GOOGLE, MOBILE AND COMPETITION: THE CURRENT STATE OF PLAY

BY BENJAMIN EDELMAN[1]

I. INTRODUCTION

Google's widely-used Android operating system is open source software. Any developer who wishes to examine the source code can download it in full. Any device manufacturer that wishes to install "bare Android" can do so free of any Google apps whatsoever, and subject to minimal restrictions and few obligations to Google or anyone else. Such flexibility might seem the epitome of competition. How could such methods be anticompetitive?

Notably, options are far more limited for the mainstream devices that offer the features consumers expect in developed markets. Consider a consumer who wants a "normal" Android phone with Google Maps and YouTube, along with the Google Play app store to download Uber and Pandora as well as obscure apps for the user's hobbies and vocation. Unbeknownst to most users, these routine capabilities require a device manufacturer to accept a web of contracts with Google—some easily available, yet others literally unknown to the public before I posted copies on my web site. Under those contracts, a device manufacturer must install the Google apps that Google specifies, must configure the device as Google specifies, and can only install apps from other developers to the extent Google approves and to the extent consistent with Google's demands. Meanwhile, Google's restrictions impede efforts of competing app developers seeking to enter the markets at issue—including preventing them from paying device manufacturers to make them the sole preinstalled services, in their respective genres, on a given device.

Competition authorities have taken note of these practices. The European Commission announced in April 2015 that it had opened an investigation of Google's practices in mobile, separate from and parallel to the Commission's long-running investigation of self-favoritism in Google's search results, among other practices. Despite previously closing an examination of Google's tactics in search, the U.S. Federal Trade Commission announced in September 2015 that it had begun to evaluate Google's tactics in mobile. The Korean Fair Trade Commission in April 2016 announced a similar investigation of Google's mobile practices. Furthest along is Russia, which in September 2015 found Google's mobile practices impermissible, and by August 2016 had imposed penalties totaling nearly USD $7 million (though Google continued to appeal).

II. THE GOOGLE CONTRACTS AT ISSUE

While bare Android is open source, any device manufacturer wanting to install even a single Google app—perhaps Google Maps, Google Chrome, YouTube, or crucially the Google Play app store that allows downloads of other apps—must accept a Google Mobile Application Distribution Agreement ("MADA"). The existence of these MADA contracts was itself secret, but in February 2014 I found and posted two MADAs.[2] (They had been revealed in open court in copyright litigation between Google and Oracle.)

The MADAs entail significant restrictions on device manufacturers: First, device manufacturers must preinstall all the Google apps that Google specifies. Second, the preinstalled apps must be prominent, with some required to be at least adjacent to the home screen. In some MADAs, Google even specifies the exact sequence from left to right and top to bottom. Third, Google requires that Google Search be the default search provider for all web search access points. (The newest MADAs also require that "assist" and "voice search" functions use Google Search, and that physical buttons access Google Search.) Fourth, Google requires that the device use Google's Network Location Provider service, which tracks users' locations at all times and sends that information to Google. Finally, Google requires that the Google Web View Component (the core of a web browser) be used by

1 Benjamin Edelman is an associate professor at Harvard Business School. His research and writings are at www.benedelman.org He has no current clients adverse to Google with respect to the practices discussed herein.

2 Benjamin Edelman. "Secret Ties in Google's 'Open' Android." February 13, 2014: http://www.benedelman.org/news/021314-1.html

all apps that seek to render web pages. As part of MADA requirements, Google also requires device manufacturers to accept an Anti-Fragmentation Agreement ("AFA"), which Google styles as preventing ill-advised customization of Android that might create incompatibilities. To date, it seems that no AFA has been released to the public. But by all indications, the AFA disallows a manufacturer from distributing any devices using a modified version of Android—requiring manufacturers to forego the customization that open source software otherwise allows.

Defending the MADA restrictions, Google argues that device manufacturers need not accept MADAs. Indeed, a manufacturer could in principle distribute some other operating system totally unrelated to Android. But alternatives are not commercially viable. Apple iOS is of course not available for installation on devices made by independent manufacturers. Windows Phone never crossed 3 percent worldwide market share and has been declining since 2015. Though Blackberry and Symbian were historically popular, they too are in decline and indeed have been withdrawn by their respective developers. As a result, device manufacturers have a single choice of operating system—Android—for marketable mobile phones.

