets in part, and the $99 upfront, in the but-for world.

Q. I think where I am differing from you is you say the commission would be lower, but you are assuming what it is that you have to demonstrate.

Let me ask you this: if Apple requires -- so in the counterfactual, if Apple requires developers to pay a fee or a commission in respect of sales on alternative marketplaces, yes, as a contribution to its tools and tech, they will pay that fee, will they not?

A. No. You heard this in the hot tub. In my opinion, if Apple's power in the primary market is taken away through competitive entry, then Apple will not be able to impose a penalty for using rival payment processors, for example, because then everyone would move to the rival store.

Q. Yes, but if somebody is moving to the rival store, Apple owns the IP. They would still need access to the IP. So they have to still pay Apple, do they not, if Apple seeks a charge -- seeks to pay for it?

A. They will continue to pay Apple, the developer will continue to pay Apple for every transaction, and I am estimating somewhere around 50. I think your expert, Dr Sweeting, said it could go to 50%. Every single one of those transactions in the but-for world, Apple will be compensated at the commission and they will have been paid their $99.

Q. So are you saying, then -- so let us say you have got an app in the counterfactual world which is both on the App Store and on a rival app marketplace, are you saying that Apple is not entitled to charge any commission for its IP on revenues in that alternative marketplace; is that your position?

A. Entitled to? Where is the commission? I am trying to figure out ... If the transaction is occurring not on

Apple's store but on the rival's, Apple does not have an opportunity to hit that transaction with a commission.
Q. Well, I am saying to you it does, because in order for that app to be on the rival store, the developer needs access to Apple's intellectual property, and Apple is entitled to charge for that.
A. Yes, but Apple will be charging for it -- and we are going in circles -- with the upfront and with all the transactions that occur on the App Store.
Q. Yes, it will. But are you saying it is not also entitled to charge on revenues on the competing app store; is that your position?
A. Unfortunately this is how competition works. They cannot control that every transaction would come over their App Store.
Q. Well, if Apple refuses to licence use of its IP to developers on alternative app stores, that is the end of the alternative app store, is it not?
A. Well, we are trying to contemplate a competitive world, right, and so if your variant of this world involves Apple exercising its monopoly powers, or leveraging its powers in other ways, like denying IP, that seems like just an alternative way to get to the same monopoly outcome.
Q. Well, hang on a minute. We are talking about there no

longer being distribution restrictions. But Apple has its IP, and the very nature of IP is that it confers a monopoly power in that IP. That is why we have IP rights. So you are saying, are you -- is your position that Apple would have to give up its IP in respect of developers that are producing apps on alternative app stores?
A. No, it is not going to give up its IP. You have probably seen the revenues that I would project Apple would make. It is still in the billions and billions of pounds per year. They are going to be compensated handsomely --
Q. I am not interested in the revenues for the moment, I am interested in mechanically how it would work.
So we have an app developer that produces an app in your counterfactual world, okay? So the App Store is still there and we have got a rival app store, let us say it is Aptoide, Aptoide iOS. So the developer places an app on both the App Store and on Aptoide. Now, you are saying, and this is correct, that Apple can still charge commissions on the revenue from the App Store, so I am agreeing with you on that.
A. Plus the upfront fee.
Q. Plus the upfront fee, all of that, so I agree with that.
A. That contributes to its IP as well.

Q. No, but is your position -- I am now thinking about the position of the developer on Aptoide who also needs -- they also need -- to get those revenues, they need access to Apple's IP, yes?
A. They have already paid for it to get onto the App Store.
Q. They have paid a commission on those revenues on the App Store.
A. Plus the upfront.
Q. Plus the upfront fee. But are you saying -- but they also need a licence, do they not, to Apple's IP, to produce the app on the rival app store, on Aptoide. They need a licence to do that?
A. To me, you are asking I think a legal question. I cannot just weigh in here. It seems like you are resurrecting the tie in a different -- you know, the exclusion in a different --
Q. No, it is a really important point, Dr Singer. So Apple --
A. You asked me do they need a licence. Do they need a licence after --
Q. Assume they need a licence. They --
A. After they have already -- after they have already acquired a licence to be on the phone through the App Store, do they need a second licence for all downloads? Because once it is on the iPhone, I do not

understand why the current -- why the old licence would not cover it.

