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### 1AC---Emerging Technology

#### The sole contention is Emerging Technology.

#### An unmoderated, permissive merger policy sanctions Big Tech to engage in predatory behavior that disrupts Schumpeterian innovation.

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1. Introduction

Commentators across the political spectrum have called for new and more forceful approaches to antitrust enforcement with respect to Big Tech—especially Amazon, Facebook, and Google. A wide range of proposals have been put forth, including breaking firms up, subjecting them to pervasive regulation, and being much more wary of mergers between incumbents and either recent or potential entrants.1 The last concern is driven, in part, by the combination of apparently dominant market positions coupled with large numbers of acquisitions. For example, Amazon is estimated to have accounted for almost 40 percent of all 2019 ecommerce sales in the U.S., and Facebook and Google together account for over 60 percent of U.S. digital ad spending.2 These companies made hundreds of acquisitions in the previous decade.3

To determine if acquisitions by Big Tech are a big problem that justifies heightened or different scrutiny, it is useful to begin by asking: what is special about these firms, beyond their tremendous success? One answer is that all are in industries with very strong increasing returns and positive feedback loops. There are several sources of increasing returns—often present simultaneously. One source is network effects. Another is the collection and use of big data, which can give rise to economies of scale, scope, and experience. Lastly, the creation of software and intellectual property (including proprietary hardware designs) is typically characterized by large economies of scale, with high fixed costs and very low marginal costs.

The presence of such strong increasing returns can limit the number of viable competitors and even create a tendency to tip toward monopoly. When increasing returns are large relative to product differentiation, competition may be for the market rather than in the market. Competition for the market, whereby firms compete by innovating to attain temporary market dominance, is often referred to as Schumpeterian competition.

The need for scale can make entry difficult in the very markets in which entry is critical because competition takes place for the market. In a market in which a large base of users is essential to a firm’s ability to offer an attractive value proposition—say because network effects are strong and/or the value of user big data is high—the only economically viable means of entry may be to build up a base of users in an adjacent market and then provide the new service to that base of users—what is sometimes called a two-stage entry strategy.4 Some commentators believe that Instagram and WhatsApp would have used two-stage entry to become strong competitors to Facebook in social networking if that firm had not acquired them in 2012 and 2014, respectively.5

Another strategy, to use alone or in conjunction with two-stage entry, is to offer a product with higher quality than that of the incumbent firm. Most directly, an entrant’s quality advantage may outweigh its scale and installed-base disadvantages. There can also be an indirect effect. In markets subject to strong network effects, a firm may gain significant competitive advantage from favorable consumer expectations—when consumers expect that firm to have high sales, their expected value of patronizing that firm rises due to the anticipated network benefits associated with a larger user base. One might expect incumbents generally to have expectations advantages. However, a highly visible innovation might tip expectations in favor of an entrant.6 \*\*\*FOOTNOTE BEGINS\*\*\* Farrell and Katz (1998) provide an early analysis of the role innovation can play to facilitate entry by shifting consumer expectations in markets with network effects. \*\*\*FOOTNOTE ENDS\*\*\* If this pattern prevails, then leapfrog innovation might allow an entrant that is small today to generate a positive feedback cycle and overcome an incumbent’s various scale advantages.

Both two-stage and innovative entry strategies require the entrant to amass complementary resources (e.g., users and intellectual property) to have a chance of overcoming the advantages of incumbency. An entrant also needs a strong growth trajectory that allows it to achieve viable scale. An entrant’s need to acquire complementary assets and attain a promising growth trajectory may allow an incumbent to identify potential rivals before they become major actual competitors.

Below, I explore the role of merger policy in a model in which competition is for the market and an incumbent can identify—and merge with—an emerging or potential competitor before the entrant becomes the new dominant firm. After Section 2 briefly reviews related literature, Section 3 presents the overall analytical framework: a discrete-time, infinite-horizon game in which each period a new potential entry opportunity arises with exogenous probability. Entry requires making a sunk investment in product development. If entry occurs and the firms do not merge, then the incumbent and entrant compete for the market, and the market is ultimately monopolized as one of the firms is driven to exit.

Section 4 argues that incumbents’ acquisitions of emerging or potential competitors should be subject to heightened antitrust scrutiny when competition is for the market. Entry is a critically important means of promoting market performance under Schumpeterian competition but acquisition of a nascent competitor can be an especially effective way to avoid Schumpeterian competition, to the detriment of consumers. Marino and Zábojník (2006) have shown that, when competition is in the market (i.e., multiple incumbents can be profitable simultaneously), the threat of rapid entry can sometimes serve as a substitute for merger policy by making merger unprofitable absent efficiencies. To see why, suppose that there are two incumbents. In the absence of additional entry, merging to monopoly raises profits by eliminating product-market competition. However, there can be an offsetting share-dilution effect: when the two firms merge, they may create room for a subsequent firm profitably to enter the market because they weaken their bargaining position—instead of collectively receiving two-thirds of the continuation profits in symmetric bargaining over merger with the entrant, they receive only half. When subsequent entry is rapid, the share-dilution effect renders mergers unprofitable absent efficiencies. By contrast, there is no share-dilution effect when competition is for the market: even absent merger, the market is monopolized after a period of competing for dominance following entry. Because it eliminates a period of competition to be the dominant firm, merger is profitable even if ensuing entry is rapid.

Sections 5-8 examine the effects of merger policy on potential entrants’ pre-merger innovation incentives. When mergers are banned, entry occurs only when a potential entrant has a sufficiently valuable innovation that it can overcome any incumbency advantages and become the new dominant firm. As Rasmussen (1988) identified, when mergers are feasible, a firm may enter the market solely to induce the incumbent to purchase the entrant in order to avoid dissipating product-market profits through competition—so-called entry for buyout.7 \*\*\*FOOTNOTE BEGINS\*\*\* Entry for buyout can occur even if the entrant could otherwise become dominant—competition to attain that position could prevent the firm from recovering its entry costs. \*\*\*FOOTNOTE ENDS\*\*\* It is often argued that a benefit of allowing mergers is that, by facilitating entry for buyout, they can promote innovative entry.8 Below, I show that allowing mergers can also discourage entrant innovation.

As long as the incumbent’s actions conditional on not merging are independent of whether mergers are permitted, the option to merge can only increase an entrant’s profits. This finding, however, does not imply that this option everywhere increases an entrant’s incentives to marginally improve its product. In fact, the possibility of merger may diminish innovation by increasing the relative profitability of entering with a less ambitious product. Moreover, the option to merge might reduce an entrant’s profits by facilitating incumbency for buyout, whereby an incumbent invests in strengthening its competitive position solely to induce the entrant to merge on more favorable terms. Finally, a permissive policy that also applies to future mergers can reduce a current entrant’s profits by facilitating entry for buyout by subsequent entrants.

Section 5 analyzes the effects of merger policy on an entrant’s incentives to invest in marginal product improvements. When there is no incumbency for buyout and certain other conditions are satisfied, an entrant’s disagreement profits when bargaining over whether to merge equal its profits when mergers are banned. Hence, the difference between the entrant’s profits with and without the possibility of merger equals the entrant’s share of the gains from merger. The effect of permissive merger policy on innovation incentives thus depends on how a change in the entrant’s product quality affects those gains. In general, increasing the entrant’s product quality can raise or lower the gains from merger, which implies that option to merge can raise or lower an entrant’s incentives to invest in quality.

The analysis summarized above relies on reduced-form profit functions. Sections 6-8 present examples in which product-market competition is explicitly modeled. These examples illustrate how permissive merger policy can harm innovation incentives and that the competitive effects of mergers can be complex and highly fact specific. The example of Section 6 exhibits same-side network effects, such as arise with social networks. Among other things, this example demonstrates that, in situations where the merged firm retains the older technology (to avoid splitting users and losing network benefits), an increase in the entrant’s product quality lowers the gains to merger. Intuitively, the higher is the entrant’s product quality, the greater the opportunity cost of not using it. The example of Section 7 considers a market without network effects in which a firm must make a new investment each period in order to be an active seller. In this example, the entrant chooses a higher product quality when mergers are banned because the possibility of merger leads the entrant to put weight on the effects of its innovation on monopoly profits, which are less sensitive to the entrant’s quality than are the profits the entrant earns when competing with the incumbent. Section 8 shows by example that permissive merger policy can facilitate incumbency for buyout that discourages innovative entry.

Section 9 discusses some policy implications of this analysis. Although acquisitions of emerging competitors in Schumpeterian markets should be subject to heightened scrutiny generally, in some cases merger promote innovation and efficiency. It is thus important to examine the facts of each case at hand even if doing so is difficult.

Finally, a technical appendix examines a benchmark case of imitative entry to compete in the market, which serves as a benchmark for the text’s model of innovative entry to compete for the market.

2. Related literature

Before turning to the analysis, it is useful to put it in context and discuss related literature. The model presented below is not intended to apply to all Big Tech mergers.9 It is highly unlikely that the Big Tech incumbents considered each of the hundreds of firms they acquired to be a significant potential competitor, and any given incumbent may have a variety of motives underlying different acquisitions. For example, some commentators are concerned that a digital platform can expand into various industries that rely on it and then create artificial advantages for its subsidiaries while harming competition from rivals to those subsidiaries. Variants of this complaint have been made against Amazon Basics, Google Shopping, and Apple apps sold on its App Store.10 My focus is on mergers aimed at preventing successful entry into a firm’s core market(s), rather than mergers that allow a firm to expand into other markets. The latter type of merger is more appropriately analyzed using models developed in the literature on vertical mergers. Church (2008) surveys the main theories relevant to vertical mergers, and Slade (2020) surveys empirical studies of the effects of vertical mergers.

Big Tech firms often operate multi-sided platforms, which can have strong implications for the welfare effects of a merger. Recent analyses include Anderson and Peitz (2020) and Correia-da-Silva et al. (2019), and Foros et al. (2015) and Jullien and Sand-Zantman (2020) offer surveys of the two-sided merger literature. Below, I abstract away from multi-sidedness and focus on the implications of strong increasing returns.

There has been a long and inconclusive debate regarding the general relationship between horizontal mergers and innovation. See, for example, Baker (2007), Jullien and Lefouili (2018), Katz and Shelanski (2007), and Shapiro (2012), and the papers cited therein. This literature tends to be concerned with the effects of merger on the level of post-merger innovation. By contrast, I consider situations in which innovation is necessary to launch an entry attempt, and I focus on the effects that the prospect of merger has on premerger innovation incentives.

Several recent papers also consider premerger incentives.11 Cabral (2020), Letina et al. (2020), Motta and Peitz (2020), and Hollenbeck (2020) all find that prohibiting mergers can reduce innovation by reducing entry for buyout. The first three papers all examine models in which additional investment increases the probability that an innovation project is successful but does not affect the outcome conditional on success.12 Hence, the possibility that merger discourages entrant investment in marginal quality improvements does not arise. Hollenbeck (2020) considers a computational oligopoly model in which entrants’ investment decisions do affect their marginal product qualities, but for the functional forms that he utilizes, he finds that the prospect of merger never decreases entrants’ innovation levels.

Kamepalli et al. (2020) also examine the effects of merger policy on premerger innovation. They find that permissive merger policy can reduce entrant innovation but for a reason very different than the ones I identify below. Specifically, Kamepalli et al. examine a market subject to network effects in which prospective early adopters shy away from an entrant that they believe will be merged out of existence.

Finally, Bryan and Hovenkamp (2020) examine a model of startup acquisitions by duopoly incumbents in which a startup does not have the ability to enter the market. Although related, the analysis focuses on the effects of exclusive licensing rather than the elimination of a potential Schumpeterian competitor that I examine.

3. The model

I explore the effects of merger policy by examining Markov perfect equilibria (i.e., subgame perfect equilibria in which players’ strategies depend only on the current, payoff-relevant state variables) in the infinite-horizon game illustrated in Fig. 1 below. Firms and consumers have a common per-period discount factor, δ. The structure of the game and specific parameter values are common knowledge.

At the start of each period, any existing incumbent chooses whether to remain active in the market. Then a new potential entry opportunity arrives with exogenous probability, ρ¯. An opportunity can be thought of as arising due to the discovery of a new generation of product or process technology that is proprietary to the potential entrant. When a new generation arrives, the potential entrant associated with that generation chooses how much to invest in developing the new technology, where greater investment leads to higher quality.13

Let qk(I) denote the quality level obtained for the generation-k technology when the entrant invests I. qk(I) is assumed to be increasing in k as well as I. To simplify the notation, equate each technological generation with the corresponding period index. That is, generation k refers to the technology that allows entry commencing in period k. This notation implicitly assumes that generations advance over time independently of both whether an entry opportunity arises in a particular period and what amounts that entrants have invested in past generations. Once a given generation of technology has arrived, it does not improve (i.e., for a given k, qk( · ) does not change with the passage of time), and there is only a single entry opportunity for any given firm: a firm must either choose to enter when an opportunity arises or otherwise stay out forever.

Conditional on having an entry opportunity and choosing to enter, a generation-l entrant facing an incumbent with product quality qf chooses investment I to maximize

[Equation omitted]

where VE l (qf, ql) is the expected discounted productmarket profits that will be earned by a generation-l entrant with quality ql facing an incumbent with quality qf. 14 One can think of f as standing for “follower” and l standing for “leader” because the entrant relies on the leading technology. Assume that that there is a unique optimal investment level conditional on the incumbent’s quality, I E l (qf), with associated quality level qE l (qf) ≡ ql(I E l (qf)). The potential entrant chooses to enter the market if

[Equation omitted]

and will stay out of the market otherwise (with I = 0). Let ρE l (qf) denote ρ¯ times the conditional probability that entrant with generation-l technology will enter if the opportunity arises and there is a single incumbent having quality qf.

After the entry decision, any incumbents and the entrant (if there is one) choose whether to merge, which generates a new state of the market. A merger is assumed to take place whenever doing so maximizes the net present value of the merging parties’ joint profits. The exit, entry, and merger decisions occur sequentially but instantaneously, followed by a production period. The next period repeats this structure.

I consider settings in which, if entry occurs and the incumbent and entrant do not merge, then they compete for the market for one period, after which one of them exits the market. The losing firm puts up a fight for one period before exiting because it has a depreciating asset (e.g., consumer brand, installed user base, or plant and equipment) in which the firm stops investing after entry but that has sufficient residual value for the firm to constrain the winner’s pricing for one period.15 Once the loser has exited the market, it exerts no competitive pressure.16

[Figure omitted]

Let πI t(qf, ql) and πE t (qf, ql) denote the per-period profits of the incumbent and entrant, respectively, when they compete for the market in period t with products having qualities qf and ql, respectively.17 These profit functions may also reflect horizontal product differentiation as long as that differentiation is insufficient to allow the firms to coexist profitably.18 After one firm has exited the market, the remaining firm earns π M t (qk ) per period until the next entry event occurs, where k ∈ {f, l} denotes the winner’s technology

Assume that maxI πE t (qf, ql(I)) − I < 0, so that it is unprofitable to enter the market, lose the competition for the market, and exit. Given this assumption, and because the model is deterministic with respect to product-market competition, entry occurs only if the entrant anticipates either winning the competition for the market or merging.19

If entry occurs and the incumbent and entrant merge, then the combined firm earns πT t (qf, ql) in the entry— or “transition”—period given the incumbent’s and entrant’s product qualities. The transition period reflects lags in redeploying competitive assets (e.g., brands, installed bases, or physical plant). The merged firm earns π M t (qk ) per period in subsequent periods until the next entry event occurs, where k ∈ {f, l} is the technology that the merged firm chooses to adopt going forward. The assumption that the merged firm has to choose one or the other technology is consistent with my focus on effects that arise when mergers do not generate productive efficiencies.

Even absent merger efficiencies, there is private incentive to merge to avoid dissipating profits through competition: both πT t (qf, ql) and max k∈{f,l} π M t (qk ) are assumed to be larger than πI t(qf , ql) + πE t (qf , ql).

4. Acquisitions of emerging competitors: a case for heightened scrutiny

As described in the Introduction, to be successful, an entrant needs to amass complementary resources (e.g., users and intellectual property) to overcome any incumbency advantages, and it needs a strong growth trajectory to achieve viable scale. The entrant’s need to acquire complementary assets and attain a strong growth path may allow an incumbent to identify and acquire a potential rival before it has entered into direct competition with the incumbent, or while the entrant still has a very small share of the market in which the incumbent competes.20 This possibility challenges the traditional antitrust approach to assessing mergers in the U.S., under which it is difficult to prevail in court when trying to block a merger based solely on the loss of potential future competition.21 \*\*\*FOOTNOTE BEGINS\*\*\* See, e.g., Bush and Massa (2004) and Werden and Limarzi (2010) for discussions of relevant cases. In addition, the lack of assets or sales may result in a transaction’s falling below the thresholds that trigger mandatory notification of antitrust authorities. (See Wollman (2019).) \*\*\*FOOTNOTE ENDS\*\*\* Moreover, the earlier the dominant firm can identify such a rival, the more problematical the outcome is for competition policy—both because the earlier a merger involving a nascent or potential competitor occurs the harder it is to challenge and because such a merger allows the firms more fully to avoid competing.

Although the conditions just described make it particularly difficult for antitrust enforcers to challenge acquisitions, these conditions also make it particularly important that enforcers do so: absent entry and dynamic competition, there will be little competition at all. Moreover, when competition is in the market, the share-dilution effect described in the Introduction and illustrated by Proposition A.2 in the Appendix can serve as a substitute for antitrust enforcement in limiting inefficient mergers.22 By contrast, when competition is for the market, the share-dilution effect does not arise.

The intuition for why the share-dilution effect doesn’t limit mergers when competition is for the market is as follows. Suppose that, in the event of merger, the merged entity adopts the entrant’s technology. If entry occurs, then after one period, the continuation game looks the same whether or not the entrant and incumbent have merged— either way there will be a single firm, which relies on the entrant’s technology. From the perspective of the current incumbent and most recent entrant, the only effect of their merger is to avoid a period of competition to be the dominant firm. If the merged firm would adopt the incumbent’s technology, then merger must be even more profitable.

To see this point formally, suppose that mergers are allowed and that the current entrant comes into the market in period l with a quality advantage sufficient for it to win the market if the firms do not merge. Absent merger, the incumbent earns

πI l (qf, ql) (1)

for one period and then exits the market, while (gross of the entry cost) the entrant earns

[Equation omitted]

where ρE l (·) ≡ 0 and VI l+j (ql, ql+j) denotes the continuation value that a firm with quality ql earns as the new incumbent when the next entrant comes into the market in period l + j with quality ql+j. πE l (qf, ql) in expression (2) equals the profits the entrant earns in the entry period. The terms involving π M l+j (ql) are the discounted profits the current entrant earns in later periods before subsequent entry occurs.

If the current incumbent and entrant merge and adopt the entrant’s technology, then they collectively earn

[Equation omitted]

Denote the gains from merger by Gl(qf, ql). Comparing the sum of expressions (1) and (2) with expression (3), the only difference is in the first period following entry, when merger allows the firms to avoid competing. Thus, if the merged firm adopts the entrant’s technology

[Equation omitted]

If the merged firm would find it more profitable to retain the incumbent’s technology, then Gl(qf, ql) would be larger than the right-hand side of eq. (4). A similar argument applies to cases in which the incumbent would prevail absent merger. Hence,

Proposition 1. When competition is for the market, it is profitable to merge regardless of the rate at which subsequent entrants arrive or firms discount future profits.

The finding that merger is profitable when competition is for the market is somewhat more general than Proposition 1. The key factors are that: (a) until entry next occurs, the incumbent and current entrant earn greater profits if they are merged than if they are independent competitors, and (b) their joint continuation value when entry next occurs is not lowered by their merger.23 The example presented in Section 7 below demonstrates that, as long as the incumbent would place no competitive pressure on the subsequent—as opposed to current—entrant, condition (b) is satisfied even if a non-merging incumbent would remain active in the market until the next entry event occurs.

5. Merger policy and product development

Now, consider the effects of merger policy on a potential entrant’s investment incentives. When entry is profitable if and only if it leads to merger, the ability to merge must increase the entrant’s investment incentives.24 Similarly, when entry is profitable if and only if mergers are prohibited, permissive merger policy must decrease the entrant’s investment incentives.

To further examine the effects of merger policy on marginal investment incentives, consider a firm that finds entry profitable regardless of whether or not it subsequently merges. Recall that entry is assumed to be profitable absent merger only if the entrant anticipates winning the market. Hence, when mergers are prohibited and entry occurs

[Equation omitted]

Using Eq. (5), any firm other than the first one to enter the industry earns

[Equation omitted]

Next, suppose mergers are allowed and that the incumbent always gets share σ of the gains from merging with the entrant. Then

[Equation omitted]

In general, the functions ρE t (·) and qE t (·) can vary across the two merger-policy regimes, which makes comparison of the entrant’s profits in the two regimes difficult. Assume that, for any given value of ql, terms of the form ρE l+j (ql) and πI l+j (ql, qE l+j (ql)) are identical under the two regimes.25 Under this assumption, the difference in the entrant’s objective function due to a merger—Eq. (8) minus Eq. (6)— is:

[Equation omitted]

l(ql) equals the expected net present value of the sum of the entrant’s share of the gains from merger with the incumbent, (1 − σ )Gl(qf, ql), and its share of what would have been the gains from merger with a subsequent entrant had it not merged with the original incumbent, σ Gl+j(ql, qE l+j (ql)). The latter term arises because it is a component of the entrant’s disagreement payoff with respect to the initial merger with the incumbent.

The effect of merger on the entrant’s investment incentives depends on the derivative of l(ql), which in turn depends in part on how Gl(qf, ql) and Gl+j(ql, ql+j) vary with ql. In general, the gains from merger are non-monotonic in the quality levels. For example, there are no gains from merger if: (a) the entrant’s product quality is so low that the entrant places no competitive pressure on the incumbent, or (b) the entrant’s product quality is so high that the incumbent places no competitive pressure on the entrant and the merged firm would not choose to adopt the incumbent’s technology.26 But there are gains from merger when the two firms have quality levels sufficiently close to one another that each firm would put competitive pressure on the other. This fact strongly suggests that the effects of merger on marginal innovation incentives are ambiguous. The derivative of l(ql) also depends on how the entrant’s choice of quality affects decisions by later potential entrants with respect to entry probabilities and investments in quality (i.e., terms of the form ρE l+j (ql) and qE l+j (ql)). Models that consider a single merger in isolation and only an all-or-nothing innovation project miss these effects.

Given these complexities, it is useful to look at explicit examples of product-market competition in order to identify possibilities and say more about welfare effects.

6. An example with network effects

The first example is of a market subject to network effects in which competing networks are incompatible. In keeping with the assumption that there are no production efficiencies from merger, assume that, even if an incumbent and an entrant merge, the incumbent’s existing users cannot be migrated to the entrant’s network and the incumbent’s existing network cannot be upgraded to the entrant’s quality. A merged firm must choose between adopting the entrant’s technology and stranding existing users, or retaining the incumbent’s network and not using the entrant’s technology.

Each consumer lives for two periods, and any given consumer purchases at most one subscription to a network. Each period, a unit mass of consumers enters the market, and each consumer chooses whether to subscribe to a network for two periods. I assume that a consumer cannot choose to wait one period before making a purchase. Hence, at any given time, half of the consumers in the market are choosing a network.