Alternatively, a device manufacturer could distribute bare Android without any Google apps, thereby avoiding signing an MADA. A phone without Google Maps might satisfy some users; perhaps MapQuest or Yahoo Maps would suffice. Indeed, some users might affirmatively prefer a different network location provider, mobile web browser, or even search engine, in part in response to concerns that Google's services collect and track excessive personal information. To assist manufacturers that attempt to offer multiple third-party apps, the Android distribution Cyanogen Mod seeks to provide the best available alternative to each of Google's apps. Cyanogen's approach has attracted enthusiast followers, yet it is struggling with management turnover, allegations of overstating installations threefold or more, and difficulty attracting distributors. Notably, whatever a device manufacturer's ability to find substitutes for most Google apps, there remains a substantial additional challenge: replacing the Google Play app store, the subject of the next section.

III. APP STORES AS AN IMPEDIMENT TO COMPETITION

App stores are the software marketplace where consumers browse software to install onto their phones and tablets, including both free offerings and those with a fee. In principle, anyone can make an app store. But an app store is no more useful than the apps it offers, and in this respect Google has a sizable advantage: the Google Play app store features some 2.2 million apps, more than three times as many as Amazon Appstore, the closest competitor among Android app stores.

In principle, a competing app store could expand its inventory by copying app listings and files from Google Play. In general, the apps would work as expected; if the only difference were that a user installed an app via a different app store, the app would still function as usual. Furthermore, each app is embodied in an APK file, which is actually just a ZIP of the app's components—so an app store wishing to use this strategy would only need to download a single file per app from Google Play servers. Notably, developers of free apps would benefit from additional distribution via inclusion in a competing app store, so they would be unlikely to object. Nonetheless, Google specifically bans this strategy, admonishing prospective copiers in the Google Play Terms of Service that copies are only allowed "via the Google Play user interface," subject to Google's restrictions, for personal and non-commercial use, with sharing and redistribution specifically disallowed—quadruply prohibiting a competing app store from copying APKs from Google Play. If a competitor has copied files from Google Play, it has done so only in secret and without significant public discussion.

Seeing the difficulty of copying apps into a competing app store, a device manufacturer might attempt to arrange for its users to receive Google Play. In principle, the device manufacturer could itself copy the Google Play APK file and preinstall it appropriately, along with any support files and configuration adjustments found to be necessary. But distributing Google Play without a license is copyright infringement, exposing the device manufacturer to litigation including statutory damages, actual damages and injunctive relief. Alternatively, the device manufacturer could teach users how to install Google Play themselves. Putting aside the prospect of contributory liability for users' infringements, such methods appear to be unreasonably difficult for users—requiring them to reduce device security settings to allow the installation, find a web site offering the Google Play APK file, accept installation prompts, then restore device security. Several of these steps rightly give consumers pause. For example, mainstream sites cannot host a copyright-infringing Google Play APK, so users must resort to untrustworthy forums or file hosting

services to find it. Similarly, users appropriately hesitate to reduce device security settings, even when that is in fact necessary to install crucial software. Furthermore, users can easily forget to restore security defenses in the final step—having obtained Play and the benefits it offers—which leaves their devices especially vulnerable. For all but the savviest experts, it is unrealistic to install Google Play independently.

IV. BUSINESS MODELS FORECLOSED BY GOOGLE'S RESTRICTIONS

Google's restrictions prevent device manufacturers from making a variety of changes to Android. For one, device manufacturers cannot replace certain Google apps with third-party alternatives viewed as preferable. If a device manufacturer thought that some other location service provider was more accurate than Google Location Services, better protected privacy or otherwise offered some notable advantage, it nonetheless could not make this substitution. So too if a device manufacturer found that some other search engine was better than Google, perhaps with fewer advertisements, more privacy, or best-of-the-web results rather than listings disproportionately drawn from Google's ancillary services.

For other apps, such as maps and email, device manufacturers remain permitted to install third-party apps in addition to Google's offerings. But Google's apps are guaranteed the prominence Google specifies, which means that users will see multiple choices for the same functions— duplicative and potentially confusing. Even if a device has ample long-term storage for apps of modest size, both RAM and CPU tend to be in short supply, and a user with multiple similar apps risks running them simultaneously, thereby taxing these key resources and also reducing battery life. When users accidentally spread prior activity across multiple apps—perhaps recent destinations split between competing map apps—the user experience is particularly poor.

Notably, device manufacturers might sometimes want to preinstall other apps not because they are intrinsically superior to Google's apps, but because competing app makers offer to pay for such installations. On one view, this creates a risk of "bloatware"—devices clogged with software installed not because a device manufacturer truly thinks it is useful for consumers, but because app makers pay to put it there. On the other hand, mobile device manufacturing is notoriously competitive: numerous manufacturers make devices that are broadly similar. Additional revenue from app makers would therefore push device manufacturers to lower their prices to consumers. Would a consumer prefer a phone with Google Maps, or one for which MapQuest paid Samsung USD $3 to preinstall its app, and Samsung in turn reduced the phone's retail price by $2? For many consumers, the lower price would prevail. Yet if MapQuest knows it can buy only additional installation, with Google Maps also preinstalled and indeed still prominent, its willingness to pay will be correspondingly reduced—perhaps $1 rather than $3, in anticipation of many users going straight to Google's offering and never trying the competitor. At best, Samsung then has less ancillary revenue to pass on (in part) to the consumer through a lower price. At least as likely, MapQuest and Samsung wouldn't even bother to do the deal.