DR BISHOP: Can I just ask a question here.

A. Sure.

DR BISHOP: It is common in IP licensing to charge ad valorem licensing fees on the revenue: you want to use my patent, you are going to pay me 2.5% of revenues, whatever the revenues are.

Now, I suppose the difference between the two of you here in these questions is that Ms Demetriou is referring to a world in which Apple imposes that sort of thing and says to people who already go through its App Store: you have paid it, it is part of the 30%. But if you are not in the App Store, then there is going to be an ad valorem charge on your -- on various revenues.

Ms Demetriou, have I interpreted you correctly?

MS DEMETRIOU: Exactly.

A. But you said not on the App Store, just to be, right, on the same page. You are on the App Store. You are on the App Store.

DR BISHOP: No, you have got two different people. We have one firm that is in the App Store and is selling through the App Store, and one that is in a rival store, a non-Apple app store.

A. I hear you, and, respectfully, I do not think anyone is going to forego Apple's App Store in the counterfactual world. Everyone wants to be in the App Store. So what we are really talking about is you are being downloaded through the App Store and you are paying Apple its upfront fee and you are paying them their but-for commission, but you are also being downloaded in the rival store, and what she is saying is in that contingency, Apple is entitled to charge the rival app store and/or developer a new fee that does not yet exist. That is the thing.

My contention is you are already paying, in a sense, for 60-odd% of the transactions that have been downloaded, right? 60% of them coming from the Apple store, and 40, right? You are paying, you are compensating Apple in part for the investments that it has made. Do they need 100%? Do they need 100% of the activity?

DR BISHOP: I do not want to -- I was just trying to clarify what I thought was the apparent talking past one another, so I am going to stop now.

MS DEMETRIOU: No, no ...

A. No, that is helpful.

DR BISHOP: Please continue.

MS DEMETRIOU: I think that was helpful. Thank you, sir.

So can I put it this way: I sympathise when you say

it is a legal point, but if we are right, if I am right on the law, that in order to gain revenues -- in order for an app to gain revenues on an alternative app store, it needs a licence from Apple to use its intellectual property, so assume that that is correct as a matter of law, so it needs a licence.
A. A second licence.
Q. Yes, a licence to allow it to operate on this alternative app store to use its intellectual property.
A. It is not operating on the alternative app store. It is being downloaded onto the iPhone and then it is operating on the iPhone.
Q. So assume -- because it is a legal issue, this -- so assume it needs a licence to use Apple's intellectual property, then your comparators here, they do not account for any charge that Apple would make for that licence; correct?
A. A better way of putting it, and I think we are close, is that I -- my damage models are not contemplating a new fee, whether for app distribution, which is what we have been talking about heretofore, or as a penalty for using a third-party payment processor. In neither one of my damages models am I allowing for that possibility. I am assuming that Apple would be compensated solely through its upfront and its commission in the primary market and

its commissions in the secondary market for those transactions that make use of Apple's technologies.

Q. All right. So we talked about -- we talked a little bit about the DMA yesterday, do you remember, and I put to you that -- I said to you that Apple cannot apply the distribution restrictions or the Payment System Restrictions in the EU because of the DMA, and I think yesterday you thought it was only the Payment System Restrictions.

A. Yes.

Q. In fact it is --

A. I will tell you that as an economist I am confused, because when I hear that Apple instead has imposed a new finite penalty of 27% --

Q. Dr Singer, I have not even asked my question.

A. But I reject the DMA as anywhere close to --

Q. I have not asked whether you accept or reject it. I have not even managed to finish my question.

Can I finish my question?

A. Sure.

Q. Thank you.

So yesterday I think you thought that the DMA only removes the Payment System Restrictions but, in fact, it is both; do you accept that now?