A consumer enjoys per-period gross consumption benefits of qβ(m) − p, where q is the chosen network’s quality, m is the network’s size or “member” base, and β(m) is the network benefit function, which is increasing with β(0) = 0.

When choosing a network, a consumer must forecast the sales of any currently available network in each period of his or her life. Consumers are forward looking and account for the possibility of entry in the second period of their lives. I assume that, if there are two firms actively selling output, consumer expectations “track quality” in that consumers expect the higher-quality network to win all of the sales in any given period (if qualities are equal, consumers expect the incumbent to win). This expectations process is very favorable to innovative entry because any degree of product superiority neutralizes the incumbent’s installed base advantage.27

6.1. Product-market equilibrium

Consider the product-market equilibrium when an entrant with quality ql competes against an incumbent with quality qf, where ql > qf. 28 In the entry period, the incumbent has an installed base equal to 1—the previous cohort of consumers who are in the second year of their lives. However, because consumer expectations track quality, consumers currently making purchases do not expect the incumbent to make any future sales.29 The incumbent thus offers a new consumer expected gross consumption benefits equal to qfβ(1).

The entrant has no installed base but has a projected base equal to 1 in the entry period due to its superior quality and the consumer expectations process. Consumers also form projections of the entrant’s user base in the next period. To simplify the analysis, assume that each subsequent generation of technological opportunity is a sufficient improvement over earlier ones that entry always occurs when an opportunity arises: ρE j (ql) = ρ¯ for all j ≥ l. 30

Suppose mergers are prohibited. If there is no entry next period, then the current entrant will have a user base equal to 2. If there is entry next period, then the current entrant is expected to have a future user base equal to 1 because the next entrant will have a superior product. Hence, the current entrant offers a new consumer expected gross consumption benefits equal to ql{β(1) + δβˆ}, where βˆ ≡ ρβ¯ (1) + (1 − ρ¯)β(2).

Consumers are assumed to recognize that, when mergers are allowed, users will not be stranded if entry occurs next period but the entrant merges with the incumbent and the merged firm uses the incumbent’s technology. Let γ t(q) denote the probability that, conditional on entry in period t and the incumbent’s having quality q, the resulting merged firm will use the incumbent’s technology. When mergers are permitted, a firm with quality q offers a new consumer expected gross consumption benefits equal to

[Equation omitted]

Note that βˆ t(q) ≥ βˆ, with strict inequality whenever γ t(q) > 0. In equilibrium, consumer expectations are fulfilled.

Now consider consumers’ purchase decisions. If mergers are allowed but the current entrant and incumbent do not merge, then consumers in the entry-period cohort choose the entrant’s product if and only if

[Equation omitted]

where pj is the price charged by a network that offers the generation-j product.31 \*\*\*FOOTNOTE BEGINS\*\*\* Firms either merge immediately or never merge; there would be no gains from delay. Whenever entry next occurred, at least one of the current entrant and incumbent would have an installed base of 0 and thus be competitively irrelevant to the next entrant. Hence, the firm without a base would have no effect on subsequent merger bargaining. \*\*\*FOOTNOTE ENDS\*\*\* The incumbent would be willing to charge a price below 0 only if it could later charge a positive price. However, if a negative price is needed to win in this period (when the incumbent has an installed base of users), then a negative price would also be needed to win in every subsequent period, when the incumbent would face either the current entrant or a subsequent entrant having an even-higher-quality product. Hence, the incumbent will price as low as 0, but no lower, to win sales. By inequality (10), the entrant can profitably win sales even if pf = 0. Therefore, in equilibrium, the entrant wins all of the sales in the period in which it enters, with

[Equation omitted]

Because the two cohorts of users are split across the two networks, the resulting gross consumption benefits are equal to {ql + qf}β(1).

Next consider the periods that follow period l but are prior to the period in which entry next occurs. The previous incumbent (generation f) has an installed base of 0 and consumers do not expect the firm to make future sales. Given β(0) = 0 and its unwillingness to price below zero, the previous incumbent offers consumers no surplus and, thus, places no constraint on the entrant’s pricing beyond that already imposed by consumers’ option to purchase nothing. When selling in period t, the most recent entrant has expected network benefits in the next period equal to βˆ t+1(ql). Consumer cohorts making purchase decisions in these periods thus choose the recent entrant’s product if and only if ql{β(2) + δβˆ t+1(ql)} − pl ≥ 0, and the entrant makes sales at pl = ql{β(2) + δβˆ t+1(ql)}. Because all users are on the generation-l network, gross consumption benefits are equal to 2qlβ(2) per period.

If mergers are banned, a similar analysis applies but with terms of the form βˆ t(ql) replaced by βˆ. In summary,

Proposition 2.

(i) Suppose that mergers are permitted, but the current entrant and incumbent do not merge. Then the continuation equilibrium has the following form:

a) in the entry period, the entrant wins all of the sales at a price of (ql − qf)β(1) + δqlβˆ l+1(ql) and gross consumption benefits are equal to {ql + qf}β(1); and

b) in subsequent periods prior to the next entry event, the generation-l entrant wins all of the sales at a price equal to ql{β(2) + δβˆ t+1(ql)} and gross consumption benefits are equal to 2qlβ(2) per period.

(ii) If mergers are prohibited, then the same results hold with βˆ replacing βˆ l+1(ql).

Now suppose that mergers are permitted and the current entrant and incumbent merge. Recall that the incumbent’s existing users cannot enjoy the benefits of the entrant’s higher-quality technology. The merged firm must choose whether to: (1) maintain two separate networks for one period and shut down the network based on the older technology at the end of the transition period,32 or (2) have new cohorts of consumers join the incumbent’s network even though the entrant’s network could offer higher quality.

If the entrant and incumbent merge, then there is no competition until the next entry event occurs. Thus, until then, the merged firm sets its prices to fully appropriate the expected consumption benefits. Straightforward calculations establish:

Proposition 3. Suppose mergers are permitted and the current entrant and incumbent merge.

(i) If the merged firm operates both networks during the entry (or transition) period and shuts down the network utilizing the older technology at the end of that period, then in the continuation equilibrium:

a) in the entry period, the merged firm makes sales on the new network at a price of ql{β(1) + δβˆ l+1(ql)} and gross consumption benefits are {ql + qf}β(1); and

b) in the subsequent periods prior to the next entry event, the merged firm makes sales on the new network at a price of ql{β(2) + δβˆ t+1(ql)} and gross consumption benefits are 2qlβ(2) per period.

(ii) If the merged firm operates a single network using the older technology, then in the continuation equilibrium the merged firm makes sales at a price of qf{β(2) + δβˆ t+1(qf)} and gross consumption benefits are 2qfβ(2) in the entry period and all subsequent periods prior to the next entry event

Propositions 2 and 3 demonstrates that, in this example, for ql > qf,

[Equations omitted]

which satisfy the reduced-form profit assumptions in Section 3 above.

The conditions of this example are favorable to entry. When mergers are prohibited, every firm chooses to enter given the opportunity and is an active producer for two periods. Hence, much of the time the industry is subject to product-market competition if ρ¯ is near 1. Proposition 1 implies that, by contrast, if mergers are freely allowed, then entry is immediately followed by merger, and there are no periods of product-market competition—the favorable entry conditions alone cannot protect product-market competition.

6.2. Inefficient entry and killer acquisitions

The favorable entry conditions can, however, promote the introduction of innovative new technologies. Given the assumed nature of consumer expectations, even a minor innovation can allow the entrant to appropriate a large fraction of the monopoly profits. As a result, there can be socially excessive entry.33

One situation in which this arises is when entry occurs and the merged firm uses the older technology: The only effect of entry on total surplus is to reduce it by the amount the entrant invests to develop its product. In some respects, the outcome in which the merged firm operates a single network using the older technology is similar to what is known in the pharmaceutical industry as a “killer acquisition,” where an incumbent buys a new drug but never introduces it to the market (Cunningham et al. (2019)). By contrast to pharmaceutical markets, however, there can be consumer and efficiency benefits of sticking with the older technology in order avoid the loss of network benefits that occurs when users are split across networks

In fact, a firm may fail to stick with the older technology when doing so would be efficient.34 Consider the technology-adoption decision of a firm newly created through merger. The private cost to the merged firm from splitting the current cohorts is equal to the loss in the consumption benefits it is able to appropriate: qf{β(2) − β(1)}. By contrast, the social cost from splitting the cohorts is 2qf{β(2) − β(1)}. The difference arises because the firm does not internalize the losses suffered by consumers who are in the second half of their lives during the transition period.

One also needs to account for the effects of the quality choice on profits in future periods. Adoption of the new technology generates gross consumption benefits prior to the next entry event, which the merged firm fully appropriates in expected value: the firm charges ql{β(2) + δβˆ t(ql)} instead of qf{β(2) + δβˆ t(qf)}. This effect induces no bias.

Adoption of the new technology also improves the merged firm’s bargaining position with respect to the next entrant: that entrant’s non-merger profits are decreasing in the merged firm’s quality. This bargaining effect is a purely private benefit.

The net effect of the first three components is to bias the firms toward adopting the new technology. However, there may be an effect running in the opposite direction: by adopting the new technology, the current firm may generate surplus for the next entrant because, when the current firm merges with that entrant, the new merged firm will have a more attractive option when deciding whether to use the current firm’s network. When δ is sufficiently small, failure to internalize the consumer losses due to stranding dominates, and the current incumbent and entrant are biased toward adopting the new technology. It is an open question whether, in other situations, merging firms can be biased toward the old technology.

In some situations, permissive merger policy can prevent inefficient stranding. As shown in Proposition 2(ii), when mergers are prohibited, the market will move to the new network and associated technology whenever the entrant’s product quality is at all higher than the incumbent’s. However, when mergers are allowed, it can be seen from Proposition 3 that the merged firm will stick with the old technology whenever the quality levels are sufficiently close together. Hence, there is a range of quality differentials such that total surplus is maximized when consumers remain on the old network and this happens if and only if the firms merge. In summary,

Corollary: By facilitating killer acquisitions, permissive merger policy can prevent socially inefficient stranding.

Although the corollary identifies a logical possibility, it is not clear how important it is in practice; the entrant’s innovation must be a large enough improvement that the entrant provides a credible competitive threat to the incumbent but not so large that the merged firm will adopt it.35 It should also be noted that even a merger that prevents inefficient stranding harms consumers through the loss of competition in the transition period.

6.3. Merger policy and entrant innovation

In addition to showing that killer acquisitions can sometimes be efficient, the network effects example illustrates that the option to merge can raise or lower the entrant’s marginal investment incentives. First, suppose that the merged firm adopts the entrant’s technology. Then, by Propositions 2 and 3,

[Equation omitted]

Similarly, if the next merger leads to adoption of the then-new technology,

[Equation omitted]

Recall that, in this example, ρE l+j (ql) = ρ¯ for all j > 0. Hence, by Eq. (9), when merged firms always adopt the newer technology,36

[Equations omitted]

Anticipation of the initial merger has no effect on the entrant’s marginal investment incentives; the gains from that merger arise because consumers do not get the surplus that the incumbent would have offered them as an independent competitor, and this amount does not depend on the entrant’s quality. However, for the same reason, an increase in the current entrant’s product quality does raise the gains from the merger with the next entrant if the current entrant does not merge with the incumbent. The current entrant’s anticipation of sharing the increased gains from a future merger raises its product-development incentives. The same argument applies to the first firm to enter the industry because it anticipates merging with a later entrant.

Now, suppose that the current merged firm retains the incumbent’s technology but again assume that, when the next entry event occurs, the resulting merged firm will adopt the technology of that entrant. Given the latter assumption, Gl+j(ql, ql+j) = β(1)ql and βˆ t(ql) = βˆ for all t from the entry period until the next entry event. As in the case just considered, an increase in the entrant’s product quality raises the gains from the merger that would take place between the current entrant and the next entrant if the former did not merge, which raises the entrant’s disagreement profits. Now, however, the gains to the initial merger, Gl(qf, ql), are decreasing in ql. Intuitively, the higher is the entrant’s product quality, the greater the opportunity cost of not using it. Formally, the effects can be broken into three components using Propositions 2 and 3. First, the gains from the initial merger realized during the transition period,

[Equation omitted]

are decreasing in the entrant’s quality. So too are the merger’s effects on the profits earned in each subsequent period prior to the next entry event,

[Equation omitted]

Third, because the merged firm adopts the incumbent’s technology, the gains to the current merger arising from effects on the gains to agreement associated with a subsequent merger, gS l+j (qf, ql) ≡ β(1)(qf − ql) are decreasing in ql.

Using the fact that ρE l+j (ql) = ρ¯ for all j > 0,

[Equation omitted]

Differentiating and collecting terms,

[Equation omitted]

The right-hand side of Eq. (11) is negative for any σ ≤ 0.5 or when σ < 1 and δ is sufficiently close to 0.37 Summarizing this discussion:

Proposition 4. When product-market competition exhibits network effects, permitting mergers: (a) can increase an entrant’s product-development incentives when the merged firm adopts the entrant’s technology; and (b) can reduce an entrant’s product-development incentives when the merged firm retains the incumbent’s technology.

7. An example with per-period fixed costs

Next, consider a market in which there are no network effects but, at the start of each period, a firm must incur a fixed cost of F in order to be an active producer in that period. An incumbent’s investment decision for each period is made before that period’s entry opportunity arises. A new entrant sinks its initial per-period investment at the same time that it makes its one-time entry investment, I. For simplicity, assume there are constant marginal costs of production, which are subsumed in the demand function.

Suppose there is no horizontal product differentiation and all consumers identically value vertical quality improvements, so that all consumers choose the same product in any period. Let X = qi − pi denote the per-period market demand function, where i is the index of the active producer offering the lowest quality-adjusted price, pi − qi. Any firm not charging the lowest quality-adjusted price makes no sales.

Consider a single incumbent with quality qf facing an entrant with quality ql. 38 If ql ≥ 2qf, the entrant’s innovation is drastic (i.e., because the monopoly price is ql/2, the current incumbent provides no competitive constraint even if it sets its nominal price at 0). In this case, the firms have is no incentive to merge, and the incumbent will make no further investments. Until the next entry event occurs, the current entrant earns profits of

[Equation omitted]

per period. If ql ∈ (qf, 2qf), the entrant’s innovation is non-drastic. If the firms do not merge and the next entry event has not yet occurred, then the current entrant earns

[Equation omitted]

in each period that the incumbent remains active and π M(ql) per period if the incumbent has dropped out.

Whether or not it remains active, the incumbent makes no sales in any period following entry. Assume that πC(qf, ql) > 0, so that the current entrant would find it profitable to pay the per-period fixed cost even if it anticipated the incumbent’s doing so as well.

If there is no possibility of merger, then the incumbent never invests F after entry has occurred and, thus, is a competitive constraint at most during the transition period. But suppose that merger is allowed. If the firms merge, they jointly earn product-market profits π M(ql) in each period until the next entry event. The gains from merger depend on what the incumbent would do absent merger. In the network-effects example above there is nothing that an incumbent can do to remain competitively relevant after the entry period because consumers’ perceived value of its product falls. By contrast, in the present example, an incumbent chooses whether to remain a competitive constraint (i.e., whether to invest F), which raises the possibility that an incumbent might sink F solely to induce the current or later entrants to pay it more to merge. That is, an incumbent might engage in incumbency for buyout.

To avoid some of the complications associated with such strategies, assume that the next entry event after the current one will entail a drastic innovation relative to the current incumbent (and possibly to the current entrant as well). This assumption implies that the presence of the incumbent as an independent firm would have no effect on the subsequent entrant’s incentives, and as an independent firm the current incumbent would have no ability to extract rents from any later entrant. Hence, merging does not give rise to a share-dilution effect. It follows that the incumbent and current entrant will merge to avoid dissipating rents in one or more periods until the next entry event occurs.

There remains the issue of the acquisition price. The cooperative-game-theoretic approach to bargaining with respect to the merger is problematical because the disagreement payoffs are not obvious when F is sufficiently small relative to π M(ql) − πC (qf, ql). For example, if subsequent entry occurs whenever the opportunity arises, then, depending on what the incumbent would do off the equilibrium path absent merger, the gains from merger could range from π M(ql) − πC (qf, ql) (when the incumbent drops out after the initial entry period)39 to πM (ql)−πC (q f ,ql)+δF 1−δ+δρ¯ (when both the incumbent and entrant invest in remaining in the market as long as they have not merged and there has been no subsequent entry in any previous period). But regardless of the acquisition price, the firms have incentives to merge, and a merger reduces consumer and total surplus by eliminating transition-period competition.

The value of the acquisition price can, however, affect an entrant’s product-development incentives. Suppose that a firm has an opportunity to enter using the generationl technology and face an incumbent with product quality qf. Moreover, suppose that technological opportunities are such that ql(I) ∈ (qf, 2qf) for all I, and with probability one an entry opportunity will arise in period l + 1 with ql+1(I) > 4qf for all I (so that ql+1(Il+1) will be drastic relative to ql(Il)). Under these assumptions, the gains from a merger between the incumbent and the generation-l entrant equal the increase in profits from the elimination of competition in the entry period. After that, a new firm will enter and displace the merged firm with a drastic innovation, which eliminates any incentive for a further merger. Hence, l(ql) = (1 − σ ){π M(ql) − πC (qf, ql)}. Differentiation yields l (ql) = 1 2 (1 − σ ){ql − 2qf}, which is negative given that ql(I) < 2qf for all I. Intuitively, the entrant chooses a lower product quality when mergers are allowed because the possibility of merger leads the entrant to put weight on the effects of its innovation on monopoly profits (which are a component of the gains from merger), which are less sensitive to the entrant’s quality than are the profits the entrant earns when competing with the incumbent.

In summary:

Proposition 5. When there is undifferentiated Bertrand product-market competition, permitting mergers can reduce an entrant’s product-development incentives even when its technology is adopted by the merged firm.

8. Incumbency for buyout

As long as an incumbent’s actions (e.g., investment levels or exit decisions) conditional on not merging are independent of whether mergers are permitted, the option to merge weakly increases an entrant’s profits. Hence, in this case, allowing mergers encourages innovative entry, and there can be situations in which entry is profitable only if entry for buyout is feasible. But the finding that the option to merge can only increase an entrant’s profits does not apply if there is a possibility that the incumbent can engage in conduct to appropriate a larger share of the post-entry profits through merger. As the following example shows, by facilitating incumbency for buyout, permissive merger policy can discourage innovative entry.

The structure of this example is the same as the one in the previous section, with three differences.40 \*\*\*FOOTNOTE BEGINS\*\*\* Permissive merger policy can discourage innovative entry in the example in Section 7 if acquisition prices are based on the belief that the incumbent will sink F in future periods if the firms have not yet merged. Intuitively, in the periods after the entry period but before the next entry event, the current entrant has to share π M(ql) with the incumbent rather earning it all itself. I consider the modified example in the text to avoid the issue of multiple equlibria based on beliefs regarding moves off the equilibrium path. \*\*\*FOOTNOTE ENDS\*\*\* First, F = 0, so there is no issue of the incumbent’s dropping out in future periods. Second, whenever an entry opportunity arises, it is drastic: ql ≥ 2qf. Third, if entry occurs, an incumbent can make a one-time, sunk investment of Z that allows it partially to imitate or catch up to the entrant, with resulting quality level qZ f , where ql ∈ (qZ f , 2qZ f ). The incumbent can imitate only the next entrant to arrive. The choice of investing Z is made after entry but before any merger discussions. There are gains from merger if and only if the incumbent invests Z.

The incumbent has no incentive to invest Z if mergers are prohibited—once entry has occurred, the incumbent makes no sales whether or not it invests Z. But when mergers are allowed, the incumbent will find it profitable to invest whenever Z < σGl(qZ f , ql) because doing so induces the entrant to merge and share some of the post-entry profits. Investing Z lowers the current entrant’s profitability, but the probability of later entry is unaffected in this example because the current incumbent is irrelevant as a standalone firm and neither the entrant’s nor merged firm’s costs are affected.41 Conditional on entry’s occurring, the incumbent’s investment has no effect on either gross consumption benefits or consumer welfare. For any given stream of entry events, the net present value of industry profits is less when mergers are allowed than when they are banned; the difference is the net present value of the rent-seeking investments in Z. It follows that, when Z is positive but sufficiently small that incumbents make the investment in response to entry when mergers are allowed, there must be at least some entry events that are less profitable when mergers are allowed than when they are banned. Thus, there exist parameter values for which merger discourages at least some entry.42

Summarizing the discussion of this section,

Proposition 6. Depending on the specifics of the market, banning mergers may: (a) reduce innovation by preventing entry for buyout, or (b) promote innovation by preventing incumbency for buyout that would otherwise deter entry.

This example only scratches the surface of actions an incumbent could take to improve its bargaining position. Here, the investment takes place only after entry has occurred. An incumbent might also make pre-entry investments designed to appropriate rents should entry occur. Such investments might also affect the probability that entry occurs at all. An interesting line of future research would examine how the possibility of merger affects an incumbent’s pre-entry investments, which can serve both to deter entry and to extract rents should entry occur.

Although the example presented above is very specific, it is sufficient to establish the general point that arguments that permissive merger policy supports innovation are too simple: banning acquisitions can, at least in theory, increase or decrease innovative entry. Moreover, as discussed above, entry incentives can be socially excessive, so that, promoting additional innovation does not necessarily promote greater total surplus.

9. Implications for merger policy

It is often argued that, under Schumpeterian competition, a firm that appears to be dominant today based on its market share may actually face strong competitive pressures from the threat of being displaced by an innovative entrant with little or no current share.43 This argument does not imply that dominance is not a concern. Instead, the importance of innovative entry as a driver of market performance provides a rationale for paying increased attention to harm to emerging or potential competition when assessing acquisitions by incumbents in such markets: acquisition of a firm that does not yet have a substantial—or even any—share of the incumbent’s immediate product market may nonetheless substantially harm future competition. Moreover, in markets subject to Schumpeterian competition, enforcement authorities should be wary of claims that the threat of future entry will discipline the market by discouraging inefficient mergers. As shown above, due to the absence of the share-dilution effect, acquisitions are especially likely to be a profitable strategy for avoiding Schumpeterian competition.

It is also often argued that mergers facilitate innovation by allowing entry for buyout. The analysis above, however, demonstrates that the possibility of merger can have positive or negative effects on entrants’ innovation incentives. Hence, in some instances, blocking mergers will promote both dynamic and static efficiency, rather than sacrificing the former for the latter.

