

Exhibit 17
to the Declaration of Catherine Hartman
Public Redacted Version

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA**

MARIA SCHNEIDER, UNIGLOBE
ENTERTAINMENT, LLC and AST
PUBLISHING, LTD, individually and on behalf
of all others similarly situated;
Plaintiffs,

vs.

YOUTUBE, LLC; GOOGLE LLC;
Defendants

CASE NO. 3:20-cv-04423-JD

EXPERT REPORT OF
HAL J. SINGER, PH.D.
FOR PLAINTIFFS

November 17, 2022

Table of Contents

Introduction and Assignment	3
Limited Data Availability	6
Summary of Opinions	10
Qualifications	11
I. Industry Background and the Nature of the Challenged Conduct	13
A. Overview of YouTube	14
1. Advertising Revenue	15
2. Subscription Revenue	22
B. YouTube Is a Multi-Sided Platform	23
1. Direct and Indirect Network Effects	24
2. Advertisers as Subsidizers of the Provider-Consumer Interaction	29
II. Impact and Disgorgement of Revenues from Infringing Content	33
A. Theoretical Framework for My Econometric Models	35
B. Empirical Estimation of Econometric Models	39
1. Effect of Infringing Content on Overall YouTube Revenues	43
2. Effect of Infringing Content on User Engagement with YouTube	47
B. Econometric Estimate of YouTube Advertising Revenues Subject to Disgorgement	49
Conclusion	58
Appendix A: Materials Relied Upon	60
Appendix B: Curriculum Vitae	70

INTRODUCTION AND ASSIGNMENT

1. I understand that Plaintiffs allege copyright infringement on the part of Defendants YouTube, LLC (“YouTube”) and its parent company Google LLC (“Google”) (collectively, “Defendants”). Specifically, Plaintiffs allege that Defendants engaged in acts causing videos that infringed the works of Plaintiffs and the putative Classes (“Infringing Content”) to be reproduced, distributed, displayed, and publicly performed on the internet (“the Challenged Conduct”).¹

2. YouTube offers a video-streaming service as well as a music service titled “YouTube Music” that offers similar services to Apple Music and Spotify. I understand that the Challenged Conduct at issue deals only with YouTube’s video-streaming service. Thus, for purposes of this report, I use the term “YouTube” to refer only to the video-streaming service.

3. I also understand that, *inter alia*, Plaintiffs seek disgorgement of any profits that Defendants derived from the Challenged Conduct.² Such profits fall into two main categories: (1) advertising or subscription revenues that YouTube obtained from the playback of videos that included the Infringing Content; and (2) incremental YouTube profits from the presence of non-infringing content resulting from the spillover effects to which the Infringing Content contributed, allowing YouTube to increase viewership and thus attract additional non-infringing content.

4. Profits in the second category flow from the display of the subset of non-infringing content that is amplified by the display of Infringing Content—profits that would not have occurred absent the spillover effects that Infringing Content created. For example, such spillover

1. First Amended Class Action Complaint (“Complaint”), Dkt. 99, ¶114.

2. *Id.* ¶156.

effects can occur through the use of YouTube’s recommendation engine.³ As Google researchers observe:

Many hours’ worth of videos are uploaded each second to YouTube. Recommending this recently uploaded (“fresh”) content is extremely important for YouTube as a product. We consistently observe that users prefer fresh content, though not at the expense of relevance.⁴

Thus, spillover effects could occur when a content provider uploads a video that contains Infringing Content, a user views the video, then receives recommendations from YouTube for non-infringing content. In other words, videos that contain Infringing Content can serve as the basis for YouTube’s recommendation of non-infringing content. As Cristos Goodrow, Vice President of Engineering at YouTube, explains, “Recommendations drive a significant amount of the overall viewership on YouTube, even more than channel subscriptions or search.”⁵ YouTube benefits from such spillover effects by serving ads on non-infringing content and gathering user behavior information that can inform its ad serving throughout the Google ad platform.

5. Defendants’ revenues and profits subject to disgorgement that I estimate in this report cover both categories (1) and (2) described above. Google owns YouTube, and has done so since 2006.⁶ In this report, I focus on YouTube, as the alleged infringement occurred either within

3. Paul Covington, Jay Adams, Emre Sargin, *Deep Neural Networks for YouTube Recommendations*, Google Research, presentation paper at The ACM Conference Series on Recommender Systems (‘RecSys’), 2016, available at <https://static.googleusercontent.com/media/research.google.com/en/pubs/archive/45530.pdf> (“YouTube is the world’s largest platform for creating, sharing and discovering video content. YouTube recommendations are responsible for helping more than a billion users discover personalized content from an ever-growing corpus of videos.... During candidate generation, the enormous YouTube corpus is winnowed down to hundreds of videos that may be relevant to the user.”)

4. *Id.*

5. Cristos Goodrow, *On YouTube’s recommendation system*, YOUTUBE BLOG, Sept. 15, 2021, [hereafter “Goodrow 2021”] available at <https://blog.youtube/inside-youtube/on-youtubes-recommendation-system/> (“You can find recommendations at work in two main places: your homepage and the ‘Up Next’ panel. Your homepage is what you see when you first open YouTube—it displays a mixture of personalized recommendations, subscriptions, and the latest news and information. The Up Next panel appears when you’re watching a video and suggests additional content based on what you’re currently watching, alongside other videos that we think you may be interested in.”).

6. Nicholas Jackson, *Infographic: The History of Video Advertising on YouTube*, The Atlantic, August 3, 2011, available at <https://www.theatlantic.com/technology/archive/2011/08/infographic-the-history-of-video-advertising-on-youtube/242836/>.

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