A. Sure.

Q. So is it fair -- I mean, the fact you did not know that I think probably means that you have not looked at this in much detail; is that right?
A. I have not looked at it in much detail, because the reason why --
Q. Yes or no? I am going to take it in stages.
A. I am going to answer your question.
Q. Well, it was just yes or no.
THE CHAIRMAN: I think if he wants to explain why he has not looked at it, you are going to have to let him explain.
A. I have looked at it.
MS DEMETRIOU: Right.
A. The debate among the economists is whether or not the fees in the competitive environment that has emerged post-DMA can be representative of the but-for, of the counterfactual world. Here we have unanimity across the experts: none of the experts thought that the DMA could create one, and we all have our reasons.
    My reason is that if Apple is permitted to reconstitute the tie by creating a finite penalty -- instead of infinity they now charge 27% for breaking the bundle -- then you have not removed the anti-competitive restraint. That is my reason.
    Whether -- now she wants to know am I familiar that you can also get access as a rival app store. Really,

at that point the experiment is so contaminated that it is interesting to know this, but it does not change my opinion.

Q. So I think, looking at the joint experts' statement, you say that studying Apple's behaviour in response to the DMA could be relevant; I think you accept that much, yes?

A. Well, I do not have them memorised, but Dr Sweeting and I agreed to one in particular that said the DMA is not an appropriate counterfactual.

Q. Well, I am just putting back to you what is in the joint experts' statement. You agree that changes -- you say:

"While the changes in other jurisdictions do not approach the full removal of the restrictions, I grant that studying Apple's behaviour and response could potentially be relevant."

Is that still your evidence?

A. Yes, it is relevant to the extent I am telling you now that Apple has reconstituted the tie.

Q. So, Dr Singer, I think you did more than simply answer my question of whether you looked into it, and I am really just going to take this in stages, so if you can just try and answer the question I am putting to you.

Let us go to {D2/129.2/1}, this is from Apple's website, and it is a summary of the arrangements under the DMA in the EU, and can we scroll so that we can see what is going on?

So we can see that the headline commission is for distribution through the App Store is 17%; do you see that? It is 10% for the small business program, et cetera, et cetera. But let us just stick with 17% for the moment.

Then if we scroll -- so those commissions, just pausing there, those commissions apply if the app is distributed via the App Store, and a different payment processor is used; correct? Does that match your understanding?

A. The 17% applies?

Q. Yes.

A. I am remembering an Apple internal analysis that said that there is another -- there is another fee that is going on top of that that brings them back to approximately the same.

Q. I am going to show you that.

A. -- the same 27%.

Q. I am going to show you that.

No, so that is also confidential. So do not talk about any internal Apple documents. But I am just going to take you through the structure and let us see if we can agree --

A. All right. Well, you are not showing me the entirety of Apple's charge here. I will just let the Tribunal know that.

Q. Dr Singer, I am going to. I am only -- you are not letting me do it. So I am going to ask the operator to scroll down, and I am going to show you the whole of the charge. It is you who is not letting me do my job at the moment, I am afraid.

So I am starting with the 17%, which is the commission rate, and what I am putting to you, because you have looked at this, I think it is non-controversial, but that commission applies if the app is distributed via the App Store and a different payment processor is used; yes?

A. That is part of the charge.

Q. I am going to come to the rest.

A. Okay.

Q. Then if we scroll down, {D2/129.2/2} we see next to "Payment processing fee" that if the developer uses Apple's IAP there is an additional 3% commission payable to Apple; do you see that?

A. Yes, if you use Apple's IAP -- ASPS, if you use their payment processing, you pay Apple another 3%, yes.

Q. That is right.

Then we can see -- and I think this is what you have

been burning to tell us -- the core technology fee at the bottom, Apple charges a core technology fee of $0.50 for each annual install over 1 million annual installs of an app, and that fee applies regardless of whether the app is distributed via the App Store or whether it is distributed by an alternative marketplace, and in-app purchases are processed by an alternative payment processor. So that is a charge that applies whether or not the app is distributed on the App Store, or whether it is distributed on a rival processor, yes? Just looking at the mechanics now, do we agree that that is how it works?
A. Yes.
Q. So this is Apple making a charge for the value it has conferred on developers through its tools and technology; correct?
A. Right. It has introduced a new fee that brings the effective commission for breaking the bundle back up to 27%.
Q. So in the EU, we see that Apple does charge for its distribution services and for use of its technology in circumstances where in-app purchases are processed by a third party; correct?
A. Correct. Which in my mind reconstitutes the tie and therefore disqualifies this DMA example as being

a reasonable approximation of the but-for world.