Several recent reports address competition policy toward large digital platforms. They generally call for heightened scrutiny of acquisitions by dominant firms in markets with strongly increasing returns to scale, innovation, and competition for the market, especially with regard to acquisitions of potential or nascent competitors.44 The analysis of the present paper broadly supports these proposals.45 \*\*\*FOOTNOTE BEGINS\*\*\* It also supports the conclusion that merging parties should not be exempted from notifying antitrust authorities based on having low current sales and/or market share. Furman et al. (2019, pp. 12 and 94-95) and Stigler Committee on Digital Platforms (2019, p.16) express concern with underreporting. The U.S. Federal Trade Commission has recently requested information on past un-notified acquisitions by major tech firms (U.S. Federal Trade Commission, “FTC to Examine Past Acquisitions by Large Tech Firms: Agency Issues 6(b) Orders to Alphabet Inc., Amazon.com, Inc., Apple, Inc., Facebook, Inc. Google, Inc., and Microsoft Corp.,” press release, February 11, 2020), and the European Commissioner for Competition has stated that the European Commission is developing means for screening smaller acquisitions by Big Tech (Arjun Kharpal, “EU says it will look closer at smaller acquisitions made by big tech firms after ‘shopping spree,’” CNBC, February 18, 2020, available at cnbc.com, accessed March 13, 2020). \*\*\*FOOTNOTE ENDS\*\*\*

#### That locks-in the Kronos effect, resulting the in the destruction of lagging and nascent firms.

Kevin A. Bryan & Erik Hovenkamp 20, Assistant Professor, University of Toronto Rotman School of Management; Assistant Professor, University of Southern California Gould School of Law, "Reassessing the Chicago School of Antitrust Law: Startup Acquisitions, Error Costs, and Antitrust Policy," University of Chicago Law Review, Vol. 87, No. 331, March 2020, Lexis.

[\*331] INTRODUCTION

High tech industries are not only lucrative, but also highly innovative and dynamic. Large firms are not their sole source of innovation, however. Many valuable technologies are first developed by startup companies. Innovative startups are frequently acquired by powerful incumbents at an early stage. Well-known examples include acquisitions of WhatsApp and Instagram by Facebook; Waze and DoubleClick by Google; and GitHub and LinkedIn by Microsoft. These cases have drawn very little antitrust scrutiny, leading many commentators to question whether antitrust is in need of reform.

[\*332] This paucity of meaningful oversight is driven by uncertainty about a startup's future impact on the marketplace. Merger enforcement is usually directed at proposed combinations of large, established firms. It largely focuses on the estimated immediate effect of the proposed deal on competition. But startups are new and comparatively small, leaving little data with which to estimate competitive effects. Further, the relevant antitrust concerns relate mainly to more speculative effects on future competition. Rather than taking calculated steps to balance such uncertainties against the potential benefits of enforcement, antitrust policy has maintained a rigid policy of near-universal inaction.

This result is emblematic of a broader principle often associated with the influential Chicago School of antitrust thought, which has had significant influence on the Supreme Court in recent decades. This principle holds that antitrust should err on the side of nonintervention (false negatives), because erroneous condemnations (false positives) are seen as more socially costly. A leading rationale is that competitive entry will discipline anticompetitive behavior organically, whereas the adverse effects of erroneous intervention will persist indefinitely. This view has [\*333] spurred very demanding evidentiary requirements, making it difficult for plaintiffs to prevail in most kinds of antitrust cases.

Thus, considering the uncertainties they present, it is unsurprising that startup acquisitions have received very little antitrust scrutiny. However, a growing body of economic theory and empirics identifies various harmful effects from such acquisitions. Over time, they can expand the technological gap between industry leaders and "laggards" (smaller or less successful rivals). The product market is thus left less competitive and more concentrated. Startups are sometimes acquired by dominant firms solely to exclude rivals from accessing such technologies. In addition, incentives for innovation may also be adversely affected, as they are influenced in part by the prospect of future acquisitions. An innovator's decisions about what lines of research to invest can become skewed. Further, once a habitual acquirer becomes sufficiently dominant, its willingness to pay for new technologies falls, reducing the returns innovators receive for future inventions. Incentives for prospective startups to innovate are thus weakened.

To be sure, in most startup acquisitions, it is probably not possible to precisely predict the transaction's but-for impact on commerce. But it does not follow that society is best served by a policy that permits dominant incumbents to acquire all promising startups soon after they form. These acquisitions may have significant adverse effects in the aggregate, even if it is difficult to [\*334] assess how any particular transaction would influence the marketplace. Consequently, society may benefit from a policy that permits limited intervention based on reasonably ascertainable evidence, even if this carries some risk of false positives.

The traditional argument favoring false negatives is particularly ill-suited to this setting. There is a clear circularity problem. The driving force behind the error cost argument, competitive entry, is directly threatened by the conduct in question. One cannot expect potential entrants to discipline anticompetitive behavior if they are consistently absorbed by powerful incumbents. When the market leader is sufficiently dominant, it is generally most profitable (for both the leader and the startup) for technology rights to be sold exclusively to the leader. This softens competition by increasing the leader's technological advantage over its competitors. Hence there is no reason to expect that the market will self-correct the problem, as it is more profitable than the alternative.

This Essay is organized as follows. In Part I, we address the error cost argument and some subsequent rebuttals. Part II addresses the potential harms from startup acquisitions by dominant incumbents, provides supporting empirical evidence, and explains why current merger policy is unlikely to provide a satisfactory solution. In Part III we argue that expanded (albeit limited) intervention in startup acquisitions is likely to be beneficial, and that the traditional error cost argument holds little weight in such cases. We also discuss reasonable indicia for the likelihood of harm and potential remedies that might be implemented in practice. We conclude by noting that the error cost argument for nonintervention may be inappropriately applied in many other settings as well.

I. ERROR COSTS AND MARKET ENTRY

The complexities of antitrust are often difficult for courts to manage in practice, and it is important for antitrust policy to be mindful of these administrative limitations. Further, the effects [\*335] of an antitrust judgment are often felt by many parties not before the court, including most or all consumers in the relevant market. Thus, a natural question is what costs arise from different types of judicial errors and how they compare. Beginning in the late twentieth century, many scholars set upon this question of "error costs" in antitrust, leading to a widespread view that it is far less harmful to condone an anticompetitive practice than to condemn an efficient one.

The argument's driving premise is that false negatives will generally self-correct over time, while false positives will not. The most commonly given justification for this is that anticompetitive behavior invites new competition, attracted by the prospect of dethroning a high-priced incumbent. After all, higher prices are the easiest to undercut while still turning a profit. Entry is thus more enticing when the relevant market is less competitive, all else being equal.

This argument is complemented by the theory of market "contestability," introduced by Professor William Baumol in the 1980s. This theory describes markets that are concentrated but nevertheless competitive because the prospect of entry deters incumbents from setting supra competitive prices. Such a market [\*336] is said to be "contestable." This theory, when applicable, suggests that market concentration does not necessarily preclude competitive behavior. While arguments about contestability are typically not focused on error costs specifically, they give some theoretical support to the proposition that markets will end up correcting anticompetitive behavior over time, which is the core premise behind the traditional error cost argument.

A. Strategic Behavior and Entry

Arguments about market power and contestability have advanced greatly among economists since the price-theoretic intellectual origins of the Chicago School. In a price-theoretic world, conduct is a function of demand, cost, and technology. Firms are ex ante identical in the technology they can access and can freely enter markets. Excess profits therefore attract entry. Regulatory error that improperly permits anticompetitive behavior by a firm will lead to excess profits, hence pressure to enter. The welfare harms of error, it is argued, are thus less than they appear.

The problem with this argument is that it abstracts away from strategic interactions among the incumbent and the entrant. If a new firm is considering entry, the incumbent may [\*337] have effective deterrence strategies. In particular, the incumbent may be able to invest ex ante in ways that limit entry. Further, the actions necessary to deter entry may harmfully distort socially useful incumbent investments, such as research and development (R&D), product variety, or product diffusion. We treat each of these cases in turn.

To deter entry by inducing potential entrants to believe that competition with the monopolist will be unprofitable requires the post-entry deterrence action to be credible. In the traditional Chicago School framework, entrants have access to the same technology, with the same economies of scale as incumbents. If actions or investments pre-entry do not affect the nature of competition post-entry, then strategic interaction is irrelevant: the extent of entry is affected only by static post-entry profits available to the entrant.

However, there are a number of straightforward strategies by which an incumbent can leverage its market power to deter entry. Incurring sunk costs that lower future marginal costs causes the post-entry price to fall, and can therefore make entry unprofitable. Network effects and other switching costs that require coordination across buyers permit short-term monopoly to turn into long-term deterred entry. Empirically, firms do appear [\*338] to react to the threat of entry in a different manner than they do to realized entry. For instance, when Southwest begins flying from A to B when they are already flying from B to C, the probability they begin flying to A to C thereafter increases as there are economies of scope across routes. The mere threat of those flights induces competitors to drop prices on A to C. When Southwest has already committed to fly from A to C, there is no such preemptive price cutting. Similar entry-deterring actions have been shown in excess advertising of soon-to-expire pharmaceuticals, and in new procedures among potentially competing hospitals. That is, a model in which firms can never credibly deter entry, and hence one in which regulatory error leading to excess profits necessarily attracts entry, reflects neither modern economic theory nor recent empirical results.

Indeed, welfare is harmed not only when entry is successfully deterred, but also from the inefficiencies that arise as firms attempt to deter entry. Efficient markets are not only about price, but also about the amount of innovation, the extent of variety available to consumers, the compatibility of products in a network setting, and the avoidance of "money burning" through zero-sum advertising.

For instance, consolidation in radio permitted by the Telecommunications Act of 1996 led new station entry to fall. Why were entrants not attracted by the more profitable consolidated entry? Newly merged incumbents modestly differentiated their [\*339] station offerings in such a way that, despite consolidation, there were no profitable "holes" in the variety spectrum worth incurring the fixed cost of setting up a station. The particular station variety was chosen for entry deterrence reasons rather than efficiency concerns. Attempts to deter not only reduce welfare by successfully deterring competition, but further harm welfare by pushing incumbents away from the most efficient product variety mix. As we discuss in the following Part, similar dual long-run harms of market power--less entry with its consequent higher prices, and distortions along other margins used by the incumbent to prevent entry--occur in highly innovative industries.

II. STARTUP ACQUISITIONS AND ANTITRUST POLICY

In this Part we consider the potential justifications for limited antitrust intervention in startup acquisitions. Throughout our analysis, we focus on cases where the acquiring firm is highly dominant within a relevant product market, meaning that it has significant market power.

A. Potential Harms

Antitrust usually focuses on potential injuries to competition. Such considerations are certainly relevant in the present context, too, but they do not tell the full story. Startups are typically innovative enterprises, and potential acquisitions may thus play an important role in the innovation and entrepreneurship processes. We address both sets of considerations below. The next Section then discusses empirical findings that shed light on these potential harms.

1. Diminished competition.

An important question in antitrust treatment of mergers and acquisitions is whether the proposed combination is "horizontal" or "vertical." The two types of mergers receive different treatment [\*340] because they involve different theories of harm and different potential justifications. In the horizontal case, the startup is a new or potential competitor of the acquiring incumbent. In this case, the potential antitrust concerns are more salient, for the acquisition necessarily forestalls competitive entry. Indeed, the acquirer may have no interest in actually using the startup's technology; it may simply wish to prevent such technology from reaching the marketplace.

For example, in Federal Trade Commission v Mallinckrodt ARD, Inc, the defendant was initially a monopolist in the market for adrenocorticotropic hormone drugs used for the treatment of infantile spasms. It outbid potential rivals to acquire the domestic rights to the lone competing product, named Acthar, which had not previously been marketed in the United States. The Federal Trade Commission (FTC) brought suit and succeeded in securing a stipulated judgment in which the defendant would be required to license the rights to sell Acthar to a competing US manufacturer, in addition to paying a $ 100 million fine.

However, Mallinckrodt is a somewhat rare case in which the relevant acquisition target was obviously a prospective direct competitor in a clearly defined market that was otherwise utterly dominated by the acquirer. In practice, matters are rarely this clear-cut. First, in many instances, the startup presently offers only a technology that is complementary to the acquirer's product. [\*341] Although it may be quite plausible that the startup would eventually have entered the acquirer's product market (or vice versa) but for the acquisition, this may be impossible to prove as of the acquisition date. Second, the startup's technology may be complementary in some respects but substitutable in others, making it hard to say whether it should be regarded as a competitor. This challenge is particularly salient in high tech sectors, where it is often difficult to define markets.

For these reasons, many startup acquisitions will be presumptively vertical in the sense that they are not provably horizontal. However, in such cases there may still be a material risk of anticompetitive harm if the acquisition prevents the acquirer's rivals from obtaining access to a promising new technology developed by the startup. That is, if the acquirer is dominant in its product market, then its motivation for the acquisition may be (in whole or in part) to exclude its smaller rivals from gaining access to the startup technology. This prevents rivals from improving their own products, thereby extending the acquirer's market advantage relative to a scenario in which several or all incumbents obtain the rights to the startup technology.

Consider a simple example. Suppose there is a dominant leader in the market for smartphones and that the startup technology is an improved processor for mobile devices. The leader maintains an advantage due to the fact that its smartphone is technologically superior in some respects, and/or because it has lower production costs. We can think of either possibility as an advantage in terms of quality. Any smartphone producer can improve its product quality by utilizing the new processor; all else [\*342] being unchanged, this quality improvement would increase demand for this producer's smartphone. Suppose that, before the startup emerges, the leader is using a processor that is at least as good as that used by the laggards (which would at least partially explain why this firm is the leader to begin with). Then, if the leader and laggards all obtain access to the new processor, the rivals will partially catch up to the leader: their own smartphones improve in quality by incrementally more. By leaving the firms on more equal footing, this would make the market more competitive and less concentrated.

By contrast, if the dominant smartphone producer obtains exclusive rights to the startup and then declines to license the processor technology (or to sell the processors wholesale) to its smaller rivals, then it will increase its market dominance. Its own quality level improves, but its rivals' do not. This leaves the market less competitive. Rivals' smartphones now look comparatively worse to consumers, leading these firms to apply less competitive pressure and hence permitting the dominant firm to behave more like a pure monopolist. The result is that static consumer surplus is lower (perhaps significantly so) than if the acquirer's rivals had also obtained access to the startup technology.

As in the pure horizontal case, the acquisition may serve no purpose other than to forestall an increase in competition. That is, the acquirer itself may derive little or no value from using the startup technology itself, perhaps because it is already using a comparable (or superior) alternative technology. However, smaller rivals may still benefit from using it, and the acquirer may purchase the exclusive rights to prevent them from obtaining access to it. In this case, there is no static welfare improvement from the acquisition, since the startup technology is simply not used. Consumers are thus worse off than they would have been if [\*343] rivals had been able to utilize the new processor. First, the market is less competitive than it would have been, and hence output is lower. Second, consumers get comparatively less value (net of price) from rivals' smartphones, as the rivals have been denied access to the improved processor.

Of course, if the dominant firm's rivals would benefit from the startup technology, then they are willing to pay the startup for the right to use it. So how do we know that the dominant firm is willing to outbid them and thereby obtain exclusive rights? The most likely explanation is that it is generally more profitable in the aggregate to soften competition than to invigorate it. By extension, it is more profitable to preserve or increase the dominant firm's market power than to enable smaller rivals to catch up. The result is that a dominant firm is generally willing to pay more to exclude rivals than such rivals would pay to gain ground on the dominant firm.

2. Innovation incentives.

The concern about competition, therefore, is that startups will sell their technology to industry leaders rather than to lagging incumbents even when the sale to laggards benefits consumers by increasing the competitiveness of the product market. A traditional error cost argument does not sit well here: the anticompetitive action is one that simultaneously limits the emergence of innovative new firms.

There are further harms beyond reduced competition. Consider the decision problem of an innovator (a prospective startup, for instance) in deciding what kind of new technology to invest in. Some technologies improve the quality of all incumbents' products, such as flexible or unbreakable smartphone glass. Others merely reduce the technological gap between leaders and laggards, like giving smartphone manufacturers an alternative to an [\*344] otherwise patented technology held by the market leader. Both types of invention improve consumer welfare: the former from directly improving the quality of all products, and the latter from inducing more competitive pricing behavior by reducing vertical differentiation.

Nonetheless, the startup who can license freely is always biased against producing inventions that only help the laggards catch up. The purchase price or licensing fee charged by the startup depends on how the use of such invention would influence competition and industry profits, since these things determine an incumbent's willingness to pay to use a new technology. Inventions that improve all firms' technologies, when bought exclusively by the industry leader, directly benefit consumers while also increasing differentiation between the leader and laggard. The second effect can be strong enough that industry joint profits are highest when only the leader possesses the new technology. However, an invention that only helps the laggard catch up increases competition without directly pushing the quality frontier forward. The industry leader may buy this technology solely to prevent this greater competition, but the purchase price will be lower than that of inventions that also increase the leader's product quality.

Unrestricted startup acquisition, therefore, both makes it harder to compete against strong incumbents and distorts the direction of invention. Things get worse dynamically. As the market leader ingests startups and startups shift their research effort toward technology that helps the leader pull away from its competitors, lagging incumbents will exit. As the number of competing firms falls, the purchase price for startups also falls: The threat to sell to a firm's competitor improves the startup's bargaining power, and such bargaining power diminishes as there are fewer competitors. This fall in purchase price therefore decreases the [\*345] incentive of startups to innovate, directly reducing productivity growth.

B. Recent Empirical Research

Numerous recent articles cast light on the potential adverse effects that may result from a laissez-faire policy toward startup acquisitions. The antitrust concerns are perhaps most salient when an acquisition is motivated purely by the desire to forestall new competition. To that end, one recent paper finds that, in the pharmaceutical industry, numerous innovative new firms are effectively terminated through "killer acquisitions" by incumbent firms. In these acquisitions, the acquirer does not utilize or further develop the target's innovation, but instead merely prevents such innovation from entering into competition with the incumbent's own product.

Although a startup is typically small, the economic effects of startup acquisitions may accumulate over time. To that end, another study finds that, following a statutory amendment that weakened the reporting requirements for prospective mergers, there was an increase in "anticompetitive deals whose individual size enables them to escape regulatory scrutiny but whose cumulative effect is large." Indeed, between 1994 and 2011, "submarine" acquisitions of firms below the Hart-Scott-Rodino Act reporting limit cumulatively consolidated $407 billion in annual US output, equivalent to a 30 percent increase in four firm industry concentration.

[\*346] One important concern is that dominant incumbents will acquire promising new technologies and then decline to license the relevant technologies to smaller rivals. Such a pattern would act to strengthen the market power of the dominant acquirer over time as its technological advantage grows. In this vein, several recent studies find that there is a widening gap between market leaders and laggards. Additionally, a number of articles have purported to find evidence that markets are generally growing more concentrated over time, although this result has not been causally linked to acquisitions or any other specific practices.

The preceding studies bear principally on potential harms to price competition, taking firms' technologies as given. But one may also be concerned about the potential impact of acquisitions on innovative activity, particularly in cases where the startup is an innovative enterprise. One recent study, relying on data from the pharmaceutical industry, finds that mergers generally lead to diminished R&D activity by both the merged firm and incumbent rivals. An additional study finds that incumbents may rely on acquisitions of innovative startups as a substitute for conducting R&D internally. Another study finds that, while innovative new [\*347] entrants have historically played an important role in market productivity and growth, this trend has started to diminish.

C. Limitations of Contemporary Merger Enforcement

The current state of antitrust merger enforcement makes it very difficult to bring a viable challenge against a startup acquisition, even if the acquirer is highly dominant. Here we briefly discuss some of the principal reasons for this. First, merger enforcement usually relies chiefly on estimates of the price effects that would result immediately following a merger. Put differently, merger analysis is static, generally declining to form predictions about how today's transaction will affect competition tomorrow. Static price effects are estimated using established data on firm characteristics and behavior, such as market shares and pricing activity. But a startup is a new player that usually does not presently have a significant market share. Thus, a static analysis will typically suggest that there is no potential harm, but this may only be because the relevant anticompetitive threat involves diminished future competition.

Relatedly, evaluating potential effects on future competition is necessarily more speculative than the analysis of mergers between established firms, where one can reasonably focus on static effects. This makes it much harder (if not impossible) to rely on rigorous empirical methods to estimate anticompetitive effects. Antitrust facially recognizes the elimination of "potential competition" as a basis for intervention, but in practice this kind of [\*348] claim is quite difficult to bring successfully and is rarely attempted. (The Mallinckrodt case was a rare exception. )

Second, as noted above, many acquisitions will not be provably horizontal, even if it is quite plausible that the startup would have gone on to enter the acquirer's product market (or vice versa). In that case, an antitrust plaintiff must attack the acquisition as a vertical merger. However, antitrust has grown increasingly hostile toward vertical merger challenges, leaving very little chance of success even if both parties to the merger are large, established incumbents. Combining this with the general dearth of useful data in startup acquisition cases, it is hard to see a viable path to enforcement without some departure from current judicial treatment of vertical mergers.

In sum, current enforcement policy demands more precise economic evidence than can typically be supplied in cases involving startup acquisitions. While there is good reason to believe that persistent acquisitions by dominant incumbents may produce harmful effects in the aggregate, it is often difficult to establish this in any individual case under the existing standards of merger review.

III. ADMINISTRATION UNDER UNCERTAINTY

The traditional error cost argument implicitly treats the prospect of competitive entry as an external, immutable force that persists independently of a defendant's conduct. But, at minimum, this characterization is inapt when the relevant conduct involves persistent acquisitions of newly formed firms with promising new [\*349] technologies. Innovative new entrants will not challenge dominant incumbents--or aid smaller rivals in doing so--if they can always reap larger profits by simply being acquired by market leaders. Thus, nonintervention in startup acquisitions cannot be justified by allusions to the prospect of competitive entry. On the contrary, the more importance one places on entry as a mechanism by which markets self-correct, the more uneasy one should feel about a pattern in which dominant incumbents regularly acquire the most promising startups that come along.

It is instructive to consider Professor Joseph Schumpeter's well-known discussion of "creative destruction," the dynamic process by which new technologies and new rivals persistently upturn the status quo over time. Schumpeter states that

[e]conomists are at long last emerging from the stage in which price competition was all they saw. As soon as quality competition and sales effort are admitted into the sacred precincts of theory, the price variable is ousted from its dominant position. . . . [I]n capitalist reality as distinguished from its textbook picture, it is not [price] competition which counts but the competition from the new commodity, the new technology, the new source of supply, the new type of organization (the largest-scale unit of control for instance)--competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives.

Schumpeter thus emphasized the prospect of new competition and innovation as playing a key role in fostering economic efficiency over time. In the same spirit as those who believe antitrust should persistently err on the side of nonintervention, he argued that an apparent deficiency in static competition does not imply that the market will perform poorly over the long run. But, as he stressed, this requires that a leading incumbent view the prospect of innovative new firms as an existential threat--not a transactional opportunity with which to extend its lead over [\*350] smaller rivals. However, we have little reason to expect this if such acquisitions are virtually never subjected to meaningful antitrust scrutiny.

As emphasized in the last Section, a serious challenge is that startup acquisitions present significant uncertainties and are therefore less amenable to empirical forecasting than conventional mergers. This means that hypothetical intervention would have to be predicated on less precise economic evidence than courts usually demand, creating some risk of false positives. But that does not mean that such a policy could not improve upon on the status quo.