Occasionally, a device manufacturer experiments with foregoing the MADA and modifying Android to build a customized device. But market response to these offerings confirms the limits of this strategy. For example, Amazon in July 2014 began to distribute the Fire Phone which did not preload any Google apps and was marketed without the Android name or logo. Avoiding MADA restrictions, Amazon could load its own apps for every feature and otherwise customize the device as it saw fit. But without Google Play, users could not get the apps they expected—a complaint reported in most reviews from both technology journalists and ordinary users. As a result, the Fire Phone was not commercially viable, and Amazon discontinued it after one year.

One might discount Amazon's failure as a phone novice struggling to enter a competitive market with experienced incumbents. But the all-or-nothing provisions of Google's AFA assure that any such experiments come only from entrants and not from firms with relevant experience. In particular, any device manufacturer that accepted the MADA for any device is bound by the AFA as to the manufacturer's entire operation. Suppose, say, that Samsung built the same device that Amazon distributed as Fire Phone. As a modification of Android, this device would have breached Samsung's AFA commitments—forfeiting the company's license to install any Google apps on any of the company's devices. Samsung's expertise might provide an advantage in designing customized devices and in making prudent decisions about device settings and features. Nonetheless, Google's interlocking contracts make Samsung's existing business an important handicap—risking losses too big to justify experimentation.

V. GOOGLE'S DEFENSES

Google has responded to critics' concerns.[3] For one, Google suggests that Android competes with Apple iOS—a market definition that reduces Android's market share and dulls concerns about dominance. Google's approach has some appeal: Certainly normal consumers in mature markets do compare Android devices with iOS devices, and from a consumer's perspective, the market may include both. Yet Google's market definition is unconvincing from the perspective of a device manufacturer. For a mobile device manufacturer needing an operating system to install on its hardware, iOS is no answer at all; Apple of course does not license iOS to other manufacturers. Meanwhile, even in the broader market that includes iOS, Android remains much larger than iOS in most countries. With over 80 percent of the global market share as of 2016, compared to about 15 percent for iOS, Android easily meets the level of dominance that triggers competition scrutiny.

Google's most nuanced arguments explore questions of compatibility and restrictions on customization. Google correctly points out that "Any phone maker can download Android and modify it in any way they choose." Yet this argument notably ignores the overwhelmingly more common devices that combine bare Android with Google Play and Google apps, at which point modifications are limited by Google's contractual restrictions as discussed above. Moreover, bare Android devices appear to be largely unworkable in wealthy and developed markets. With a few key exceptions such as China (where many Google apps would be blocked in any event), sophisticated consumers expect and demand Google Play access. Then bare Android appears to be more of a developer toolkit than a commercially-viable offering, and in that context the potential but unpalatable availability of bare Android need not blunt competition scrutiny of Google's restrictions. Here, too, the relevant decision-maker may be a mobile device manufacturer. Choosing between bare Android and a normal installation with Google Play and more, even a substantial increase in price of the latter (or contractual restrictions equivalent to such an increase) seems unlikely to push the developer to bare Android in light of the commercial difficulties of marketing such devices.

Separately, Google flags the risk of fragmentation—noting the importance of "a stable and consistent framework" across devices so that all apps run on all devices. No doubt certain customizations would create incompatibilities. But most of Google's restrictions seem a poor match for this concern. For example, there is no serious suggestion that a device would be incompatible with new apps if, say, a MapQuest icon took the space where Google Maps usually appeared. In the event that some third-party app required Google Maps (perhaps for mapping within the app), it could access Google Maps components despite the lack of a Google Maps app for users to see—an approach reminiscent of Microsoft hiding Internet Explorer but keeping its components for use where needed by other Windows applications.

Google later suggests that it "offer[s] manufacturers a suite of apps so that when you buy a new phone you can access a familiar set of basic services." Here, it seems there are competing values: Perhaps Google's approach offers convenience for users who most value simplicity. Yet it simultaneously increases the barriers to entry for competing apps, and it portends a world where Google's apps dominate ever more sectors. If consumer confusion is Google's fundamental concern, the better approach might be impeccably clear choices for consumers—"Do you want Google Maps or MapQuest?" "Do you want your location tracked by Google Location Services or by Skyhook?" By insisting that users receive Google service, prohibiting such prompts, and denying these user choices, Google invites an inference that its true motive is leveraging its other services, not protecting consumers.