Q. Well, on the contrary, this is a real-world guide to what Apple would do in a counterfactual world without your restrictions?

A. None of your experts agree with that.

Q. Well, I am asking you whether you agree with it?

A. No, I do not. But I thought we had unanimity across the experts on this point.

Q. I am afraid we do not have unanimity on that point.

Now, the idea that Apple would not charge developers that distribute on other platforms for its proprietary technology in your counter-factual is utterly implausible, is it not?

A. No.

Q. Your whole benchmarking exercise is flawed because it simply does not take account of the fact that Apple would be entitled to charge for its technology in respect of revenues that are received on other platforms?

A. No, for all the reasons that I have given you already.

Q. Now, I want to -- in your table, just thinking back to your table, you have included platforms for the sale of physical goods, Etsy, Poshmark, et cetera, but you have not included the Google Play Store, have you?

A. Yes. Of course not.

Q. Now, I am going to come to your explanation in a moment, so let us not get ahead of ourselves, but can we first of all explore some characteristics of the Google Play Store and consider whether, in terms of objective characteristics, these make it more similar to the App Store as opposed to some of these other comparators. I want to go through a few and see whether we agree or disagree?
A. Similar apps into the challenged conduct, that is what we are trying to get to. Similar apps into the challenged conduct. If the challenged conduct is there, we cannot look at it.
Q. I am going to come to that.
A. Okay.
Q. Like the App Store, the Google Play Store is a platform for the sale of digital goods as well as enabling the sale of physical goods; yes?
A. That is true.
Q. So the Google Play Store in that sense is closer to the App Store than Amazon or eBay or Etsy, yes?
A. Yes, but not closer than, say, the PC comparables.
Q. Now, what Mr Howell says, and I can show you his report. Let us look at his report so you can see what he says. So if we go to {C2/4/17}, so paragraph 34.1, you will have read this. I think you refer to it. Mr Howell is

saying here that:

"It is generally much easier for a user to discover a native app through a native app store than to discover a web app."

I think you agree with that evidence, do you not?

A. Yes.

Q. That is something that both the App Store and the Google Play Store provide, correct?

A. Discoverability?

Q. Through a single app store.

A. Yes. They are both monopolists, if that is what you are asking.

MS DEMETRIOU: Dr Singer, can you refrain from trying to argue -- Mr Hoskins, I can promise you, is an excellent barrister and he will make all of these points at the end. Can you just answer my questions on the evidence.

A. You are the one who said a single --

THE CHAIRMAN: Dr Singer, I think we will move more quickly if you just --

A. Okay, but she did say a single app store.

THE CHAIRMAN: Well, do not argue with me now.

A. Okay.

THE CHAIRMAN: I think if you just accept the obvious questions without making a positive case about it that would be quite helpful.

A. Okay.

THE CHAIRMAN: You will get your opportunity, in fact you have had plenty of opportunity to tell us what you think about this, and we have got that on board.

A. Okay.

THE PRESIDENT: So I think if you just answer the questions, we will get through more quickly.

MS DEMETRIOU: Thank you.

The routes through which transactions for desktop apps take place are more fragmented, are they not, than for apps for mobile devices; correct?

A. "More fragmented". You are going to have to explain that one to me.

Q. All right. I will explain it. So it is right, is it not, that desktop users are accustomed to downloading apps from developers' websites; yes?

A. Or from the app store, from -- on my desktop I am downloading from the app store.

Q. Both. They are more -- they are accustomed to multiple sources, and they are more accustomed to having to conduct general searches for apps on the internet; yes?

A. Compared to a mobile environment?

Q. Yes, where -- compared to a mobile environment where users are accustomed to having a one-stop shop?

A. Well, they only have one option in the mobile environment, so it makes sense that that is where they would search from.

Q. Right. So I think you are agreeing with me?

A. Yes.

Q. So that is a further respect, is it not, in which the App Store is closer in its objective characteristics to the Google Play Store than it is to PC app stores?

A. I do not find that one very persuasive.

Q. Well, let us look at what you say about this. If we go to {C2/8/44}.

A. Okay.

Q. Paragraph 74, you say:

"Distribution of content through a web browser on iOS Devices is not a substitute for the distribution of iOS Apps through the App Store. To begin with, I note Mr Howell's evidence that native apps and web apps or web pages are discovered in a different way. Users generally discover web apps or web pages through eg, general web search, linking from other sites or social media, or online/offline advertising. As Apple is aware, users generally discover native apps through an app store."