Importantly, the uncertainties cut in both directions. The current policy, which permits virtually all startup acquisitions by dominant incumbents, is also making errors: some portion of these transactions will inevitably lead to a but-for reduction in future competition, even if this result was not rigorously quantifiable ex ante. As such, it would be naïve to suggest that antitrust is currently avoiding errors simply because almost none of the relevant acquisitions are expressly litigated. If anything, this merely signals that current antitrust standards are too onerous to be administered in practice. This reflects a failure to acknowledge the distinct economic and practical difficulties that distinguish startup acquisitions from more conventional mergers between established incumbents. Current policy simultaneously (a) makes no effort to confront the uncertainties in a practicable way, and (b) gives no weight to the broader incentive problems that may arise if leading incumbents can rely on persistent acquisitions to modulate the future course of competition.

Realistically, any antitrust policy toward startup acquisitions (including one of inaction) is bound to make errors in some percentage of cases. But, as we have argued above, in this context there is no good reason to maintain the traditional view that false positives are more problematic than false negatives. A better approach is to acknowledge that this area involves unavoidable uncertainties, but also significant potential harms, and to develop [\*351] standards that strike a reasonable balance between administrability and the risk of judicial error. Consistent with this, the courts have occasionally cautioned that antitrust standards ought not to demand such a degree of economic precision that they become impracticable. For instance, in Barry Wright Corp v ITT Grinnell Corp, the court noted that "[r]ules that seek to embody every economic complexity and qualification may well, through the vagaries of administration, prove counter-productive, undercutting the very economic ends they seek to serve."

#### Err AFF---the structure of market dictates the ability to innovate.

Mark A. Lemley & Andrew McCreary 21, William H. Neukom Professor of Law, Stanford Law School. Partner, Durie Tangri LLP; J.D./M.B.A., Stanford Law School and Stanford Graduate School of Business, "Exit Strategy," Boston University Law Review, Vol. 101, Issue 1, January 2021, Lexis.

While these may be valid points in particular cases, they neither disprove nor help solve the problems of concentration caused by the norm of selling startups to incumbents.

First, market structure matters. Markets that are not competitive not only distort prices but also reduce innovation. Further, incumbent acquisitions prevent potential competitors from combining to form a company that can credibly threaten entry at scale. So reducing the possibility of Schumpeterian competition is likely to discourage innovation in the long run. And precisely because incumbency does bring some real advantages, we may need to create incentives to support Schumpeterian competition and avoid perpetual incumbency.

[\*68] And second, in any event, the incumbent will put the innovation in the hands of more consumers only if it actually deploys that product. As we have seen, incumbents often buy startups and then kill them, either deliberately or by dissipating the team and not focusing on the acquired product. Incumbents have less incentive to deploy new technologies than startups do. That's because incumbents that replace their existing product with a new one are mostly stealing customers from themselves. And incumbents don't need to innovate to stay alive if they can buy any entrant that looks like a threat.

Finally, the value of scale is similarly not a persuasive reason for most incumbent mergers. There may be markets where network effects are so strong that merger is inevitable. But we should be reluctant to assume that just because scale has value, the incumbent will always make a better product. History is full of cases where that turned out not to be true. Sometimes it just means we need a new dominant firm. And we won't see those leapfrog products if the incumbent buys the potential disruptor. Even in the relatively rare case of technologies that can reach their full potential only when deployed to the entire market, there are alternatives to allowing incumbents to buy up all new technologies. We could, for example, require that certain AI training databases be open to all AIs or that companies allow access by competitors seeking to make their products interoperable with the de facto standard.

#### Creative destruction realigns economic incentives to protect the environment.

Agnieszka Lipieta & Andrzej Malawski 21, Department of Mathematics, Cracow University of Economics, "Eco-Mechanisms Within Economic Evolution: Schumpeterian Approach," Journal of Economic Structures, Vol. 10, No. 4, 03/26/2021, Springer.

In the Schumpeter’s vision of the economic development innovations are endogenous and the key role is played by entrepreneurs-innovators (Schumpeter 1934, p. 63). Schumpeter argues that entrepreneurs-innovators, according to their creative nature, break the circular flow introducing innovation in the economy due to which they initiate and carry the economic development. To satisfy wants, both spiritual (i.e., satisfaction with introducing innovations) or material (i.e., increasing profits) entrepreneurs-innovators compete against each other in introducing new commodities, new technology, etc., on the market (see Schumpeter 1934, pp. 81–94). Similarly in the model presented, innovations are endogenous, some heterogenous producers, instead of aiming at the profit maximization, may undertake some innovative activities and realize the production plans which offers the possibility of future profits. Consequently, entrepreneurs-innovators are the initiators and leaders of economic evolution, whereas consumers play passive role. However, just like in Schumpeter’s theory, in the model consumers can induce innovative changes and play the key role in the spread the innovations.

The approach proposed in the current paper significantly differs from the traditional models used for studying the economic evolution (see for example Aghion and Howitt 1992, 1998; Romer 2012; Dosi et al. 2010). The use of Hurwicz’s apparatus emphasized the significant role of information for appearance of innovation and the ways of its exchanging. In the model presented, innovation emergences as a response to information on, among others, consumers’ likes and requirements. Analyzing of information, which nowadays, is spread almost immediately, can provide entrepreneurs-innovators with new ideas, without which there is no innovation. Schumpeter maintained that “changes in economic life as are not forced upon it from without but arise by its own initiative from within.” (Schumpeter 1934, p. 63). The “not forced” changes can be inspired, above all, by messages sent by economic agents. Therefore, the concept of studying innovations as the results of information available on the market corresponds to Schumpeter's theory of innovation.

If a new commodity emergences on the market, then there will be no equilibrium in the economy in the next period. However, if the innovation is successful, then it will lead to changes in the economic environments and could change profits and utilities. In that period, the following actions can take place: some next innovations can be introduced, or the economy can reach a new state of equilibrium, or the economy can be transformed to its imitative or regressive transformation. Thus in the model presented, the impact of innovations on economic environments is revealed: as a result of emergence of innovations and their diffusion, the economic environments evolve. It is the equivalent of the “ripple effect” observed in simulations models. If innovative eco-mechanisms are implemented, then eco-changes as well as ecological economic activities are seen in the model.

We will deal with Schumpeterian swarming of innovations in the model, if the numbers of innovations introduced in subsequent periods are much higher than in earlier periods. Modeling of the swarm of innovations is feasible due to density of the set of real numbers. The effects of the creative destruction can also be analyzed in the model. It is seen, among others, in introducing innovations as well as in eliminating some commodities or firms from the market.

Conclusions

Modeling mechanisms of economic evolution in the Hurwicz’s apparatus confirms the Day’s ideas (2007) on the differences between mechanisms within the circular flow and the economic development, as well as contrary to the Schumpeter’s concept, showed that mechanisms governing the innovative and non-innovative processes are naturally divided into more than two groups. What is more, it was shown that at every stage of the economic evolution eco-mechanisms can be implemented. The eco-mechanisms defined in the paper in many cases can improve the position of economic agents. Moreover, if an eco-mechanism were not be implemented, then the agents’ economic position would not be better.

The model presented reveals the significant role of information and the ways of exchanging messages during innovative processes. Diversification of analyzed mechanisms reflects the complexity of economic processes and their results. In the set of outcomes of an innovative mechanism, the effects of creative destruction are also revealed; besides new commodities, technologies and organizational structures visible on the market, the old, unattractive or harmful products and technologies as well as the uncompetitive in a new economic reality firms, can disappear from the market.

In contrast to many other studies on evolutionary processes in economics, in the current paper the problem of incentives of economic agents can be analyzed. In the model presented, it is assumed that ecological consumers do not want to consume harmful commodities or commodities produced by the use of detrimental technologies. It makes producers modify their activities to become ecological and friendly to the environment. In that approach, a role of planners of economic life should not be neglected: a role of a decision-maker is to specify goals and choose a proper mechanism to be implemented, preferable in such a way that producers active in their own interest and eco-changes are introduced. We presented the examples of mechanisms in a competitive economy (Example 1, Theorem 2, Theorem 3) which could result in eco-changes or in equilibrium in a competitive economy or in its transformation.

#### AND it results in a circular economy which creates sustainable growth.

Anne P.M. Velenturf & Phil Purnell 21, School of Civil Engineering, University of Leeds, "Principles for a Sustainable Circular Economy," Sustainable Production & Consumption, Vol. 27, July 2021, ScienceDirect.

Transforming industrial systems: Circular economy is often posited as an ideal end state which would not change anymore once it has been achieved. The reality of human society is, however, that it has always evolved and most likely will continue to do so. Hence it would be better to think about circular economy as a continuous process within which production systems, and indeed consumption systems, society and the wider context (Section 3.1.8) continue to evolve. Fig. 7 demonstrates the current evolutionary process of developing circular economy conceptions, in which the linear society was challenged and the current compromise being a recycling economy that has become the mainstream (Section 4 opening and 4.1); the sustainability of the recycling economy is challenged and the circular economy evolution must now go further towards dematerialisation (Principle 2). The change from a “recycling” to a “dematerialisation” circular economy involves a shift in design efforts from design for recycling and eco-design which aim to design out waste and limit environmental impacts (Kiser, 2016), to transform industrial systems, supply chains, and materials and products for a sustainable circular society (Section 3.1.5) capable of delivering the social and environmental net-gains while maintaining economic prosperity (i.e. in line with the value system outlined in Section 4.2). The evolutionary perspective demonstrates that implementing a circular economy is a process of continuous improvement in which the sustainability of practices is continuously monitored, evaluated and adapted (Principle 10). Adaptation involves the nurturing of innovations while unsustainable practices are phased out through “exnovation” (Fig. 7). While governments tend to show motivation for the promotion of sustainable, circular and low-carbon innovations, dealing with the other side of the coin on which we find the necessity to significantly reduce or entirely phase out fundamentally unsustainable industries (e.g. Schröder et al., 2019) proves far less popular. This is the process of creative destruction (Abernathy and Clark, 1985; Gunderson and Holling, 2002; Schumpeter, 1934) and circular economy research now has to reach out further to translate this concept into action, helping stakeholders to leave behind unsustainable practices and tap into the plentiful sustainable opportunities.

#### AND it coheres with a multitude of SDGs vital to protect the environment.

Emerson A. Jackson 20, Doctoral Scholar, Sustainable Livelihood Diversification, Centre of West African Studies, University of Birmingham; Senior Research Economist, Model Building Analysis Section, Research Department, Bank of Sierra Leone, "Fostering Sustainable Innovation through Creative Destruction Theory," MPRA Paper No. 102174, 08/02/2020, pg. 2-12.

The current information age is modelled on the advancement of innovative mindset of creative thinkers, championed through means associated with transformative technologies embodied on events like, high speed internet and payment system, thereby making it possible for transactions to be dealt with almost instantaneously. Such developments are essentially vital, given its prospect for championing growth rate and dynamism in the world economy and also, the need to ensure living conditions are adequately satisfied, particularly in the direction of the Sustainable Development Goals (SDG) earmarked for full implementation in the year 2030. The concept of innovation is widely used in all walks of life - the effort of Schumpeter’s paradoxical term, “creative destruction” became highly prominent in the 1950s, which many economists in recent time have endeavoured to linked with free market economics (Cozzi and Galli, 2019; Benigno and Fornaro, 2018). Creative destruction as proposed by Schumpeter, and also explained by Alm and Cox (Online) is essentially facts about capitalism, which is thought to be a shorthand description of free market’s messy way of delivering progress. This concise summary of Schumpeter’s ideology is thought to be echoing criticism of capitalism by acknowledging that, lost jobs or vanishing companies are considered part of the growth system of creative destruction. In view of the UN drive to achieving the SDG goals by 2030, it is believed that creative destruction modelled on innovation will make it possible for societies that embraces creative destruction to operate on a growth pathway of higher productivity, through the creation and destruction of industrial processes. The process of entrepreneurial efforts will make it possible for citizens to realize the benefits of new or innovative products, with the hope of making it possible to shorten working week, improving employee skills profile and also, enhancing living conditions (linked with SDG1 and 2 agendas).

The concept of creative destruction has become topical in the field of Economics, especially in the design of continuous time innovation and growth models, and more recently, the emergence of Dynamic Stochastic General Equilibrium (DSGE) – the use of such a model to mimic Schumpeter’s creative destruction ideology seem to be consistent with microeconomic foundation connected with resource reallocation from less productive / obsolete firms to more innovatively productive firms as a way of championing sustained growth in the global economy (Cozzi and Galli, 2019: 2; Jackson, 2018a).

SCHUMPETER'S THEORY OF INNOVATION AND ITS CREATIVE DESTRUCTION ECONOMICS

The concept of creative destruction as alluded by Schumpeter has come as a lasting legacy in the subject matter of (Development) Economics. Such approach is seen to be noticeably pursued in all areas of professional endeavours, particularly that which is geared towards developing the human innovative mind to become creative, while also harnessing their entrepreneurial ability to expand wealth capacity (Cozzi, Pataracchia, Pfeiffer and Ratto, 2017). Schumpeter’s contribution to creative destruction economics has been carved under the notion of developing the human “innovative and entrepreneurial intellectual capacity”, which requires old fashion means of doing things to be buried in tandem with emerging innovations - supposedly with the ulterior motive of making things better in enhancing sustained progress through human endeavours (Kopp, 2019). Such focus on innovation and entrepreneurship as emphasised by Schumpeter also requires partnership with the other SDGs, which affirm the way forward as excerpted in a commitment from the Better Business Better World report produced by the Business & Sustainable Development Commission: "This is the first time that the private sector (i.e. everything other than governments) has been called on to play a key role in achieving the global development agenda – and not in terms of charity, but by exploring new business opportunities. Achieving the SDGs could open up an estimated $12 trillion in market opportunities (ING, online)".

In his book titled “Theory of Economic Development”, Schumpeter (1912) emphasised the importance of the 'entrepreneur', whose role is to develop creative ideas – such ideas are meant to be revolutionary in a way that set the pace for dynamism in society, thereby making it possible for the world economy to transcend from its static mode, akin to the notion of “Circular Flow”. Drawing on from early literature on the creative destruction concept, the ideal is now taking a revolutionary turn, as the pace of innovation is championing the way forward in tacking climate change as explored by George, Merrill and Schillebeeckx (2020). Their studies was able to explore challenges in tackling climate change, with the aim of pursuing the UN SDG agenda. More critically, it is believed that digital technologies have made great stride through continuous efforts of entrepreneurial efforts (this incorporate social, institutional and sustainable entrepreneurs) pursued in the development of business models and ecosystems, and also masterminded by trusts and institutional logics. The identification of problems as addressed in George et al study (2020), mainly associated with issues pertaining to how organizations’ businesses impact on climate change could also be seen as a form of exploring the full extent of creative destruction concept – in this case, innovative ideas are certainly in the way of destroying existing means of utilising the earth’s resources, while new ecosystem structures like eco-friendly technologies are sure to create the potential for positive impact on society.

To Schumpeter as mentioned in his book “Theory of Economic Development: an inquiry into profits, capital, credit, interest and the business cycle”, development, which is perceived as a form of historical process of structural change is thought to be highly driven by innovation – this as highlighted in an excerpt from Śledzik’s (2013: 90) work is divided into five types:

* Launch of new product or a new species of already known product;
* Application of new methods of production or sales of a product (not yet proven in the industry);
* Opening of a new market (the market for which a branch of the industry was not yet represented)
* Acquiring of new sources of supply of raw material or semi-finished goods;

Launch of new product or a new species of already known product; - Application of new methods of production or sales of a product (not yet proven in the industry); - Opening of a new market (the market for which a branch of the industry was not yet represented) - Acquiring of new sources of supply of raw material or semi-finished goods;

Transformational competency as asserted in the work of Saffa and Jabbie (2020) should be set as the backbone in fostering innovation and entrepreneurship, particularly in the present age of transformative technologies, where businesses are seen to be preparing themselves to become innovatively creative as a way of taking lead position in the marketplace. In a survey conducted by KPMG (2019) on technology innovation, Internet of Thing (IoT) was seen to be ranked as the top driver of business transformation, both in the present and the future. Research based on the International Data Corporation (IDC) forecast IoT spending to reach $745 billion towards end 2019 and reaching $1.2 trillion by the year 2022. Such spending is believed to be supported by the pursued dedication of high entrepreneurial ability of skilled human resource potential to ensure investments in innovation is effectively utilised in leading the way on creative destruction, where the gains on firms closure will also result in the creation of transformative opportunities. As addressed Cozzi and Galli’s (2019: 5) empirical study, dedicated Research and Development in innovation will make it possible for firms to increase their share in business competitiveness through actions taken in registering of patents, while being in a position to create expansion in business operations.

There are myriads of empirical proxies to assert the notion of creative destruction on macroeconomic performances (both in terms of long-run growth, economic fluctuations, structural adjustment and market factor fluctuations) as originally postulated by Schumpeter – example of such cases include factor reallocation and, in particular, job flows (Caballero and Hammour, 2001). Whittling it down to microeconomic foundation, such creative destruction approach is characterised by vagaries of decisions that are bent on creating and destroying production activities. Decision around the dismantling of existing systems are also hinged on the complexity of events and to name a few, ‘strategic entrepreneurial talents and technological innovations’. As emphasised by Caballero and Hammour (1994; 1998; 2005), the failure of such creative innovative ideas can have macroeconomic ramifications, with its interweaving connection on the concept of creative destruction. The notion of Schumpeter’s creative destruction economics have demonstrated itself through transcending of things happening in the world economy as highlighted in the work of Davis, Haltiwanger and Schuh (latterly referred to as DHS, 1996) – their empirical observations could be seen to present a case of job flow in the United States of America’s manufacturing sector. Based on this, DSH (1996: 2) were able to provide a definition around the concept of job creation (destruction) as the positive (negative) net employment change at the establishment level, and from one period to the next. On this note, it was concluded that over 10% of jobs at any point in time were not in existence a year before or will cease to exist in a year’s later. In a nutshell, the concept of Schumpeter’s creative destruction economics is alluring to the fact that well over 10% of jobs are likely to be destroyed each year, and with the possibility of creating the same amount within a year on account of entrepreneurial innovations connected with transformative technologies.

In relation to recent studies, Kogan, Papanikolaou and Stoffman (2020: 39) developed a general equilibrium model in a bid to assess the effects of innovation on asset returns. The main feature of the model is based on the fact that, benefits from technological progress are not shared symmetrically across all agents in the economic system. In this vein, it is thought that technological improvements partially benefit agents that are key in the creation and implementation of new ideas – more appealing to Schumpeter’s creative destruction theory. It can be made clear here to note the shocks pertaining to innovative improvement in technology can result in a considerable rationalization of wealth among households. The takeaway from their study shows that at equilibrium level, shareholders will pursue investment in firms with potential to grow, notwithstanding the scope for low average returns, given the fact that they provide insurance against increases in the probability of future wealth reallocation (Kogan et al: ibid).

While some have remained on the positive side of Schumpeter about the benefit of restructuring during times of depression as a result of destruction caused by improvement in innovative technologies, it is also believed by some that restructuring can be seen as a period of contraction – in fact, such rate of increased destruction would normally followed by a surge in opportunities or boom during the recovery period of cyclical economic downturn (Caballero and Hammour, 2001). There is a belief that businesses would be inclined to replace jobs destroyed during time of depression (recession), but in a heterogeneous productive environment, there is the possibility of other scenarios cropping up, which are mostly beyond the ambit of an entrepreneur or business owners – an expanded scope for heterogeneousness in family income as a means for future research was proposed by Kegan et (ibid) in their study on how creative destruction is impacting on inequalities in stock market investment.

Discursive literatures around the notion of the benefits and limitations of creative destruction economics would never cease to be placed as critical point of contention. In order to Discursive literatures around the notion of the benefits and limitations of creative destruction economics would never cease to be placed as critical point of contention. In order to accommodate transformational change, one would allure to the idea of Schumpeter, which in relation to the current era of post-modernity have not cease to influence human imagination regarding the importance of entrepreneurship as the root of innovation. The notion of creative destruction viewed from the pessimistic side of things would always bring thoughts around costs relating to transformational means of implementing change, which in the current era is modelled on hi-tech investments.

Moving forward with future research in the area of addressing research gap, efforts must be made to explore the complexities of firms, in this case with homogenous and heterogeneous entities in a bid to address the vagaries of technological opportunities that are avail for business to become robustly competitive in a fierce market of digital transformation. The polarization of job market means that technological advances can only be made complementary to sub-set of workers’ skills – in this regard, it is therefore important for R&D to be emphasised in quantifying the role of technological progress, which is a considered determinant of the human capital risk to businesses (details outlined in Autor, Katz and Kearney, 2006; Kugan et al, 2020).

In a bid to address research gap in the discourse of creative destruction, there is a very high scope for technological innovation or progress to interrupt traditional mode of production, thereby resulting in an increase rate of uncertainty in business continuity and also, the longevity of job opportunities. In this vein, preference for robust control will make it possible for high level of uncertainty to increase agents’ demand for insurance against improved rate of technological progress embodied in the time ahead. Also, there is a need to further research on the relevance of factor productivity given the rapid rate of technological innovation that is almost killing existing businesses. In such a case, entrepreneurial capacity should be built such that a review of the relevance of production factors are regularly assessed, while at the same time encouraging innovative ideas in a bid to make it possible for businesses to stand the test of fierce competition.

CREATIVE DESTRUCTION LINKAGES WITH THE UNITED NATIONS SDGs

In view of discourses surrounding Schumpeter’s creative destruction economics, one would certainly attest to the myriad of gains that lies ahead in terms of its link with the UN SDGs. The continued pressure on a growing world population is making it mandatory for firms or business enterprises to adjust to change, and more so the demands to become competitively sustainable in this earthly world. As addressed by Schumpeter in the creative destruction economic theory, one is with the view of using it in critiquing Rev. Thomas R. Malthus on his theory of population, which assert the view that the growth of population in geometric term is inconsistent with subsistence means of production, which he perceived to be growing in arithmetic term (Malthus, 1826: 2; also excerpted in Palumbo, 2010: 2-3). In view of Schumpeter’s drive to stimulate human thought on his notion of ‘Innovation and Entrepreneurship”, it is clear that regardless of the threat caused to a swing in entrepreneurial adjustments, the pace of present day technological pace is sure to demystify Malthus’s theory, which assert that technological pace of development would surpass what he thought was an astronomical rise in population growth during his era of existence in the world. Such ideology is certainly said to be making positive impact on present day society with regard to the call for reducing poverty (SDG1). On this note, it is worthwhile to note that human innovation is certainly geared towards ensuring technological pace of development supports the call for reducing poverty level – a means of ensuring starvation is drastically curtailed (linked with SDG2). Equally, human pursued intervention in exploring diverse means of technologies connected with food and medical technologies are also giving way to prolonging human lives through healthily living (SDG3).

More specifically, it is believed that the alluring ideology of Schumpeter to postulate his creative destruction economic theory is a reassuring motivation for enterprises to continue their search in the area of new creativity – to address it, there is a need to ensure institutions are well capacitated in the direction of embracing SDG4, 5 and 8. In the move to fostering innovation, with the underlying intention of making an impact on transformational technologies, it is certain that much needed efforts would be required to ensure educational investment is made an integral part of national governments and also, the core of institutional objectives.