Google concludes by discussing its requirement that manufacturers preinstall Google Search as the default search provider from all search portals, in order to get the crucial Google Play app store. Google explains that this restriction "permits us to offer our entire suite for free—as opposed to, for example, charging upfront licensing fees." Google continues: "This free distribution is an efficient solution for everyone—it lowers prices for phone makers and consumers, while still letting us sustain our substantial investment in Android and Play." But Google offers no financial information to support the claim that the value of free traffic to Google Search is similar to the cost of operating Google Play. Indeed, one might suspect otherwise in light of high revenues from search ads, versus the apparent modest costs of running Play. Indeed, Play's costs seem to be particularly low thanks to self-service app uploads and little to no screening by app store staff. Moreover, Play's costs are likely at least partially offset by some of

3 Kent Walker, "Android: Choice at Every Turn." Google Blog, November 10, 2016: https://blog.google/topics/google-europe/android-choice-competition-response-europe/

the service's revenues, including Google's non-negotiable 30 percent fee on both paid apps and in-app purchases. With modest costs and considerable offsetting revenues, it seems probable that Google Play could even be profitable on a standalone basis.

The merits of providing a larger software suite at no charge, versus for a license fee, surely deserve additional examination and discussion. But in some respects, competition concerns would be more naturally advanced by a paid platform. Indeed, if Google charged a license fee for its services, competitors could enter with lower prices to offset, perhaps, lower initial product quality. And if device manufacturers could recoup Google license fees via revenues from third-party app preloads, device manufacturers' net cost might well be negative, facilitating lower device prices to consumers as sketched above.

A recent Google-sponsored paper by Christopher Yoo offers additional insights into Google's defenses of its approach.[4] As to Google's requirement that device manufacturers install certain apps, Yoo notes potential benefits of standardizing user interfaces so that users can more readily switch between devices. But if user interface standardization is truly Google's concern, the MADA's specific requirements do little to fix the problem. For example, most users would find a competing map app intuitive based on experience with Google Maps, and vice versa, and there is little apparent risk of genuine confusion there. Nor does it seem particularly confusing for some devices to direct searches to Google, while others use alternate search services, just as desktop and laptop computers have long featured similar diversity in search defaults. In contrast, Google allows device manufacturers to customize Android in ways that users widely report as confusing. For example, manufacturers install "skins" that transform Android's appearance by changing menus, icons, shortcuts, and more. As a result, the on-screen display of a Samsung phone may differ substantially from, say, a Motorola phone. Similarly, manufacturers change which hardware buttons, in which sequence and combination, perform common shortcuts—so buttons that take a snapshot on one device may not work on another. Furthermore, manufacturers alter and reorganize crucial settings screens that allow user to adjust key configurations. Google's professed interest in user interface standardization would seem to call for standardization in these crucial respects, which have been widely criticized by users and reviewers. Instead, Google allows diversity in these areas—yet demands uniformity in precisely those realms that benefit Google's own apps.

VI. LOOKING FORWARD

Despite investigations on three continents, Google seems to stand by its restrictions on mobile device manufacturers. Indeed, requirements that had previously been cloaked in secrecy are now under public discussion, in part via newly-available documents and also via increasingly detailed statements from Google leaders. Yet consumer reaction remains limited. On one view, consumers may be satisfied with their devices and may not care. But with few alternatives apparent, save for intervention by competition authorities, consumers may see little reason to speak up.

Meanwhile, important aspects of these questions have already played out in prior competition cases. Most similar are prior proceedings against Microsoft. Accused of misconduct in the design of its dominant computer operating system, Microsoft noted the availability of other OSs including Apple's MacOS—but competition regulators resoundingly rejected that argument, in part because MacOS was unavailable to PC manufacturers. Notably, the final resolution in Europe required Microsoft to offer users prominent choice among competing browsers—promoting the top five browsers in random order with none offered as the default. I previously proposed that competition authorities impose a similar requirement on Google, as to apps on phones and tablets, in any sector where Google offers an app of its own.[5] With such an intervention, competition regulators might similarly accelerate usage of competing services and reinvigorate competition in these important sectors.

4 Christopher Yoo, "Open Source, Modular Platforms, and the Challenge of Fragmentation," SSRN Working Paper 2866666, November 10, 2016.

5 Benjamin Edelman and Zhenyu Lai, "Comments on Commitments in AT.39740 – Google," May 28, 2013: http://www.benedelman.org/publications/comment-edelman-lai-to-dgcomp-28may2013.pdf


CPI
COMPETITION POLICY
INTERNATIONAL