So you say you do not find that persuasive any more?

A. It was persuasive for a point I was trying to make, but not for the point you are trying to make.

Q. Ah, so it is persuasive where it suits you and not where you think it might be unhelpful to the Class Representative's statement?
A. These are two completely different points. You are trying to say that because mobile has been restricted to a monopoly use that is where people get it from. Yes, I have to admit that, if you do not give them any other options, they can only get it from the monopoly, and that is true on Google's platform. But I do not know why that makes it necessarily easier.
Q. Dr Singer, I am just asking about objective characteristics of discovering apps on desktops as opposed to discovering apps on mobile devices. Here you have explained that the process is different. We can agree with that, yes? You have said it here.
A. This is a different point. This is toggling between -- on a mobile phone this is toggling between downloading from an app store and going out onto the web and finding it. That is the point being made here; that those are different, right?
Q. Yes. That is --
A. But now we are talking about is this more -- is this a more convenient forum, because of the monopoly, than when you download apps from a PC, and I am just pushing back generally. I do not think that it follows.

Q. I think you are reading much too much into my question. I was just asking about the factual point that you have put here.
A. Yes. It is a good point for this purpose.
Q. So it is a good point on the facts, right? As a matter of fact, there are differences in the way that apps are downloaded on PCs as opposed to mobile devices?
A. That is not the point here. The point here is whether or not digital content downloaded from the web is a close substitute to content from the phone, starting from the phone. I am saying that if you are starting from the phone, a mobile app, App Store, it is more convenient to download the app from the App Store than to go out onto the web and get it. It is a different point.
Q. All right.
Now, like the App Store, the Google Play Store is not confined to games apps but distributes a wide range of different apps; correct?
A. They have the same, roughly the same apps as the apps that are on the App Store.
Q. Yes, and so they are both different in that respect to Steam and the Epic Games Store, which specialises in games, yes?
A. That is a difference, yes.

Q. Like Apple, Google has its own operating system, Android, which is installed on mobile devices; correct?
A. Correct.
Q. Native apps for phones that use Android need to be built for use on the Android operating system; correct?
A. Yes.
Q. Apple and Google on the one hand are different in that respect to App Store, the One Store, Steam, the Epic Games Store and the Amazon App Store; yes?
A. In the sense of the integration between the operating system and the App Store?
Q. In the sense that apps on the Aptoide system do not need to be -- they do not have a specific operating system so there is not some Aptoide operating system?
A. They would still have to be compatible with whatever operating system they worked on.
Q. Yes, so that would be either Android or iOS in (inaudible).
A. Correct.
Q. Practically all people who use an Android device will use the Google Play Store for at least some of their apps; yes?
A. Almost all of their apps.
Q. Practically all developers who make apps for Android will put their apps on the Google Play Store even if

some also place apps on other marketplaces, yes?
A. Even if -- I missed the thing. Even if there is?
Q. So even if some of those developers also place apps on other marketplaces.
A. Yes, outside of the phone? Yes, of course.
Q. Or on the phone.
A. Well, it rarely happens. But, yes, in those rare instances you are definitely going to be on a Play Store.
Q. Yes. So the Google Play Store is providing Android developers with access to the widest range of Android consumers; yes?
A. The Play Store?
Q. Yes.
A. Yes, the Play Store, given the restraints that Google imposes, is the only game in town.
Q. None of your mobile device App Store comparators that you have in your table are examples of stores that provide developers with access to all users of the operating system.
A. You are putting your finger on what disqualifies Google. It is the monopoly status. If you are a monopolist I do not want you to be in the comparables set. It is that simple.
Q. So do you agree with the factual point I am putting to

you?

A. Yes, that if you are the only game in town and you are able to command a monopoly commission, I do not want that to contaminate my set of competitive benchmarks.

Q. Now, it is right, is it not, that Google does not impose, and has never imposed, the distribution restriction that Dr Kent is challenging in these proceedings?