Innovations requires people to make themselves au fait with modern means of technology, while also advancing their thirst for knowledge to develop on existing practices in championing high level competition in society (Saffa and Jabbie, 2020; Jackson, Jackson and Jackson, 2020). Equally, institutions should prepare themselves to make sure inclusivity is made an integral part of institutional objectives – in which case, equality in gender participation must be seen as an important element and therefore, should be encouraged in all walks of life. There are plethora of gains that can be envisaged, where men and women are made an integral part of the endeavour to champion innovation, with the enabling ambition of fostering transformational technologies at the highest level (Jackson and Jackson, 2020; Jabbie, Barrie and Tamuke, 2020). More advantageously to the highlighted SDGs is the scope of expanding opportunities for society to create better opportunities in the direction of high level employment, championed through mega means of technological development in ensuring businesses are able to stand the time of intense competition in the current age of digital technology. In this situation, there are myriad of gains to be made, both in terms of personal benefits to individuals (who would be assured of receiving high level of skills set to face competition), employers (through improved scope for profitability) and also, governments through improved tax revenues that can be used for stimulating and diversifying investment opportunities. Examples in this direction could be utilised in the expansion of essential facilities such as road construction, digitising transport network system and investment in high powered technologies (for example 5G and Artificial Intelligence, currently championed in the developed economies). Such endeavours are sure to incentivize high scope for Foreign Direct Investments (FDI), which will also build capacity for home-based investors to share risks in their pursuit of investment ventures through Public Private Partnership (PPP) arrangements.

More closely linked with Schumpeter’s creative destruction theory is the move for human innovation and entrepreneurial ability to address concerns around renewable and clean energy, which is though could assist in sustaining the already depleted earth’s natural resources (SDG7 and 9) – example in this direction include ‘Smart-efficient energy, Wind turbine, Solar Power, Artificial Intelligence (AI) and Internet of thing (IoT)’. Amongst the highlighted examples, AI and IoT seem to be making their way in dictating the pace of automated transactions across continental borders (KPMG, n/d; OECD, 2019). In this regard and as specified in the OECD (2019) report in going digital, there is an emphasis on the production of high quality of data to champion innovation in the current age of technology. It is certainly true that data is the engine of research as pursued by firms and government-led institutions, particularly in addressing key areas of focus with regard to product development, service delivery and market-led development. Most importantly, and where data integrity and sharing is concerned, there is an onus on public service institutions like the government-led statistical office of individual economies to keep stakeholders informed about information that will make it possible for firms or enterprises to utilise resources in the best possible way to facilitate competitive edge in their area of business activities (Jackson, 2020).

While it is good to focus attention on SDG9, which addressed the capacity to foster innovation and infrastructural development through smart technologies, there is also a need for state actors and also private sector entrepreneurs to be very attentive in a bid to reduce inequalities (SDG10). Inequality in many ways breed corruption (Jackson and Jabbie, 2019; Jackson, 2018), particularly in a situation where state actors and those in position of trust are turning blind eyes from the realities of ensuring investments in the creation of wealth (in this case, development of technology capacity) is done equitably, with attention focused in engaging individual talents irrespective of social status in society (See Jabbie, Barrie and Tamuke, 2020). The prospect for economies to foster high level of innovation should be done in a way that incorporate citizens from all sectors of the world economy – in this regard, both men and women alike should be seen as an asset in term of infusing their ingenious skills in developing high capacity for advancing technologies geared in following the pathway of Schumpeter’s creative destruction ideology. In this regard, the capacity to address technological developments should embrace new and creative ideas from citizens, which is hoped will compete fiercely with existing technologies.

Technological innovation in the present age of creative innovation is making progress in the direction of impacting positively in developing facilities that are sustainably efficient for cities and communities alike (SDG11). Such facilities can be seen through development in Artificial Intelligence (AI), which embraces the application of hi-tech scientific technology and machine learning to mention (OEC, 2018). As addressed in an OECD (2019) publication, there is a need for cross-cutting policies to be instituted in ensuring the move to high-powered skills is promoted in a bid to making it possible for cities and communities across the world to become efficient as masterminded by human intelligence. In this regard, governments, through its ambit of the public service (also linked with SDG 16 and 17) should endeavour to draw on available information by indulging business, educational institutions and learners regarding emerging skills-set needed to make it possible for the world to move in the positive direction of Schumpeter’s creative destruction ideology (OECD, 2019). This implies that, regardless of the risk of institutions and technologies phasing out, there are also opportunities for the establishment of new skills that will be more engaging for new generation of people to be engaged in decent work / improved economic activities. Such move will also come positively in supporting governments’ agenda to capacitate institutions, while also addressing welfare needs of citizens throughout the universe.

RELEVANCE OF INNOVATION AND ITS LINK WITH CREATIVE DESTRUCTION TO WORLD ECONOMY

Innovation is an essential engine in the promotion of Schumpeter’s creative destruction theory given the capacity of new discoveries to create an atmosphere for industries / firms to keep up to date with the latest forms of invention in a bid to ensure their sustained survival. Innovation has the potential of killing old ideas, but more in the positive direction of infusing competitiveness in satisfying the varied tastes of consumers in the world community. The existence of trade liberalization amongst regions in the world economy is an attestation of the relevance of innovation and its associated link with the concept of creative destruction – for example, Hsieh et al (2019) empirically proved this in their study by using the case of Canada and the United States of America (USA), in which the benefits resulted in a sustained increase in job reallocation for both small and big firms. The resulting outcome of their model shows that trade liberalization accelerate the process of creative destruction, which in effect also accounted for a rapid flow of technology transfer across the two countries. To support the claim of innovation’s positive associated link with creative destruction, several empirical studies on model construction have been pursued lately in different parts of the world to attest growth prospect effects of trade liberalization (Buera and Oberfield, 2020; Akcigit, Ates and Impullitti, 2018; Perla, Tonetti and Waugh, 2019).

It is worthwhile for such approach like trade liberalization to be addressed with caution despite its acclaimed positive impact on many of the developed economies. With reference to Akcigit et al (2018) study, one can be very much critical about the dichotomy along the line of both the positive and negative gains on tariffs as opposed to free trade liberalization, which is thought to support Schumpeter’s creative destruction concept. As addressed by Jackson and Jabbie (forthcoming), one would be very much inclined to be on the cautious side of adopting a mild form of protectionist approach (backed by Private Public Partnership arrangements) in ensuring industries in the developing economy market are protected against the emergence of big firms, which overall is sure to have a short term impact on welfare loss, particularly for those employed in the unskilled job cadres. There is certainly a win-win situation to be made from innovation that result in the approach to liberalizing trade, wherein firms are allowed to reallocate across continental borders. As emphasised by Perla et al (2019), there is a huge cost to creative destruction, which takes the form of reallocating labour away from production line, given the introduction of innovative means of technology, but a gain for economies where production factors are transferred, on account the opportunity cost to accessing cheaper forms of factor productivity. On interpretation of Hsieh et al (2019) model outcome, it is but certain that the resulting dynamic gains from trade liberalization are enormous when compared to a more static model approach, particularly in the case with homogenous firms.

On the whole, there are both winners and losers in the model of creative destruction Economics as masterminded by Joseph Schumpeter, particularly when the focus is geared towards maximising efficiency through human innovation to facilitate technological transformation. Opportunities gained through utilisation of Schumpeter's creative destruction model is very much beneficial to capacitating people seeking to become competitive in their pursuit of skills development. While also for organisations and government-led institutions alike, there is an opportunity to improve and transform the world into becoming a better place to live through uptake of modern technologies such as Artificial Intelligence (AI). With the model being applied throughout in the case with both homogenous and heterogeneous firm situations (Hsieh et al, 2019; Perla et al, 2019), there is high hopes that the drive to achieving all of the SDGs will become a reality. In addition, with the drive to foster global competitiveness in business operations, businesses will be free to transfer technological provisions in areas / regions where resource investments are considered relatively cheap by taking advantage of low cost factor productivity (for example, labour and land space). This is also a time for those transferring technologies to explore the full potential of human creativity when the focus is on the internationalisation of business models. As noted by Siedschlag and Zheng (2015: 183) in their econometric study of examining linkages between the internationalisation of firms and their innovation and productivity performance (with data from Ireland, 2004–2008), the outcome revealed that, relative to firms that served the domestic market only, firms with international activities were more likely to invest in innovation, with successful outcomes in the area of innovation output, and higher labour productivity. Lost opportunities would always be gained somewhere else, given the need for institutions / firms to focus attention on a global approach of utilising innovation and competitiveness.

Innovation is certainly seen as the way forward in keeping pace with Schumpeter’s creative destruction economics. Huffman (2019) provided a balanced analysis of the importance of both destruction and creation to economic growth in his model – in this, he decoupled the destruction (or exit) from the creation (or research) and in contrast with existing literatures on the concept, he emphasised the importance of decisions made by agents, but they ultimately influence on each other. In other words, decision pertaining to destruction is as equally important as the need to be creative (Stokey, 2009) - in this vein, the model demonstrate that a halt in destruction will also result in slow growth. An equilibrium point of a balance between destruction and creation may not necessarily yield the optimum - this is factual as decision to remain at equilibrium point may give rise to either too high or low a level of innovation, while the impact on destruction may even manifest itself as too high or low. In balancing the risk of creation versus destruction that is likely to arise during thought spanning innovation, Huffman (2019) proposed that the utilisation of a non-linear tax / subsidy scheme (which is considered to be of great impact to Research and Development) may impact on welfare, relative to equilibrium for which consequences may prove too harsh, particularly when the outcome is more on the destructive side. The practical application of creative destruction model by firms’ in business model is one that needs applauding, given the emphasis placed in ensuring innovation is prioritised as the driving force behind technological development and growth as emphasised in the study from Huffman (2019). In the present age of digital innovation in businesses and work activities, there is certainly going to be winners and losers, who with the right level of motivation incentives are sure to take advantage of available opportunities that result in an overall pathway of sustained growth in the global economy, which is in line with the SDG9 agenda (Hoffman, 2019; Klette et al., 2004).

In furtherance of the relevance of innovation and its link with creative destruction concept, Awan and Scroufe (2019) demonstrated the interconnectedness of social sustainability with innovation performance. Despite several studies have addressed the impact of collaboration on innovation (Fidel, Schlesinger and Emilo, 2018; Sakka, St-Pierre and Bahri, 2019), in particular Awan and Scroufe (2019) were very much unique in their empirical investigation using Partial Least Squares Structural Equation Modelling (PLS-SEM) to explore the mediating role of firms’ social performance between collaboration and innovation performance. Where other studies have focused purely on factor productivity components (see Hoffman, 2019; Hsieh et al, 2019), outcome from Awan and Scroufe’s (2019) study shows high level of potential when social concerns are addressed in the process of firms’ innovation drive. Their focus on the future of collaboration as a means of addressing sustainable innovation is also in tandem with a study carried out by Fidel, Schlesinger and Emilo (2018), who provided empirical evidence on the direct effects of two strategic resources, namely ‘Customer Orientation and Customer Knowledge (CKM)’ and their outcome on innovation capacity and marketing results with SMEs. In this, the outcome demonstrated the importance of CKM and customer orientation – these are considered relevant strategic resources for the development of innovation capacity and marketing results. CKM approach is considered very vital in a climate of creative destruction given that firms, and particularly in this case SMEs will be more inclined to orient their customers’ minds about new (technology) innovations. This is a worthwhile approach that supports SDG agenda (reference to SDG1, 2 8 and 9), particularly with regard to ensuring SMEs existence are sustained, even with the emergence of innovations, which can either result in destruction or creation, more so in the direction of expansion (reduction) in growth and jobs opportunities.

CONCLUSION AND RECOMMENDATIONS

In view of the discourse on this chapter, one will assert that creative destruction concept is quite a relevant tool in promoting sustainable innovations in the global economy – despite its critiques in terms of disruption to existing technology, it can also be seen as the engine to supporting sustained level of growth and development, where institutions, businesses and firms (both SMEs and large-scale-enterprises) are able to utilise creative innovations or R&D opportunities in support of achieving sustained level of growth in the world economy.

Critics of Schumpeter's creative destruction ideology are still perceiving it as problematic to institutional mode of addressing sustained level of profitability and also the promotion of social inequality (Peck, 2005; Florida, 2002). In reality and where the drive to innovative thinking is concerned, more so in relation to promoting free and competitive trade, businesses / firms will be very much placed at effectively utilising production factors like human resource potential to access opportunities across international borders (reference to study by Siedschlag and Zheng, 2015). Literature extracts utilised in this study have emphasised on the relevance of creative destruction concept in ensuring the drive towards innovation is well supported by entrepreneurial capacity to champion the productive capacity of institutions. While it can be a scary process for firms and businesses to grapple with the reality of innovation’s impact on the sustainability of their operations, it is good to note that, innovation comes with opportunities, and failure to embrace creativity can also impact institutions’ capacity to grow, especially in the current environment of transformative technologies (Hsieh et al, 2019; Huffman, 2019).

Modern economies are becoming ever increasingly sophisticated through engagement in transformative technologies and the dedication of entrepreneurial skills / creative innovation devoted to ensuring such approaches are championed sustainably, with their impacts positively felt in the direction of potential growth for the global economy. It is certain that the future of the world economy will continue to grow in the direction of heterogeneous trends in the effort to foster creative innovations, supposedly needed to address growth in world population and meeting the demands of human insatiable wants. There is an ever growing need for collaboration to be established amongst institutions in the world to make sure innovative ideas are translated into reality – possibly one that mimic that of ‘Customer Orientation and Customer Knowledge (CKM)’ as empirically founded by scholars like Fidel et al (2018) and Awan and Scroufe (2019). The concept of creative destruction has modelled itself to become a universal language - one that is acceptable in the world of transformational competencies, which means that its impact should not only be limited to large firms or enterprises, but also a beneficial factor for SMEs, which are considered the bedrock for economic growth, particularly in under-developed economies mostly located in regions around Africa, Latin America and some parts of the Asia bloc.

In as much as the thrust of Schumpeter’s creative destruction concept has been modelled on the gains of creativity, which is backed by the ingenuity of (entrepreneurial) innovations, one should not lose sight of its inherent risks to the global economy given that opportunities created can also result in lost ventures for some. Hence, there is a need for concerted effort to be placed at the heart of institutional collaboration and strategic actions in support of the sustainability of SMEs’ existence (as already mentioned by authors like Awan and Scroufe, 2019 and Ajor and Alikor, 2020). This could involve move in the direction of Import Substitution Industrialization approach that protect institutions like SMEs, with scope for Public Private Partnership (PPP) in a bid to ensuring risks are shared, while also creating an environment for job sustainability in communities (Jackson and Jabbie, forthcoming).

In a bid to moving forward in fostering innovation, with the focus being on creative destruction in the world economy, organisations must seek to adopt a model that support organizational scope for achieving sustained growth and development through consideration on variety of model approaches. On this note, the undermentioned points are worth considering as a way of ensuring the ideology of creative destruction continue to rein in the effort to fostering institutional growth and development in the world economy:

* While it is necessary to ensure the pursuit of innovation supports the continued drive on creative destruction, risks to firms or businesses continuation would always be an integral part of the model and ultimately, raising high concerns around inequality for institutions like SMEs and also economies in the under-developed world. In this regard, and as emphasised by Huffman (2018), government policies that favours subsidy / grant and tax reduction for vulnerable businesses must be encouraged as the way forward. The identified policy approach(es) could also be utilised to promote the capacity for future scope in the area of R&D for local / national organizations of all types (SMEs, Universities, etc.) to access in a bid to nurture creative innovations that ultimately result in new wave of (job) opportunities for people. Such provision could include expansion in areas relating to ‘Smart-efficient energy, Wind turbine technology, Solar Power expansion, Artificial Intelligence (AI) and Internet of Thing (IoT)’, which are also relevant in addressing SDGs associated with decent work and economic growth (SDG8) and technological innovation and industrialization (KPMG, n/d; OECD, 2018 and 2019). Furthermore, tertiary education institutions, particularly universities must seek to nurture creativity that utilizes the best and most skilful professionals – registered patents from innovation could also be utilised to increase potential for attracting foreign direct investment opportunities.
* Given high level of risks that creative destruction brings to the sustained survival of institutions, particularly SMEs, there is likelihood for firms or businesses to seek an option for merger-acquisition in a bid to access resources or continue their existence in the world of business (Caballero and Hammour, 2001). Where such approach is the case, governments, particularly those in under-developed economies should seek to promote an initiative that support Import Substitution Industrialization (ISI) strategy in a bid to protect local industries or support their capacity to become competitive in the midst of bigger firms’ emergence in situations where trade liberalization is part of a common market system. More cautiously, ISI needs to be monitored given the experiences of businesses exploiting it as a form of unproductive rent-seeking venture, which limit their potential of becoming creatively innovative (Koroma, 1996; Jackson and Jabbie, forthcoming; Jerome, Ajakaiye, 2019). In order to avoid failures as experienced in the early time of its inception, ISI if adopted must be linked to reward and where necessary merged with PPP solicited funds in a bid to ensuring bureaucracy is minimized in situation where government is actively involved. Opportunities for future should promote openness in exploring the best way by which innovation could be fostered, but with its underlying focus on the creation of newer opportunities and more importantly, incorporating welfare gains that are considered to be of value-added to the continued pace of institutional destruction, which may arise on account of the emergence of new skills or transformative technologies.

#### Numerous environmental stressors culminate in extinction.

Nathan A. Sears 21, PhD, Political Science, University of Toronto, "International Politics in the Age of Existential Threats," Journal of Global Security Studies, Vol. 0, Issue 0, 2021, pg. 9-11.

The second mode is human destruction of the natural environment, which could leave the planet uninhabitable for humanity (Ward 2008; Brannen 2017; Steffen et al. 2018; Spratt and Dunlop 2019; Wallace-Wells 2019; Ripple et al. 2020). Humans have become the driving force behind environmental change, which is why this geological epoch is increasingly called “the Anthropocene” (Crutzen 2002), to distinguish it from the unusually temperate period since the end of the last Ice Age roughly 11,700 years ago, the Holocene, when human civilization—probably not coincidentally—began and flourished (Steffen, Crutzen, and McNeill 2007).9 The decline of some of Earth’s environmental subsystems already exceeds the “planetary boundaries” believed to constitute a “safe operating space for humanity” (e.g., climate change, biodiversity loss, and the nitrogen cycle), while others are under serious strain (e.g., ocean acidification and the phosphorus cycle). The outcome of human-driven environmental decline could be “irreversible and, in some cases, abrupt environmental change, leading to a state less conducive to human development” (Rockstrom et al. 2009, 472). The species extinction crisis—what some are calling the “sixth mass extinction” (Kolbert 2014; Brannen 2017)—is a sign of Earth’s declining habitability in the Anthropocene.10

The biggest environmental danger may be climate change (or “global warming”). The major anthropogenic drivers of climate change are the burning of fossil fuels (e.g., coal, oil, and gas), combined with deforestation for agriculture (e.g., livestock and monocultures) and resource extraction (e.g., mining and oil), plus ocean warming undermining the planet’s capacity for absorbing carbon dioxide. Anthropogenic climate change could soon pass certain “tipping points,” whereby positive feedback loops in Earth’s climate system could lead to potentially irreversible and self-reinforcing “runaway” global warming (Kump, Kasting, and Crane 2003; Steffen et al. 2018). For example, the melting of Arctic “permafrost” could produce additional warming, as glacial retreat reduces the refractory effect of the ice and releases huge quantities of methane currently trapped beneath it. Earth could then move towards a “Hothouse Earth” climate, which would make the planet a less-hospitable place for humanity (Steffen et al. 2018; Spratt and Dunlop 2019; Wallace-Wells 2019; Ripple et al. 2020).

The third mode is human development of technology, which engenders the risk of loss of control over a singularly powerful technology (Moravec 1988; Vinge 1993; Bostrom 2014; Shanahan 2015; Danzig 2018; Tegmark 2018; Russell 2019). Bostrom (2013, 25) succinctly describes the risk: “If we continually sample from the urn of possible technological discoveries . . . then we risk eventually drawing a black ball: an easy-to-make intervention that causes extremely widespread harm and against which effective defense is infeasible.” Several emerging technologies pose a loss-of-control risk, including biotechnology (e.g., the “CRISPR revolution” could give humans the power over evolution to “rewrite the code of life,” including “gene-editing” of the human germline or large-scale “gene-drives” in nature) (Doudna and The third mode is human development of technology, which engenders the risk of loss of control over a singularly powerful technology (Moravec 1988; Vinge 1993; Bostrom 2014; Shanahan 2015; Danzig 2018; Tegmark 2018; Russell 2019). Bostrom (2013, 25) succinctly describes the risk: “If we continually sample from the urn of possible technological discoveries . . . then we risk eventually drawing a black ball: an easy-to-make intervention that causes extremely widespread harm and against which effective defense is infeasible.” Several emerging technologies pose a loss-of-control risk, including biotechnology (e.g., the “CRISPR revolution” could give humans the power over evolution to “rewrite the code of life,” including “gene-editing” of the human germline or large-scale “gene-drives” in nature) (Doudna and The third mode is human development of technology, which engenders the risk of loss of control over a singularly powerful technology (Moravec 1988; Vinge 1993; Bostrom 2014; Shanahan 2015; Danzig 2018; Tegmark 2018; Russell 2019). Bostrom (2013, 25) succinctly describes the risk: “If we continually sample from the urn of possible technological discoveries . . . then we risk eventually drawing a black ball: an easy-to-make intervention that causes extremely widespread harm and against which effective defense is infeasible.” Several emerging technologies pose a loss-of-control risk, including biotechnology (e.g., the “CRISPR revolution” could give humans the power over evolution to “rewrite the code of life,” including “gene-editing” of the human germline or large-scale “gene-drives” in nature) (Doudna and

Perhaps AI best captures the threat of technological loss of control. Artificial intelligence is broadly defined as digital technologies or computers “that are capable of performing tasks commonly thought to require intelligence” (Brundage et al. 2018, 9). Currently, progress in AI is being driven by a combination of gains in hardware (e.g., the exponential growth in computing power described by “Moore’s Law”), software (e.g., “machine learning” algorithms and techniques, such as “neural networks” and “deep learning”), and data (e.g., the abundance of digital information on the Internet) (Bostrom 2014). Today’s AI are “narrow” systems that can achieve or surpass human-level intelligence only in specific domains—as demonstrated in November 2017, when “AlphaGo” beat the world champion, Ke Jie, at the strategy game “Go.” The idea that computers could one day possess human-level “general” intelligence was first suggested by none other than Alan Turing, who described a test—the “Turing Test”—in which a computer would successfully persuade a human observer that it was human. Since then, AI experts have frequently expressed the concern that AI could one day far surpass human beings in general intelligence—i.e., “superintelligence” (Good 1966; Moravec 1988; Vinge 1993; Kurzweil 2006; Bostrom 2014; Shanahan 2015; Tegmark 2018; Russell 2019). In one scenario, an AI system pursues the goal of optimizing its own algorithm, which becomes an accelerating process of self-recurring improvements—an “intelligence explosion”—that approaches a near-vertical ascent in capabilities—the “singularity.” The essence of the “control problem” is about figuring out how to properly align the goals of AI with humanity before an “intelligence explosion”; for once superintelligence exists it could become impossible for humans to control (Bostrom 2014; Shanahan 2015; Tegmark 2018; Russell 2019).