A. It is not in the exact same way, if I could explain, it is pretty close. Google is not vertically integrated into the handset. They decide to licence their technology to third-party handset manufacturers like Samsung. But as a condition of getting access to that licence, Google requires that the handset maker install Google as the default, premier app store on its phone, right?

That means that rivals can only really be bidding for access to become the second provider. Then Google of course imposes many other restrictions -- I will not go into all of them, but I will skip to the relevant one, which is the payment restriction. That is, Google does not allow app developers, just like Apple, to use third-party payment processors. You have to consummate all app and in-app transactions through Google Play.

Q. So just thinking about the first point that you made.

So you say as a condition of getting access to the licence, Google requires that the handset maker install Google as the default app store on its phone; yes?
A. Yes.
Q. Now, just thinking about our counterfactual, obviously Apple would also install the App Store on all of its devices, yes? So that feature would also be present in the counterfactual.
A. Yes, Apple will be available on all, but so will a rival app store.
Q. Sorry?
A. Apple plus a rival app store. What I am contemplating is that -- in this counterfactual is that a rival app store, unlike the Android system, this rival app store will co-exist alongside Apple's App Store.
Q. But you are not saying that it would be -- the rival -- Apple would be forced to pre-install the rival app store are you on the phone?
A. No, no, no.
Q. No.
A. I have been agnostic as to how it gets there.
Q. Yes.
A. It just wouldn't be barred in the way that it presently is under the distribution requirements.
Q. No. Neither does Google bar any rival app store on the

Android device either.

A. What Google does instead -- and I am stopping after this one, because it is enough, and you can go into the Epic v Google case if you are so inclined, but the MADA(?) and these other requirements thwart competitive entry. The proof is in the pudding if you look at what Google's share of downloads is on Android phones; it is somewhere north of 90%.

Q. So you are saying because Google has such a large market share, that in itself proves that it is anti-competitive, does it?

A. No, never. What makes it anti-competitive is their large market share and their high commissions are made possible through their restraints, and restraints that a jury in the Epic v Google case have determined to be in violation of the anti-trust laws.

Q. So what is the particular restraint that you say makes Google's 90% market share and 30% commission possible?

A. Well, you know, sitting here I cannot list out every restraint that has been alleged to be part of the challenged conduct. But the ones that are coming back to mind are the default status and the payment processing restriction. Cannot use a third-party payment processor.

Q. So those are -- so thinking -- it is not a memory test, but just thinking about the issue now, because it is a very important point here, you think that the most important features of Google that have led to its 90% market share and 30% commission are the default status of the Google Play Store on phones and the payment processing restriction; is that right?

A. There is a litany of restrictions. I think I mentioned one yesterday, a technological restriction that prevents side loading of an app store. So if you attempt to side load you get hit with a series of warnings that basically are designed to scare off the user from pursuing that download.

Q. So are you saying in this counterfactual that Apple should not -- that there should be some sort of free for all for side loading and Apple should not be entitled to put warnings on to try and warn consumers about the dangers of side loading?

A. No. I am saying -- I am being agnostic as to how the second or third app store makes it on to the phone. What I am assuming is that in the presence of a second or a third app store what would happen -- what would be the competitive pressures that would manifest themselves in a lower commission rate.

Q. So when you say -- when you say you are agnostic about what would happen --

A. How they would get there. I do not think I have offered an opinion as to how they would get there.
Q. No, or any explanation, I do not think you have offered, have you, any explanation as to ...
A. Well, the payment -- we have been focusing on other app stores, but of course the action is in the aftermarket transactions, you know, allowing app developers to use third-party payment processors and other In-App Support Services. How would it happen? It would just happen because people would step forward and ask to assist in the consummation of those transactions.
MS DEMETRIOU: Sir, I am about to embark on a document, and it is going to take me more than five minutes. So should we rise now?
THE CHAIRMAN: I think that is -- unless you thought you were going to finish shortly afterwards.
MS DEMETRIOU: I am just not. So I think it is --
THE CHAIRMAN: Why do we not rise now and start again at 10.30 tomorrow.
MS DEMETRIOU: Thank you.
THE CHAIRMAN: Dr Singer, the usual rules apply: no discussing your evidence. Thank you.
THE WITNESS: Yes. Thank you.
(4.27 pm)
(The hearing adjourned until 10.30 am the following day)

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