Destruction Capacity

The second variable—destruction capacity—concerns the scale of physical destruction by human agency. The salient trend in the evolution of the forces of destruction is that humanity’s capacity for physical destruction has grown continuously in its scope and intensity over time. Humanity’s destruction capacity has reached the critical level in which it constitutes an existential threat to human civilization and survival (see figure 2).

Diagram

Description automatically generated

The essence of the “nuclear revolution” was that the scale of potential destruction became an existential threat to humanity. Historically, the development of military technology reflects the empirical pattern of the growth in destruction capacity (Brodie and Brodie 1973; McNeill 1982; Buzan, Jones, and Little 1993; Deudney 2007), from clubs and slings, to spears and bows, muskets and cannon, machine guns and artillery, tanks and bombers, and nuclear warheads and ballistic missiles. The atomic bomb greatly surpassed the destruction capacity of conventional weapons, which was demonstrated twice in violence with the destruction of the Japanese cities, Hiroshima and Nagasaki, to end the Second World War; but even these first-generation atomic bombs were soon eclipsed by the second-generation thermonuclear weapons. It was the development of thousands of thermonuclear weapons by the United States and the Soviet Union during the Cold War that made nuclear war an existential threat. A report conducted by the US Office of Technology Assessment (1979, 8) estimated that a large-scale nuclear war could have caused immediate deaths ranging from the tens to hundreds of millions, and that the “future of civilization itself in the nations attacked would be in doubt.” Nuclear war also raised the prospect of “nuclear winter”—or a severe drop in global temperatures, decline in precipitation, and the probable collapse of agriculture from the release of massive quantities of ash and aerosols into the atmosphere from nuclear explosions and firestorms (Sagan 1983; Toon, Robock, and Turco 2007; Robock and Toon 2012; and Helfand 2013). Nuclear winter might cause billions of deaths from “nuclear famine” (Toon, Robock, and Turco 2008; Helfand 2013).

Since the end of the Cold War, global nuclear forces have declined from their peak of approximately 70,000 warheads to an estimated 13,865 today—including 1,750 and 1,600 deployed warheads by the United States and Russia, respectively. There is also renewed discussion about the use of “tactical” nuclear weapons to fight “limited” nuclear war (e.g., the 2018 US Nuclear Posture Review). However, the possibility of limited nuclear has always been a big if (Brodie 1959; Kahn 1960; Morgenthau 1964), because of the strategic pressures to “win the war” and military uncertainties of the “fog of war” once nuclear war has begun. Thus, it is still important to consider the “worst-case scenario.” One “total” nuclear war scenario—involving 1,066 warheads (566 megatons) on 387 known targets in the United States—estimates 184.5 million causalities during the first two hours within the United States alone (Minson 2020). This would meet the threshold—“roughly around 500–2000 strategic warheads” (Sagan 1983, 292)—that could trigger nuclear winter. This suggests that the absolute decline in nuclear arsenals has not fundamentally transformed the existential threat of “total” nuclear war.

Similarly, humanity’s impact on the environment reflects its growing destruction capacity (Steffen, Crutzen, and McNeill 2007; Rockstrom et al. 2009; Ripple et al. 2020). While humans have had an impact on Earth’s climate since at least the Industrial Revolution, the dramatic increase in greenhouse gas emissions since the mid-twentieth century—the “Great Acceleration” (Steffen, Crutzen, and McNeill 2007, 2015; McNeill and Engelke 2016)—is responsible for contemporary climate change, which has reached 1°C above preindustrial levels (IPCC 2018). If climate change reaches a Hothouse Earth state, then it could pose an existential threat to humanity (Steffen et al. 2018; Spratt and Dunlop 2019; Wallace-Wells 2019; Ripple et al. 2020). The direct effect would be extreme heat. While human societies possesses some capacity for adaptation and resilience to climate change, the physiological response of humans to heat stress imposes physical limits—with a hard limit at roughly 35°C wet-bulb temperature (Sherwood, Huber, and Emanuel 2010). A rise in global average temperatures by 3–4°C would increase the risk of heat stress, while 7°C could render some regions uninhabitable, and 11–12°C would leave much of the planet too hot for human habitation (Sherwood, Huber, and Emanuel 2010). The “burn-it-all” scenario of fossil fuel exploitation puts even these hard upper limits within reach (Sherwood, Huber, and Emanuel 2010; Brannen 2017), although physiological limits probably exaggerate what humans would find tolerable. The possibility of heat stress is a grim reminder of human beings’ corporeal vulnerability to physical destruction.

The indirect effects of climate change on human civilization could include rising sea levels affecting coastal cities (e.g., Miami and Shanghai), or even swallowing entire countries (e.g., Bangladesh and the Maldives), extreme and unpredictable weather and natural disasters (e.g., hurricanes and forest fires), environmental pressures on water and food scarcity (e.g., droughts from less-dispersed rainfall, and lower wheat-yields at higher temperatures), the possible inception of new bacteria and viruses, and, of course, large-scale human displacement (World Bank 2012; Wallace-Well 2019). The societal consequences of a Hothouse Earth climate are difficult to determine. Historically, environmental pressures have contributed to the collapse of societies, such as the Akkadian, Easter Island, and Mayan civilizations (Diamond 2005; Kemp 2019). A Hothouse Earth climate is terra incognita for human civilization, which has only known the relatively stable climate of the Holocene (Steffen, Crutzen, and McNeill 2007). This is why scientists have turned to the geological record of Earth’s “big five” mass extinctions: they could provide a glimpse at the future of the planet should humanity fail to arrest climate change (Ward 2008; Payne and Clapham 2012; Brannen 2017).

#### The plan inaugurates a revitalized presumption against the technology sector with regard to mergers.

Mark Glick et al. 21, Professor of Economics, University of Utah; Catherine Ruetschlin, Assistant Professor of Economics, University of Utah; Darren Bush, Leonard B. Rosenberg Professor of Law, University of Houston Law Center, "Big Tech's Buying Spree and the Failed Ideology of Competition Law," Hastings Law Review, Vol. 72, No. 465, 2021, Lexis.

Introduction

Big Tech dominates the technology sector in the American economy. Five technology firms - Google, Amazon, Apple, Facebook, and Microsoft - claim the top five spots on the NASDAQ by market capitalization. And Big Tech is hungry for more. All five companies are buying smaller companies at an unprecedented pace. Google has acquired 270 companies since 2001, including Android, YouTube, and Waze. Microsoft has made over 100 acquisitions in the last ten years, including acquisitions of Skype, Nokia Devices, LinkedIn and GitHub. Amazon has made a similar number of acquisitions, including its purchase of Whole Foods. Facebook has acquired ninety companies, mainly startups.

A growing chorus of commentators have argued that Big Tech's appetite for expanding through purchasing other companies provide a potential means for these dominant firms to solidify and protect their dominance. While we do not determine whether any particular merger was anticompetitive, this Article, relying exclusively on public information, joins that chorus but adds a new twist. It argues that existing law of mergers is ill-equipped to address the tech firms' acquisition of startups because of a rule called the "potential competition" doctrine. The potential competition doctrine addresses the effects of an acquisition where one firm is in the market and the other is "waiting in the wings" or on the periphery of the market.

The problem with the potential competition doctrine, we argue, is its extraordinarily high burden of proof. That burden can be traced back to Justice Powell's opinion in United States v. Marine Bancorporation. The Marine Bancorporation case imposed an extravagant evidentiary burden for a violation of § 7 of the Clayton Act based on elimination of potential competition. Decades later, that standard has gutted the proper role of competition law and rendered it effectively inapplicable to today's mergers in digital markets. A dramatic rethinking of the doctrine is needed to enable federal antitrust enforcement agencies to protect consumers.

In this Article, we explore how the proper use of potential competition doctrine might have halted the transactions that have led to massive Big Tech. We begin by examining the history of Facebook's acquisition strategy and how [\*468] it could have contributed to Facebook's rise to dominance and the maintenance of its dominance.

Facebook and other Big Tech companies maintain their market dominance by harnessing the network effects that reinforce user value in the consumer-facing market and advertiser benefits in digital advertising markets. Startup firms provide competitive pressure because they are able to siphon off or "cream skim" customers and collect valuable data. Big Tech acquisition of startup companies may benefit the incumbent by reducing competitive pressure of potential entrants on the periphery of the market or by preventing future entry and expansion by such firms that could undermine the incumbent's dominance.

Such acquisitions are typically analyzed under the potential competition doctrine. In the next Part, we discuss how the Court transformed a once workable standard into a completely unworkable, open-ended prediction of future conduct and performance that could not be practically discharged. We discuss how the Court split the doctrine in two, creating the actual potential competition doctrine and the perceived potential competition doctrine, each with different evidentiary requirements. It ultimately expressed disdain over one of the doctrines it created, suggesting that no plaintiff could meet such a standard.

We then discuss, using public information, the competition harm story of Facebook's acquisitions of Instagram and WhatsApp. In each Part, we detail why antitrust enforcement agencies failed to challenge mergers. We then describe why the potential competition doctrine as currently applied would lead to a false negative; namely, an acquisition that is competitively harmful yet not challenged by federal antitrust enforcement agencies. The high initial burden on the plaintiff to present a case concerning future conduct and competitive effects serves as a serious deterrent to potential competition mergers, even by dominant firms.

In the next Part, we seek to alter the potential competition doctrine. Using the 1968 Merger Guidelines and additions from the potential competition literature, we assert that with simple structural presumption, the Federal Trade Commission (FTC) could have elected to challenge these mergers and shifted the burden to Facebook to demonstrate why no harm to future competition could occur, and why, given Facebook's resources it could not internally innovate to achieve its competitive goals.

I. Facebook's History of Acquisitions of Small Potential Competitors

Big Tech firms operate in online platform markets where they provide critical facilitation services between buyers and sellers, users and content providers, and advertisers and consumers. Their services include search [\*469] engines, social networks, ecommerce, digital advertising, app stores, and operating systems, where platforms connect parties online to facilitate transactions. The increased functionality and speed of the internet has made platforms exceptionally efficient in connecting end users. The tremendous profits earned by these firms create strong incentives for others to enter these markets, yet two or fewer Big Tech firms have dominated many of these markets for years. Some observers contend that the Big Tech large-scale acquisition programs have diluted the natural process of competitive entry, with firms entering the market with the sole intent of being acquired, as there would be no other plausible endgame.

Online platforms typically operate in two-sided markets including a consumer-facing market for digital services and a market for online advertising. In order for a platform to maintain its position in both the digital services and the online advertising markets, it must maintain the most desirable platform for users and prevent users from switching to other platforms. In other words, user traffic is important to both markets because they each exhibit strong network effects. In social networking, for example, users value the social network with the most opportunities to reach others; advertisers benefit from [\*470] greater user numbers in terms of reach and consumer targeting. Such direct and indirect network effects have resulted in Facebook becoming a dominant provider. Once a dominant firm establishes itself in an online platform market, the network effects and data-driven efficiencies in digital markets tend to reinforce dominance even when new rivals improve or produce novel products.

While strong network effects can cause markets to tip and create a dominant firm, they can also allow small nascent competitors with a desirable alternative platform to scale quickly and challenge such dominance. Innovating startup firms provide competitive pressure in such markets when they exhibit rapid user growth and the potential to enter the dominant firm's core market. Prior to entry into the core market, these nascent firms demonstrate their potential by diverting users from the dominant platform or acquiring data that would be valuable on the advertising side of the market. This information provides a signal to the dominant firms, creating an incentive to absorb or eliminate the nascent rival. A nascent competitor can improve the economic performance of the market overall by preventing a dominant firm from reducing quality, raising prices, or curtailing innovation. The nascent startup that blossoms into a competitive rival can reinvigorate the competitive process within the dominant firm's core market. In this context, acquisitions of nascent competitors by dominant firms undermine both current and future competition, reinforcing the incumbent's dominance in the face of technological shifts.

[\*471] Facebook's record demonstrates how acquisitions can play a critical role in the rise to dominance and the maintenance of dominance by a Big Tech incumbent. At the time of Facebook's launch in 2004, the social media market was highly competitive, with multiple new social networks emerging each year. Facebook's famed beginnings in a Harvard dorm room filled a new niche in the social networking market. The site opened exclusively to the Harvard community - requiring a Harvard.edu email address to join - before extending services to Stanford, Columbia, and Yale. The interface was simple, providing a few core social networking functions, including profile pages where users could post a single photo and personalized information, as well as a "friend graph" or database of connections between individuals that could be searched via user names or other attributes to identify and request new connections.

The site was immediately popular and each new user added to its overall utility as more friends or potential friends joined the network. Despite its limited Ivy League user base, by December 2004 the site had grown to one million monthly active members. Its popularity drew the attention of funders. Funding drove expansion, first to more universities, then high schools, then workplaces, and finally in September 2006 to anyone in the world. By the time Facebook was opened to all people willing to register, the company had already received more than $ 40 million in angel and venture capital investments. This funding enabled the company to pursue an ambitious growth strategy, including early acquisitions, which made it possible for the company to take advantage of economies of scale and scope and network effects in the social networking market.

Social media use grew rapidly in the years of Facebook's early expansion. According to survey data from the Pew Research Center, just 7% of U.S. adults participated in social networking in 2005. Over the following decade, that number would rise to 65%, with the fastest growth occurring before 2011. Facebook positioned itself to take advantage of this market growth by expanding its user base, articulating a qualitative product differentiation between itself and [\*472] its competitors, and integrating new ways of engaging users into its suite of social networking functions by offering new features and functionalities.

Facebook operated in a rapidly changing competitive environment where the basic technological undergirding of the social network was evolving, including the increasing importance of mobile technology to connect users online. Beginning in 2007, the company initiated a series of acquisitions of both its potential rivals in the social media market and firms in adjacent markets that could divert user engagement away from the social network. This tactic arguably propelled Facebook's growth strategy as the company overtook its main competitors. Figure 1 shows the number of acquisitions Facebook completed each year from 2004 to 2018, as well as the number of monthly active users reported by the company each year.

Figure 1

Partially as a result of Facebook's acquisition strategy, when market user growth leveled off, competitors like MySpace, Windows Live Spaces, and [\*473] Google's Orkut suffered significantly, while the number of new users active on Facebook each year continued to measure in the hundreds of millions. Facebook first surpassed its main rival, MySpace, to become the most popular website in the United States in 2009, just five years after its founding. By 2011, when more than half of all adults and two-thirds of internet users were regular users of social networks, Facebook dominated the industry by a wide margin. Pew Research Center data from 2011 showed that while 92% of social network users regularly accessed Facebook, just 29% utilized the nearest competitor, MySpace, while 18% used LinkedIn and 13% used Twitter.

From 2007 to 2018 Facebook acquired or attempted to acquire more than 100 companies in competing and adjacent markets. The ninety acquisitions completed since the company's founding, and documented in the Appendix, range from small acquisitions like the $ 2.5 million purchase of location services network Nextstop to the $ 19 billion acquisition of popular instant messaging rival WhatsApp in 2014. They include deals that transferred key technology and expertise to the company in markets for app development platforms, instant messaging, photo sharing, location services, user information and surveillance, and advertising and analytics. Many of the acquisitions converted stand-alone apps, websites, and platforms that worked inter-operably across competing [\*474] networks into Facebook-exclusive features. Other products were simply shuttered in the days or months following their acquisition.

Today, Facebook is number three on the list of most-trafficked websites in the world. With Instagram, Messenger, Facebook, and WhatsApp, the company now owns four of the most popular mobile apps in the United States. Facebook is responsible for about ten percent of the mobile browser market, representing a substantial share of mobile users for whom Facebook is the main point of entry for online content. This remarkable influence over how individuals engage and consume online is the product of over a decade of strategic internal growth, as well as the acquisition of potential competitors and the integration of their user traffic and functionality within the Facebook structure.

Remarkably, Facebook's ascendancy in concert with its numerous acquisitions stimulated little interest by the antitrust agencies. A march to dominance, accompanied by numerous acquisitions of potential competitors, puts Facebook's strategy directly within the merger regulatory power of the government through its ability to enforce § 7 of the Clayton Act. Yet, few of [\*475] the acquisitions faced review from antitrust authorities in the United States. In 2012, the FTC conducted a nonpublic investigation of the $ 1 billion Facebook-Instagram merger and did not recommend any further action. In 2014, U.S. regulators cleared Facebook's $ 19 billion acquisition of the messaging application WhatsApp, though the FTC did send both companies a letter reminding them of their obligation to maintain privacy practices in accordance with the WhatsApp user agreement in place at the time that user data was collected.

Unlike many other companies acquired by Facebook, Instagram and WhatsApp remained separate from Facebook's social network in branding until 2019, and in some features of interoperability and data autonomy. They are also globally important market leaders in social networking, photo sharing, and instant messaging. The scale, innovation, and popularity of these products have made them frequent examples of potential competitors both at the times of the acquisitions and in the years since.

The question arises why the federal antitrust enforcement agencies demonstrated reluctance to seriously confront the competitive impact of these and similar mergers among high tech companies. We argue below that the potential competition doctrine, as developed during the years of the influence of the Chicago School of antitrust, has played an important role in insulating acquisitions of startups by the dominant tech companies from the levels of antitrust scrutiny necessary to protect consumers and the competitive process in technology markets.

II. The Potential Competition Doctrine

Facebook and other Big Tech companies maintain their market dominance by harnessing the network effects that reinforce user value in the consumer-facing market and advertiser benefits in digital advertising markets. Innovative startup firms provide competitive pressure in these markets despite the tendency toward tipping when small firms exist that have the potential to rapidly siphon off users to more desirable or innovative platforms, collect valuable data on end users, or both. In this context, the acquisition of startup companies may benefit the dominant firm by reducing the disciplining competitive pressure of potential entrants on the periphery of the market or by preventing future entry and expansion by such firms that could undermine the incumbent's dominance. Under the common law of antitrust, an acquisition of a potential entrant is [\*476] analyzed under the potential competition doctrine. Thus, to understand the ability and potential to regulate acquisitions by dominant tech firms it is important to understand how the law of potential competition mergers developed and why it has been so underutilized to date.

The history of the potential competition doctrine informs the analysis of tech industry acquisitions because it demonstrates how a shift in the standard of analysis beginning in the 1960s and culminating in the 1974 United States v. Marine Bancorporation decision undermined the applicability of the doctrine in a range of contexts including online platform markets. The potential competition doctrine emerged in the aftermath of the 1950 Amendment to § 7 of the Clayton Act. As described by the Supreme Court in Brown Shoe v. United States, the "dominant theme pervading congressional consideration of the 1950 amendments was a fear of what was considered to be a rising tide of economic concentration in the American economy." In 1963, the Supreme Court, in United States v. Philadelphia National Bank, explained that the "intense congressional concern" about increasing concentration "warrants dispensing, in certain cases, with elaborate proof of market structure, market behavior, or probable anticompetitive effects."

Under this standard, expectations of the market-disciplining effects of potential competition operated to preserve competition in cases where the doctrine applied. The Court explained that when there is a structural increase in concentration due to a merger, the merger "is so inherently likely to lessen competition substantially that it must be enjoined in the absence of evidence clearly showing that the merger is not likely to have such anticompetitive effects." Thus, the Court created a presumption of an anticompetitive effect from a structural increase in concentration, placing the burden on the merging parties to refute the presumption. The plaintiff would still be required to define the relevant markets involved and measure market shares and concentration, but a full-blown analysis of the impact of the merger was judged by the Court to be unrealistic and counter to the congressional intent to stem the rising levels of concentration in the United States.

The Court's approach is often referred to as a "structural approach," which is shorthand for the belief that mergers above a certain concentration threshold [\*477] have a reasonable probability of harming competition. The structural approach to merger analysis contrasts to the effects-based approach, which requires a prediction of the future competitive effects of the merger by use of detailed economic analysis. The Philadelphia Bank opinion implicitly rejected the effects-based approach because of its intractability. As the Eighth Circuit later commented, the structural approach is preferable in cases concerning potential competition since "proof of liability under either [potential competition] theory is certain to entail expensive, uncertain litigation, even if, as here, the acquiring firm is rich and powerful and the acquired firm's market highly concentrated." The practical requirements of proving the competitive effects of the threat of entry were deemed nearly insurmountable despite the importance of these effects.

In contrast to the Philadelphia Bank paradigm, later Supreme Court cases developed an unworkable legal standard for the potential competition doctrine. The Court imposed an initial stage open-ended proof requirement involving prediction of future conduct and performance that could not be practically discharged. In developing this standard, the Court divided potential competition into two separate legal doctrines - the actual potential competition doctrine and the perceived potential competition doctrine - with distinct evidentiary requirements. After separating actual and perceived potential competition, the Court twice expressed doubt regarding the viability of the actual potential competition doctrine. In these cases, the Court discussed the actual potential competition doctrine primarily in the context of acquisitions targeting a dominant firm, and not the context relevant to the current Big Tech mergers in which a dominant firm targets a startup.

The Supreme Court first addressed the issue of harm to potential competition from a merger one year after the Philadelphia Bank decision in United States v. El Paso Natural Gas Co. This case provides important insights [\*478] for the viability of the potential competition doctrine to Big Tech mergers since it is the chief example of the doctrine applied to a case where the potential entrant is the target firm. The case involved the merger between two natural gas pipeline companies and their impact on the California market. El Paso Natural Gas was the only supplier of natural gas to California when it attempted to acquire Pacific Northwest. The Court noted that Pacific Northwest had attempted to enter the California market by supplying Canadian natural gas to one of El Paso's customers in Southern California, Southern California Edison Co. The deal fell through only when El Paso agreed to a more favorable contract with its customer. The Court conceived of the potential harm from the merger as the elimination of influence of the potential entrant on El Paso, or the perceived potential competitive impact of Pacific Northwest. Pacific Northwest's threat of entry forced El Paso to act competitively, despite the company's monopoly in the California market. The evidence showed that El Paso did prevent Pacific Northwest's entry by matching and exceeding Pacific Northwest's offer to a California customer. If Pacific Northwest had captured the customer, it would have entered the market. Nevertheless, the Court chose to focus on the current impact of the entry attempt on El Paso's bid, rather than the more significant future impact Pacific Northwest might have had had it become a competitor in the California market. The Supreme Court would follow this emphasis on the impact of perceived potential competition in subsequent cases.

In the same year, the Supreme Court issued an opinion in another potential competition case. In United States v. Penn-Olin Chemical Co., the Court appeared to reject the structural approach of Philadelphia Bank, defaulting to a vague, open-ended analysis. Penn-Olin Chemical Co. involved a joint venture rather than a merger. All joint ventures raise potential competition issues because absent the joint venture one or both of the same companies might enter into the market alone.

In the Court's analysis, the joint venture eliminated a perceived potential entrant, removing the impact of an "aggressive, well equipped and well financed corporation engaged in the same or related lines of commerce waiting anxiously to enter an oligopolistic market" which disciplined the existing competitors. [\*479] Citing the El Paso Natural Gas case, the Court stated that potential competition "is not "susceptible of a ready and precise answer.'" It stated that analysis of the impact of a potential entrant depends on ""the nature or extent of that market and by the nearness of the absorbed company to it, that company's eagerness to enter that market, its resourcefulness, and so on.'"

In Philadelphia Bank, the Court had addressed the comparable complications of predicting the future effects of a horizontal merger by establishing structural judicial guidelines. Now, when addressing a parallel prediction of the impact of a potential competitor, the Court surprisingly defaulted to an ambiguous and open-ended narrative. The Court might be forgiven because it resolved the controversy by remanding the case back to the lower court to consider the perceived potential competition impact of the joint venture, but it did so without clear guidance on how such an analysis should proceed. In so doing, the case set a precedent in which the structural approach to potential competition was set aside in favor of a range of claims and presumptions about the intentions and perceptions of merging firms.

In 1967, the Supreme Court again confronted a potential competition problem in Federal Trade Commission v. Procter & Gamble Co., and moved the doctrine closer to the unworkable effects-based approach deduced from a subjective and imprecise evaluation of competitive conditions. Following the acquisition of Clorox Chemical by Procter & Gamble, the FTC blocked the merger, asserting, among other reasons, that Procter & Gamble was likely to enter the bleach market absent the acquisition. Procter & Gamble was a potential competitor in the market and had already launched an abrasive cleaner that was a differentiated substitute for liquid bleach. Procter & Gamble knew the liquid cleaning business, the customers of Clorox and Procter & Gamble largely overlapped, and the company advertised and merchandised in the same manner as Clorox. All of the factors led the FTC to conclude that the acquisition of Clorox by Procter & Gamble would eliminate a likely entrant into the liquid bleach market. Yet the court of appeals rejected the evidence of the closeness and proximity of the two markets and declared that there was insufficient evidence from the management of Proctor & Gamble that it intended to enter the liquid bleach market.

The Supreme Court reversed the court of appeals, but without offering a helpful analysis of the potential competition issues. The Court abstained from [\*480] analysis of actual potential competition and focused solely on the impact of Procter & Gamble as a restraining perceived potential competitor, even though the Court opined that it was "the most likely entrant" into the liquid bleach market. The Court also found, without explaining its basis, that Procter & Gamble did not face a barrier to entry and that "the number of potential entrants was not so large that the elimination of one would be insignificant." The focus of the court of appeals and the Supreme Court on aspects of competition such as the potential competitor's intention of entry, the likelihood of entry, and the number of potential entrants would support the inclusion of such difficult and even subjective or illusory criteria in the evidentiary standards for potential competition cases.

In 1968, the Department of Justice issued Merger Guidelines. While the Supreme Court was grappling with the early cases involving mergers that harm competition by preventing future entry, the Department of Justice developed a clear policy to protect new entry from mergers by dominant firms. According to the 1968 Merger Guidelines:

Since potential competition (i.e., the threat of entry, either through internal expansion or through acquisition and expansion of a small firm, by firms not already or only marginally in the market) may often be the most significant competitive limitation on the exercise of market power by leading firms, as well as the most likely source of additional actual competition, the Department will ordinarily challenge any merger between one of the most likely entrants in the market [and a firm with a large share of the relevant market.]

The acquiring or target firm must be one with the ability and incentive to enter and must be "one of the most likely potential entrants into the market." As discussed in a later Part of this Article, the 1968 Merger Guidelines faltered when addressing the evidentiary burden required to show that a target is one of the most likely potential entrants.

The 1968 Merger Guidelines' explanation of the required evidence to demonstrate potential entry is not a model of clarity. It requires that the Department of Justice marshal evidence demonstrating that entry by the firm [\*481] would be more profitable and less risky than other unidentified non-litigant third-party firms. In 1984, the Department of Justice would give more structure to this inquiry but would continue to require unworkable conduct and performance evidence that would make the potential competition analysis impractical and infrequent.

More clarity emerged from the Supreme Court's 1973 opinion in United States v. Falstaff Brewing Corp. The case involved the acquisition of Narragansett Brewing by Falstaff. Narragansett produced beer sold in the New England regional geographic market. Falstaff sold beer in thirty-two states and was the largest beer producer not in the New England market. The district court considered both the theory that Falstaff disciplined competition as a potential entrant and that Falstaff was a future actual entrant into New England. The district court held that evidence from Falstaff's management cast doubt on whether Falstaff was going to enter the New England market and that competition had not decreased since the consummated acquisition. Again, despite acknowledging the pertinence of the actual potential competition doctrine, in their decision the Supreme Court focused solely on the perceived potential competition aspect of the situation in which the merger "eliminates a potential competitor exercising present influence on the market." The district court erred by assuming that the subjective evidence from Falstaff's management meant that, as a matter of fact, Falstaff was not a potential entrant. Instead, the district court should have considered the objective evidence.

If the district court's approach had prevailed, it would have meant that plaintiffs asserting potential competition cases could be defeated by the uncontroverted testimony of the management of one of the merging entities. Instead, the Court thought that the proper inquiry was whether a rational incumbent firm would have perceived the acquirer as a likely entrant. It stated that "if it would appear to rational beer merchants in New England that Falstaff [\*482] might well build a new brewery to supply the northeastern market then its entry by merger becomes suspect under § 7." However, the Court does not inform us concerning what "economic facts about Falstaff and the New England market" should have been analyzed or what objective evidence should be consulted in order to ascertain the beliefs of a rational beer merchant. It appears that a complex, open-ended inquiry of this nature would lead to an unmanageable problem for a court. For an actual potential competition case, the Court offered even less, declining to even hold that a merger that prevents actual entry violates § 7 of the Clayton Act.

The Court's reluctance is puzzling. As described by Joseph Brodley, the Court has ample scope to apply and interpret the actual potential competition doctrine in both law and precedent. In early Supreme Court cases, the Sherman Act has been held to cover actual potential competition, and the Clayton Act "is an incipiency statute designed to prevent [mergers] that are beyond the scope of the Sherman Act."

The last and most influential Supreme Court case addressing the potential competition doctrine is United States v. Marine Bancorporation, Inc. The 1974 opinion, penned by Justice Powell, established the extraordinarily high requirements of proof that inoculate potentially anticompetitive mergers from scrutiny under the potential competition doctrine today. The case concerned the acquisition by Marine Bancorporation, a large Seattle-based bank, of the Washington Trust Bank, a smaller bank headquartered in Spokane, Washington. The government challenged the merger on both perceived and actual potential competition grounds. It argued that Marine Bancorporation's presence on the fringe of the Spokane market disciplined Spokane competitors, and that absent the merger, Marine Bancorporation would likely enter the Spokane market.

[\*483] The district court found against the government because Washington's state banking regulations prevented the kind of entry the government's theories predicted. The Supreme Court affirmed, but this time took the opportunity to develop a general methodology for analyzing actual potential competition mergers. According to the Court, "two essential preconditions must exist" before an actual potential competition theory "establishes a violation of § 7." First, that the potential competitor could enter the market at issue absent the merger. Second, that such entry would produce a likelihood of deconcentration or other significant procompetitive effects. Moreover, with respect to the first prong, the Court implied that "unequivocal proof" of actual future de novo entry is required. The standard of proof for the second prong is also exacting. The potential entry must accomplish more than simply increased competitive rivalry. It must deconcentrate the market or accomplish another "significant" but unspecified procompetitive transformation. Moreover, the Court expressed doubt that an actual potential competition case would be viable, even when these exacting standards are met. Because the government did not meet its burden regarding Marine Bancorporation, the Court would "express no view on the appropriate resolution of the question reserved in Falstaff."

Lower court interpretations of the binding precedent set forth in Marine Bancorporation demonstrate both the unworkable nature of the proof requirements and the difficulties attendant to requiring the judiciary to grapple with complicated conduct and performance predictions. For example, a few years after the Marine Bancorporation decision, the Fourth Circuit considered a potential competition claim by the FTC in 1977 in Federal Trade Commission v. Atlantic Richfield Co. The case involved the acquisition of Anaconda, a copper and aluminum mining and processing company, by ARCO, a large oil and petroleum company. The FTC claimed that ARCO was a likely entrant into the copper market. The Court interpreted Supreme Court precedent to require "clear proof" of entry (citing to the Marine Bancorporation standard of [\*484] "unequivocal proof"). The Court then relied on the testimony of ARCO's management. This is precisely the type of evidence eschewed by Falstaff. The Court found that "Arco would never seriously consider original entry or entry by toehold acquisition." Lack of proof of entry also doomed the government's cases in British Oxygen Co. International v. Federal Trade Commission, Tenneco, Inc. v. Federal Trade Commission, United States v. Siemens Corp., and Fraser v. Major League Soccer.

The Fifth Circuit, in Mercantile Texas Corp. v. Board of Governors of the Federal Reserve System, set forth a detailed analysis of its understanding of the proof requirements of an actual potential competition violation of the Clayton Act. According to that court, the required elements are: (1) a concentrated market; (2) no other potential entrants exist other than the target (or acquirer); (3) probability of procompetitive entry; and (4) procompetitive effects of independent entry. The court stated that when there are several potential entrants, the elimination of any one entrant would not be significant. It then added, following Richard Posner, that "economic theory suggests that, where oligopoly profits are available, a multitude of firms will eagerly seek to enter the market." Thus, the proponent of an actual potential competition case must show in the Fifth Circuit, contrary to the general case, that the specific facts at issue suggest that only the target (or acquiring) firm is a likely entrant. Thus, the court found that the plaintiff failed to demonstrate that the actual potential competition was "significant" because of the presence of other unanalyzed [\*485] potential entrants and that there was insufficient evidence that entry would have had a "significant" procompetitive effect.

The Department of Justice addressed the potential competition issue again in the 1982 Merger Guidelines drafted by appointees of Ronald Reagan, who were heavily influenced by the Chicago School of Economics. They were revised in 1984, and this was the last time potential competition mergers are addressed by the Merger Guidelines. The 1984 Merger Guidelines built upon but also significantly revised the Department of Justice's position developed in the 1968 Merger Guidelines. The 1984 Merger Guidelines treated perceived and actual potential competition together, thus implicitly rejecting the artificial division made by the Supreme Court. The Department of Justice considered four factors. First, the acquired firm's market must be concentrated, above 1800 HHI. Second, the acquiring firm must have specific entry advantages; otherwise, the elimination of the target still leaves many potential entrants. The number of firms likely to enter should be less than three. If there are more than three likely entrants then there must be direct evidence of likely entry. Third, the target must have a larger market share of twenty percent or more to make a challenge likely. Fourth, the 1984 Merger Guidelines required an analysis of the efficiencies of the proposed merger.

The 1984 Merger Guidelines were both a step forward and a step back from the 1968 Merger Guidelines. Unlike the 1968 Merger Guidelines, the 1984 version assumed that the acquiring firm is the potential entrant. The Department of Justice should have made clear that the potential competition doctrine can be applied in either direction; a merger can prevent entry by the acquiring firm or the acquired firm. The 1984 Merger Guidelines further provide that where entry is easy no merger challenge will be undertaken. This is a step backward from the 1968 Merger Guidelines. The 1984 Merger Guidelines never define ease of entry. At most, the 1984 Merger Guidelines declared that ease of entry is the likelihood and probable magnitude of entry in response to a small but significant and nontransitory increase in price. While the newer version of the Merger Guidelines added structure to the more opaque 1968 Merger Guidelines, it relied on another undefined concept, "entry advantage." As the antitrust scholar Joseph [\*486] Brodley points out, the most probable market entrant under the analytical structure of the 1984 Merger Guidelines is the firm that would achieve the greatest anticipated return from entry. According to Professor Brodley, "courts lack the expertise to resolve complex and speculative factual issues as to future costs and economic conditions. The cases are bound to be burdensome and expensive, especially when competing experts escalate the subtlety of the analysis."

Professor Brodley is correct. Analysis of entry under the Merger Guidelines requires a fairly sophisticated predictive financial analysis. To require a similar analysis for firms that are not parties to the analysis appears intractable.

Thus, the plaintiff asserting a violation of § 7 of the Clayton Act against a dominant firm in a digital market seeking to acquire a startup based on actual potential competition has a difficult uphill climb. First, many circuits do not recognize a reduction of actual potential competition as a viable theory under § 7 of the Clayton Act. Second, most courts, but not all, have considered the situation where the acquirer is the potential entrant rather than the incumbent, dominant firm. Third, the courts have demanded a high standard of proof for demonstrating that the startup would likely enter the market dominated by the acquirer. Fourth, even where entry is likely, the courts require that the target be uniquely situated to enter and not be one of many potential entrants. Fifth, the courts require proof that the startup's entry will significantly reduce the dominance of the dominant firm in its relevant market. These onerous requirements would deter even the most committed antitrust enforcer or plaintiff.

III. Application of the Potential Competition Doctrine to the Instagram and WhatsApp Mergers

In this Part of the Article, we describe the difficulty of applying the potential competition doctrine to Facebook's widely criticized acquisitions of Instagram and WhatsApp. Our intent is not to demonstrate that these acquisitions were anticompetitive but to show that the potential competition doctrine as presently formulated does not allow for a serious inquiry into tech mergers.

[\*487]

A. The Instagram Acquisition

When Facebook announced its $ 1 billion acquisition of Instagram on April 9, 2012, it was something of an anomaly. Although Facebook had made thirty-one acquisitions up to this point, none approached the price tag paid for Instagram. However, Instagram was different, and the opportunity arose at a critical crossroads for Facebook. On the eve of its May 2012 IPO, Facebook was under great pressure by investors to increase its revenue base. At the same time, the rise of mobile technology and its rapid adoption by consumers created hurdles for Facebook to satisfy these demands.

Two problems confronted the company as an increasing share of users accessed the internet from mobile devices. First, Facebook struggled to reorient its network from a desktop-based platform, and second, it had yet to monetize its mobile user base by incorporating advertising on the limited display area available on mobile screens. As other companies developed mobile-first applications that optimized web access using smartphones, Facebook elected to invest in an HTML5-based multi-platform strategy. On mobile devices, their HTML5 approach was slower and less stable than native iOS and Android applications. At the same time, mobile-native applications with social features such as Instagram and Foursquare were attracting growing user numbers and threatened to draw user engagement away from Facebook precisely when its revenue base was under scrutiny.

Photo sharing had been a key facet of Facebook's user engagement since its introduction on the network. By 2009, Facebook Photos was the largest photo sharing service in the world. In ensuing years as dramatic improvements in smartphone camera features made photo sharing an increasingly mobile-based activity, Facebook struggled to adapt to the shift to mobile technology. At this pivotal juncture, Stanford engineering graduates Kevin Systrom and Mike [\*488] Krieger launched the native iOS photo sharing social network Instagram. On Instagram, users could upload, edit, and share pictures from their iPhones and follow, comment, and like the images posted by others. The app also enabled users to post their Instagram images across social networks, including Facebook and Twitter. But the founders did not aim to be a mere content creator for other social networks. Rather, Systrom and Krieger envisioned their app as a rival to the incumbent social networking giants based on a community united under the premise that "the next network is people interested in sharing life visually." The company was poised to compete in the social networking market.

Within the first week of its October 6, 2010 launch on the Apple App Store, Instagram had garnered 100,000 user downloads. Ten weeks later it had accrued over 1 million registered users. The company quickly attracted the attention of venture capital that would allow it to scale. The firm's initial funding round brought former Facebook VP of Product Management Matt Cohler to Instagram's Board of Directors, who advised the company to pursue growth first without monetization in order to achieve the network effects that would drive advertising revenue later. One month before the company revealed its acquisition, just two and half years after its introduction on the App Store, Instagram founder Kevin Systrom announced that Instagram had reached 27 million registered users and "Facebook-level engagement." In the following weeks, Instagram branched out from iOS to launch on Android and brought in 1 million new users in the first twenty-four hours. When Facebook and [\*489] Instagram announced the acquisition six days after the Android launch, Instagram had over 30 million users and just thirteen employees.

According to Silicon Valley folklore, Zuckerberg invited Systrom to his home on a Saturday. By Monday the billion-dollar deal was done. Observers at the time registered their suspicions that the acquisition was an act of "squashing a potential rival" and pointed to the impending monetization of Instagram as a source of competition that could have driven down prices in online advertising markets. The merger triggered a Hart-Scott-Rodino filing, but ultimately the antitrust agencies took no action. The FTC investigation was nonpublic and enforcers did not disclose the basis for their decision at the time. One likely obstacle was the user price of zero set by Facebook and Instagram for their social networking services, which complicates estimates of markups above the competitive price or estimates of entry in response to a small price increase. In the social networking market, companies compete for user attention. The consumer-facing market generally has a price of zero, with services monetized in the advertising market by selling access to the user attention captured on the social network. Instagram operated in the social networking market and it was encouraging users to defect from Facebook to Instagram, but the competitive dimensions of this market are challenging to measure and interpret since users may participate on both networks and neither network charged for the services involved. Several economists have offered solutions to this problem, including measures of user engagement such as the [\*490] number of users or the amount of time spent on a website. By any reasonable measure, Instagram was already a competitor.

In contrast, advertising markets are not free. Digital advertising market analysts widely acknowledge the dominance of a duopoly in digital advertising composed of Google and Facebook, which jointly claim approximately 60% of total revenue in the market. For Facebook that dominance amounted to $ 16.6 billion in advertising income during the second quarter of 2019 and more than 98% of its total revenue. Facebook's advertising market power is even more significant when compared to similar advertising platforms. For example, during the 2007 investigation of the Google/DoubleClick merger, the FTC determined that search advertising (advertising delivered in response to a consumer search query) should be separated from display advertising (including image, video, rich media, etc., purchased on a webpage). According to the FTC, "the evidence shows that the sale of search advertising does not operate as a significant constraint on the prices or quality of other online advertising sold directly or indirectly by publishers or vice versa."

Today, Facebook leads the market in digital display advertising with a market share of over 40%. Arguably, an even smaller relevant market might exist for advertising on social networks. In 2011 and 2012, as Facebook struggled to monetize its mobile user base, Google and Facebook battled for the top spot, each controlling about 14% of the digital display advertising market in [\*491] 2011 and 15% in 2012. At the time of the merger, the majority of Facebook's revenue came from display advertising. Instagram did not sell advertising at the time of the acquisition, but it had been working directly with brands to support image-oriented ways of connecting companies with users. As the Instagram network grew, more businesses saw it as an important medium to reach consumers. When Instagram was ready for monetization, it would be unlikely to charge users for social networking services in a market where the going price was zero. Once Instagram introduced advertising it would likely compete with Facebook in the digital display advertising market as well as social networking. Instagram was an actual potential entrant in both of these markets. Thus, the Instagram merger presented a classic case of a potential competition merger under § 7 of the Clayton Act.

Although the FTC did not outline the considerations that guided its investigation, in August 2012 the United Kingdom's Office of Fair Trading (OFT) published an outline of its decision to refrain from referring the Instagram acquisition to the Competition Commission. OFT determined that Instagram was a current competitor in social networking services, and that Facebook's large share of the market achieved the threshold for investigation. OFT interpreted Instagram's rapid growth as an indication of low barriers to entry in social networking and photo sharing, concluding that Instagram did not evince a uniquely competitive product such that its acquisition would foreclose competition in either market. OFT considered Instagram as a potential competitor in digital advertising markets, but determined that Facebook's [\*492] competition from Google, Yahoo, and Microsoft dwarfed the potential competitive impact of entry by Instagram. It determined that there was "no realistic prospect that the merger may result in a substantial lessening of competition in the supply of display advertising."

Today, Facebook claims a dominant position in the social networking and online social photo services markets, and market power through the Facebook-Google duopoly over digital advertising. If the antitrust agencies faltered, it was likely because the potential competition doctrine created difficult obstacles for a merger challenge. Consider the following facts of the Instagram merger in light of the required proof under the 1984 Merger Guidelines to justify a Department of Justice challenge.

1. Market Concentration

The 1984 Merger Guidelines state that a challenge is unlikely if concentration in the acquired firm's market is below 1800 HHI. In the case of the Instagram merger, the relevant market to measure concentration would be the acquiring firm's market. Facebook operates in markets for social networking and digital advertising. By 2011, Facebook dominated the social networking industry by a wide margin in terms of user numbers and engagement, but HHI calculations lack defined measures for markets where the user price is zero. A workable measure of concentration is critical for markets like social networking in which the good or service is free. As zero-price markets proliferate, antitrust institutions must adopt new instruments for analysis or risk the amplification of consumer harms. Scholarship on the application of antitrust in these markets suggests that enforcement focus on attention and informational costs or metrics such as "time on site" to indicate the extent of competition for user engagement. Such a measure could have demonstrated [\*493] important implications of a Facebook-Instagram merger for competition in the market.

In the digital advertising market, the Facebook-Google duopoly already controlled 45.5% of revenue in 2011, although the majority of that share was attributable to Google. Narrowing the scope to the display advertising market, the top six firms in 2011 collected approximately 49% of the digital display advertising revenue and the HHI among those six firms amounted to just 546. In the years following the 2012 acquisition of Instagram, the Facebook-Google duopoly consolidated their market power in both the digital advertising and the display advertising markets. By 2018, both markets displayed HHIs of over 1800 and Facebook's share of display advertising revenue in the U.S. market rose to more than 20% - even higher if a more narrow market were defined. Thus, while it is likely that a measure of concentration for the social networking market would have satisfied the first prong of the merger guidelines analysis, the concentration levels measured for the display advertising market concentration levels would not have been sufficient.

2. Conditions of Entry Generally

The Department of Justice will not challenge a potential competition merger if entry into the market is easy. This protocol requires the Department of Justice to demonstrate some difficulty of entry or barriers to entry in the concentrated market. Through 2011, the markets for social networking and digital advertising had been dynamic as firms in these markets competed for dominance. The economies of scale and network effects that typify platform markets represent traditional barriers to entry that would reinforce the incumbency of dominant firms, but Instagram was showing the potential for a nascent competitor to siphon off users and gain market share. Entry into social networking or digital advertising markets was achievable for small and startup firms that operated in any of several adjacent markets if they exhibited the rapid growth in user engagement that would lead to increasing value on both sides of [\*494] the market and if they had access to the funding that would allow the company to scale up.

There is one significant barrier to entry in online platform markets that is unlike the traditional barriers considered in other markets: access to data. A dominant firm with access to broad user data has a significant advantage over new entrants. The data advantage allows a dominant firm to reinforce its market power in three ways. The firm can use data to review and improve user services in the core market and expand user engagement, generating more data. The firm can leverage its data advantage to reach new users through entry into adjacent markets and likewise expand its data access. Finally, the scope and magnitude of consumer data available to a dominant firm allows it to sell high-value, targeted advertising with revenues that may be invested in increasing user engagement and amassing more consumer data. These three advantages create a positive feedback loop for the dominant firm.

The drive to exploit user attention and access to data may translate to gains for consumers who enjoy higher quality services and seemingly individuated advertising. For startups with comparatively little data access, the competitive advantage of large firms' data scale and efficiencies poses a significant barrier to entry. As a result of these advantages, the dominant, consumer-facing platforms also dominate advertising markets - a tendency exemplified in the Facebook-Google duopoly.

Despite these structural barriers, demonstrating the difficulty of entry into the social networking or digital advertising markets presents a challenge. For one thing, the data barrier is specific to online platform markets. For another, competition for user attention forces the dominant firm to compete with platforms and applications operating across a variety of markets. There is no direct substitute for Facebook in the social networking market, but smaller firms offering complementary or adjacent features have the ability to capture user attention that draws engagement and profits away from the network, even if the smaller firm is not competing in social networking. This ability to capture user attention also makes these smaller, adjacent firms potential competitors in digital advertising. Extending consideration to potential competitors in adjacent markets where entry is relatively easy could undermine the government's ability to isolate any impact from the elimination of a single rival.

[\*495]

3. The Target Firm's Entry Advantage

If entry is not easy generally, then the Department of Justice has to show that Instagram had an entry advantage not possessed by three or more firms. For reasons discussed later, the potential for firms to enter social networking or digital advertising markets from a variety of adjacent or complementary markets makes it impossible to identify limits to potential entrants. Isolating the photo sharing market in the case of Instagram provides a good example of this difficulty.

Despite Facebook's dominance in photo sharing, several desktop-based and mobile applications existed at the time. Most of these platforms lacked the social features that distinguished the social networking elements available through Facebook and Instagram. Facebook even purchased several other photo-related services leading up to the Instagram acquisition, including the photo sharing and tagging website Divvyshot in April 2010, the file sharing, messaging, and commenting service Drop.io in October 2010, and video and image recording and editing app developer Digital Staircase in November 2011. In May 2012, after announcing the Instagram acquisition but before it was finalized, Facebook purchased Lightbox.com, a mobile social photo sharing application designed for Android, in the period before Instagram introduced its Android app. While Lightbox had amassed 1.5 million downloads in its first seven months of operation, Instagram's Android launch in April reached 1 million within a week. Facebook purchased and shuttered the Lightbox application, absorbing its employees and pulling the app from the market immediately. Facebook launched its own camera app, Facebook Camera, on May 24, 2012, weeks after announcing its intention to acquire Instagram.

The United Kingdom's OFT decision lists six competing apps in the photo sharing market, including Camera Awesome, Camera +, Flickr, Hipstamatic, Path, and Pixable. Of these services, only Camera+, Hipstamatic, and Camera Awesome included camera applications. Flickr is a photo storage and management tool and Pixable was an aggregator that scraped images from social networks including Facebook, Twitter, and Instagram. Path was a social network conceived as a competitor to Facebook that offered a more private experience, limiting social connections to invite more personal interactions. [\*496] Hipstamatic and Camera+ provided photo taking and editing tools but lacked the social features that distinguished Instagram. In addition, Hipstamatic and Camera Awesome had entered into a partnership with Instagram that streamlined posting photos taken with those apps to Instagram's social network. The OFT's list of competitors illustrates the difficulty of identifying potential entrants in the social networking or digital advertising markets. In online platform markets, new entrants often offer just a subset of the services offered by the dominant provider. Firms like Instagram that gain the popularity and funding to scale become rivals for user attention and potentially rivals for the market over time. Facebook would likely argue that Instagram is just one of many potential entrants into social networking, and that any of the other photo sharing apps could replace the potential competition lost through the Instagram acquisition. Moreover, when consumers multi-home by using several apps at once, entry by multiple firms becomes even more likely.

Facebook named Instagram as an important competitor, but it was not the only competitor. Instagram's entry advantages were the extraordinary user growth rate and venture capital investments that might allow the firm to overcome barriers of scale and data access in the social networking and digital advertising markets. These same advantages gained the attention of Facebook and its buyout proposal.

4. Deconcentration from Instagram Entry

The final criteria for a potential competition claim is for the government to show that Instagram's entry into the social networking or advertising markets would deconcentrate the market or have a significant procompetitive effect. Under the Merger Guidelines, this effect can be established by showing that Instagram had a market share of 5% or more. In 2012, the first year Instagram was included in the Pew Social Media Survey, 12% of adults - and a significantly higher share of young people - used Instagram despite the fact that it was a mobile-only application. There are no attentional measures such as [\*497] time on site available for the period before acquisition, but multi-homing and Instagram's own interoperability would suggest that the company claimed a small share of total social networking users' attention. The market draw for Instagram was its popularity with important demographic groups at a time when Facebook saw reaching young people and their preferred technologies as key to maintaining dominance in the market.

At the time of the Facebook acquisition, Instagram had not entered the digital advertising market and had no advertising revenue. It would be impossible to establish a procompetitive effect of Instagram's entry into the advertising market through the 5% threshold because competition from Instagram lay entirely in the future.

The potential competition challenge by the Department of Justice would have certainly failed under its own guidelines. But consider the post-acquisition information that retrospectively demonstrates how the guidelines produce a false negative result. Since the acquisition was finalized in 2012, Instagram has generated a significant share of user engagement and revenue for Facebook. With Facebook's resources and expertise guiding its evolution, Instagram reached 1 billion monthly active users in June 2018 even as Facebook's own user growth dwindled. According to the Pew Research Center, Instagram trails Facebook as the third-most popular social network in the United States with 37% of adults using the platform in 2019. It is the most-used social network for American teens. Although Facebook does not disclose Instagram's financial details, market analysts estimate that 15% of Facebook's revenues come from advertising on Instagram, a number expected to grow over [\*498] time. In 2019, Instagram launched a checkout feature allowing users to make purchases from within the app and delivering a new source of revenue to its parent company. It is impossible to know if Instagram would have developed into such a powerful position without Facebook's guidance, but it is clear that Facebook's ownership of Instagram allows it to reach a larger user base and achieve greater levels of user engagement and revenue generation than Facebook alone. The economies of scale and scope that characterize online platform markets are simultaneously a source of efficiency gains from the acquisition of Instagram and a barrier to entry reinforcing Facebook's dominance in the social networking market.

The Instagram case shows that the potential competition doctrine must be reformed. Common sense suggests that concentration must be measured either by an alternative metric in markets where goods are offered to the public without charge, such as user engagement, or possibly by the advertising dollars that flow to social networks. As we will discuss in the last Part of this Article, concentration should serve as a structural rebuttable presumption when a dominant firm purchases a potential entrant. Before turning to that issue, we briefly discuss Facebook's acquisition of WhatsApp.

B. The WhatsApp Acquisition

Facebook's $ 19 billion acquisition of WhatsApp was another landmark deal. In 2014, mobile messaging applications were the fastest growing app category in the mobile market as social media evolved to accommodate increasing smartphone usage. Users relied on these applications for far more than text messaging, with a variety of social activities taking place on the apps including voice calling, image and video sharing, and gaming. Five-year-old WhatsApp was already the largest and fastest growing of these applications worldwide. The app offered a reliable and affordable cross-platform technology for text, voice, image, and video sharing in one-to-one or group contexts that worked across national borders complete with end-to-end encryption. At the [\*499] time of the acquisition, WhatsApp had 450 million monthly active users and was gaining users at a record rate of one million per day. Importantly, WhatsApp users were unusually engaged; more than 70% of WhatsApp users accessed the app daily and its volume of messaging rivaled the global total of telecom SMS.

Two characteristics distinguished WhatsApp from its rival messaging services, and from Facebook's corporate model. First, WhatsApp's founders committed the service to almost complete data privacy. Second, WhatsApp was advertising-free. Instead of the intensive data collection, aggregation, and analysis driving advertising revenue on other apps and networks, the company elected a paid model with most users charged a $ 0.99 annual subscription fee after their first year of service. The app offered an alternative entry point into scaled-down social networking using only existing phone contacts to connect users; it was more personalized and lacked the privacy concerns and tracking characteristic of Facebook.

In February 2014 when Facebook and WhatsApp announced their merger, Facebook served over 1.2 billion monthly active users. Mobile devices had become an essential component of that usership. More than 75% of active users accessed the network through mobile technology and in the fourth quarter of [\*500] 2013 mobile Facebook users outnumbered those using personal computers for the first time in the company's history. Growth in user engagement was increasingly driven by mobile access to the social network and Facebook anticipated that future growth would similarly depend on mobile connections. In its 2013 Annual Report, Facebook identified mobile applications with competing social features including text messaging, voice, image, and video sharing as a key source of competition for the network.

Facebook's reorientation toward mobile-first engagement led the company to develop and release its own standalone messaging app, Facebook Messenger. As mobile users sought short, private, and real-time communication options, Facebook identified and acquired one of the best-received startups in the mobile messaging market, Beluga, and refashioned it into a Facebook product. Upon its release in August 2011, Messenger became the number one most-downloaded app on the Apple store overnight. Although Messenger quickly claimed the status of the most-utilized iPhone messaging application in the United States, Facebook struggled to make headway in markets like Europe where early movers had an established advantage and in emerging markets where consumers were more likely to access their networks through feature phones. In early 2014, when Facebook and WhatsApp agreed on their merger, Facebook Messenger had 200 million users compared to WhatsApp's 450 million. With [\*501] the purchase of WhatsApp, Facebook would claim ownership of the world's top two messaging companies in terms of market share by user numbers.

The $ 19 billion price tag made the WhatsApp acquisition one of the largest mergers in Silicon Valley history. Facebook's offer nearly doubled a prior bid from Google to buy the startup for $ 10 billion. Moreover, the $ 19 billion deal amounted to approximately one-tenth of Facebook's total market value, while the monetization opportunities associated with WhatsApp were as yet unproven. In 2013, WhatsApp operated at a $ 138 million loss. WhatsApp's commitment to maintain privacy precluded merging its users with Facebook's social graph and adding advertising or other monetization options would require a substantial change in WhatsApp's approach to the messaging market. For Facebook, the benefits of owning WhatsApp clearly involved future competitive advantages in messaging and social media. Firstly, the purchase thwarted rival Google's attempt to gain ground as a social network. Secondly, the transition from social sharing on broad networks to one-to-one and group messages promoting private, real-time interactions indicated a significant shift in the social networking services market. Facebook CEO Mark Zuckerberg increasingly alluded to this shift as an important guide for advancing social networking and other social media with his declaration that "the future is private."

True to form, the FTC cleared the merger without challenge in April of 2014, with a letter warning both companies about their responsibility to maintain the privacy agreements in place when WhatsApp users accepted the company's terms of service. The letter highlights the distinction between Facebook's data collection and advertising platform model and WhatsApp's promises that it will [\*502] not collect any personal or contact data from mobile phones or messages or send any marketing material without the user's consent.

The European Commission also conducted an investigation of the transaction and cleared the deal. The European Union (EU) primarily analyzed the merger within the confines of the relevant market for consumer communications services, not as a potential competition merger. Consumer communication services includes stand-alone apps such as WhatsApp, Viber, Line, WeChat, Facebook Messenger, Skype, and those integrated with smartphone hardware or operating systems like Apple's iMessage. In their analysis of consumer communications services, the Commission noted that low switching costs, the tendency for users to multi-home, and the overlap between consumers of the two platforms would undermine any barriers to entry derived from the network effects captured by the merged companies. On these grounds, they concluded that the merger would be unlikely to lead to increased concentration in consumer communications services.

The Commission ultimately found no competitive concerns in the online advertising services market, based on WhatsApp's abstention from advertising and data collection and the number of providers supplying online advertising at the time. The EU also analyzed the social networking market and again found no competitive concerns. According to the EU analysis, WhatsApp was not a participant in the social networking market. The Commission considered a social network to involve many functions in addition to communications, including contact lists, user profiles, relationship status, and other social features of online activity. Although the EU reported that several industry participants informed the Commission that they considered WhatsApp to be a social network already, and predicted that absent the merger WhatsApp would expand and scale in this market, the Commission dismissed these opinions. The EU placed considerable weight on statements from WhatsApp management, stating "no indication was found of WhatsApp's plans to become a social network [as defined by the EU] which would compete with Facebook absent the merger." In the Commission's view, identifying WhatsApp as a potential competitor in social networking would expand the scope of alternative sources of competition to include other prominent firms in the consumer communications market, [\*503] including LINE, WeChat, iMessage, Skype, Snapchat, Viber, and Hangouts. Such an expansion would only make it less likely that the elimination of a single rival would raise competitive concerns.

Next, the Commission evaluated the potential for Facebook to gain market power in social networking by integrating the two platforms. The addition of WhatsApp's consumer base to Facebook's social graph would reinforce the network effects that maintained Facebook's dominance in the market for social networking services. According to the Commission's report and later documents, Facebook testified that technical limitations would prevent any such integration without significant user involvement. The claims that technical issues prevented integration were proven false just two years later in 2016 when Facebook began to add WhatsApp user data to the Facebook social graph. The EU fined Facebook €110 million ($ 122 million) for misleading the Commission but did not reverse its authorization of the acquisition.

What the EU did not consider was the possibility that the social networking market could be disrupted by a mobile, reliable, private, no-frills competitor. While the Commission noted that innovation in communications services was driven by consumer demand for reliability, privacy, and security, and acknowledged that the social networking services and consumer communications services markets exhibited significant overlap, it did not identify the trends in consumer behavior pointing toward the increasing the importance of private, mobile social platforms. Facebook had honed in on the competitive threat that this shift in consumer preferences presented for social networking, especially as it manifested in demographic and geographic groups critical to user growth such as young mobile users and those in emerging markets.

WhatsApp may have posed important potential competition issues. The strength of its reliable private messaging capabilities, its social orientation connecting users through their address books, its access to unique user data, and its ability to scale untethered to a monetization strategy based on consumer [\*504] surveillance could have raised a threat to Facebook's social network strategy. WhatsApp also may have been able to partner with complementary service providers to generate revenue and develop innovative and competitive social communications products. We will never know.

The EU's analysis highlights the problems with the potential competition doctrine. First, the problems of evaluating concentration in the social networking and mobile messaging markets are identical to those pertaining to the acquisition of Instagram: enforcement agencies have yet to identify a workable measure of concentration or a credible data source. The European Commission's report notes the lack of appropriate measure, despite its own reliance on user numbers (provided by Facebook) as a proxy for market shares. Second, the perceived ease of entry and broad consideration of potential competitors ignores the data barrier that reinforces firm dominance in online platform markets and makes it difficult for the government to isolate the impact of eliminating individual rival companies. Finally, according to the U.S. Horizontal Merger Guidelines, a five percent market share would substantiate the potential for WhatsApp to have significant procompetitive effects in markets for social networking or digital advertising. The EU cites conflicting views on the distinct boundaries of social networking markets, but even if these boundaries were clear, proof of deconcentration still demands appropriate measures of market share and current participation in the market. Harm to potential future competition was alone inadequate to challenge the merger.

The high initial burden on the plaintiff to present a case concerning future conduct and competitive effects serves as a serious deterrent to potential competition mergers, even by dominant firms. Under a simply structural presumption the FTC could have elected to challenge the merger and shifted the burden to Facebook to demonstrate why no harm to future competition could occur, and why, given Facebook's resources it could not internally innovate to achieve its competitive goals. A structural standard of this type should be embraced by critics of agency intervention who believe that the government is poorly positioned to make a strong empirical case, since representatives of the private sector would be the first source of analysis.

[\*505]

IV. Reform of the Potential Competition Doctrine

The Instagram and WhatsApp examples demonstrate how the potential competition doctrine is designed to fail by placing an unrealistic burden on the government in a challenge to any of the hundreds of mergers by dominant technology firms. We do not think this case is merely the result of new technology that has rendered the law obsolete and unworkable. We argue that the law was made unworkable because of the ideological goals of the Chicago School of Economics.

A comparison of the law of horizontal mergers with potential competition mergers is instructive. The Philadelphia National Bank structural presumption remains intact today. The plaintiff, typically the government, bears the initial burden in a § 7 horizontal merger case of demonstrating that the challenged merger should be presumed to substantially harm competition. This is accomplished by showing that the transaction will lead to undue concentration. The burden then shifts to the defendant to rebut the presumption. If successful, the burden then shifts back to the government to present additional evidence of competitive harm. The structural presumption has survived despite erosion by the lower courts. For example, in United States v. Baker Hughes, Inc., Justice Thomas (then on the D.C. Circuit) sought to dilute the presumption stating:

The Supreme Court has adopted a totality-of-the-circumstances approach to the statute, weighing a variety of factors to determine the effects of particular transactions on competition. That the government can establish a prima facie case through evidence on only one factor, market concentration, does not negate the breadth of this analysis.

In contrast to the courts, when the Reagan Administration appointees to the Department of Justice revised the Merger Guidelines in 1982 they replaced the strong structural presumption in the 1968 Guidelines with a detailed multi-step effects approach that placed the full burden of demonstrating a merger will harm competition on the government itself. The shift was motivated by the Chicago School supposition that most mergers are efficiency producing, an assumption that was never backed by empirical evidence. The higher burden made it much less likely that the antitrust agencies would bring a merger challenge, and when [\*506] they did, defendants could point to any defects in the agency's proof induced by its own standards.

The shift away from the Philadelphia Bank structural presumption for mergers that impact potential competition came earlier. It was achieved in complete form in Justice Powell's opinion in United States v. Marine Bancorporation. This wrong turn in 1974 must be corrected in order for the potential competition doctrine to have any practical application in tech markets.

Thus, the starting point for our approach would be to resurrect the pre- Marine Bancorporation 1968 Merger Guidelines. Under the 1968 Merger Guidelines, a merger would be likely to be challenged when a firm with a large market share (above 25%) purchases a firm that is "one of the most likely entrants into the market." The determination of whether a firm is a likely entrant is based on the capacity of the firm to enter, an incentive to enter based on attractiveness or a special relationship of the market, and potential profitability of entry, or a manifested interest in entry. While a possible starting point, a further correction is required. The 1968 Guidelines' analysis of entry is open ended and not sufficiently amenable to a tractable structural presumption that could be used by the courts.

What is needed to address the intractability of proof in a potential competition merger is a reasonable proxy that can incorporate a structural presumption for the likely entry or entry advantage of the startup. Thus, the second component of our test is to adopt the proxy that Professor Joe Brodley referred to as a "legal surrogate to identify the entry advantage of the acquiring firm." Professor Brodley recommended the use of the concept of "proximate markets" to provide the structural presumption of ability to enter and entry advantage for a target firm. As Professor Brodley explained:

Market proximity is a concept of presumptive entry advantage. Two markets are proximate to the extent that a knowledgeable firm in one market [\*507] possesses the necessary production and marketing information and other capabilities to operate in the other. Market proximity provides a suitable surrogate for entry advantage because, other factors being equal, there is less risk and therefore less expense involved in entering a familiar market.

To establish proximity, Professor Brodley focused on the factors that would be critical to the entry analysis of a business: production, marketing, technology, and customer relations similarities. More pointed criteria can be defined given the accumulated knowledge concerning tech industry mergers. For example, proximity to the general search market in which Google is dominant would include factors such as specialized search features, search advertising abilities, and the overlap of users with Google properties. The criteria would capture a vertical shopping site that is supported by search advertising and would clearly be a proximate market to the general search market. There are many such vertical markets that are potential rivals to Google's general search advertising revenues. Proximate markets to the social networking market certainly would include markets that compete with the functions hosted by Facebook's social network for user engagement and/or compete for similar targeted advertising dollars. In addition, the ability to gather user data complementary to Facebook's may be indicia of proximity.

We pause to recognize that other scholars have proposed different tests. We argue here that these tests do not create a sufficient standard for potential competition cases, and would condemn the plaintiffs in such cases to unworkable standards.

To start, Professor John Kwoka proposed a test involving two components, one involving structure and one involving effect: "(1) satisfaction of one structural precondition for concern with mergers involving non-incumbent firms, and then (2) demonstration of certain features specific to the case of (a) a deconstraining merger or (b) an entry-negating merger."

The first step, demonstration of a structural precondition, requires that there be moderate concentration according to the 1992 Guidelines approach. Under recent guidelines, the standard for moderate concentration is substantially increased. Regardless, substantial concentration is a condition for bringing any merger challenge. Over-reliance on the guidelines (in any version) will effectively eliminate a potential competition claim and analysis we seek to bring.

Under Professor Kwoka's test, if the structural precondition holds, then the analysis hinges upon whether the merger is entry-negating or deconstraining. [\*508] If the merger is deconstraining, the transaction "would likely be challenged on the basis of convincing evidence that the firm represented an effective and significant constraint on competition among incumbents." Such "convincing evidence" would include "documents in the possession of incumbent firms indicating active monitoring of and reaction to the non-incumbent party to the merger" or "market data that demonstrate significant responsiveness by incumbents to actions of the allegedly constraining firm."

With respect to an entry-negating merger, Professor Kwoka would have the enforcement agencies challenge such transactions if the transaction meets a multi-factored analysis. These factors are all focused on intent and ability to enter.

One of the authors of this Article, along with Salvatore Massa, proposed a two-step approach for a party moving to show entry with an opportunity for the non-moving party to rebut the claim. In that article, the first step is to determine whether the firm intends to and has the ability to enter the market. Evidence that directly relates to the commitments and investments a firm has made for entry are the most direct and relevant. The difficulty with this test is that if the evidence is more equivocal, there is little guidance as to how to proceed - a point admitted to in the original article.

[\*509] The second step considered other factors that may influence the relevance of potential entry. The primary issue is whether the potential entrant firm has an ongoing influence on the market. To make this determination, the court may turn to external factors, such as general industry knowledge and the internal documents of competitors, to see if there is a perception that the firm is a potential entry threat. Econometric evidence that a potential competitor is constraining prices in the market is the strongest evidence. Where econometric evidence is ambiguous, courts could look to other evidence. Regardless, the party not asserting potential competition would have the ability to rebut the potential competition claim to demonstrate that the firm would not be able to discipline the market, have too remote an entry date, is unfit to enter the market, or is not unique in its ability to enter.

There are multiple problems with this approach. Most pressing apart from the test's complication, however, is that the ability to rebut will likely swallow the claim. In particular, uniqueness would likely be difficult to argue against.

Others have argued that the potential competition doctrine is "superfluous," and could be integrated into the recent Horizontal Merger Guidelines. The authors argue that the potential competition doctrine, whether actual or potential, is a meaningless distinction: "Whichever label is applied, the theory must involve a unilateral or coordinated horizontal effect, and its evaluation should be essentially the same. The new Horizontal Merger Guidelines are consistent with this approach."

[\*510] We consider this a weird flex. For one, it is not as if there have been a plethora of potential competition cases under any version of the Guidelines. To the extent that the Non-Horizontal Merger guidelines raised issues inconsistent with consumer welfare, those Guidelines have been disavowed. Moreover, even the Department of Justice has not consistently adopted a guidelines approach when seeking to prove potential competition, particularly outside of the area of § 7. Even within the realm of § 7, the Guidelines approach has proven problematic, and any rebranding of the Guidelines is unlikely to cure the issues we describe here. In short, neither Instagram nor WhatsApp would have been challenged successfully under any of these tests.

Under our approach, both the Instagram and the WhatsApp mergers might have been challenged. Instagram operated in a proximate market. In the months before the Instagram acquisition, Facebook identified photo sharing as a key component of social network functionality, particularly on the mobile platform, and a key facet of Facebook's own success. The social features common to Facebook and Instagram demonstrate considerable proximity between the two companies. The private messaging offered by WhatsApp was rapidly becoming a prevailing aspect of online communication for individuals and groups, with networks established via the user's own address book posing an alternative to the public platform approach. In both cases, users' increasing reliance on mobile technology for digital interactions forced a collision between Facebook and the proximate markets that provided the aspects of online interaction its users increasingly demanded. Under the structural approach, tech mergers like Facebook's acquisitions of Instagram and WhatsApp could be challenged and receive the scrutiny they deserve. Regardless of the particular cases engaged, the process would develop a new guide to judicial decision making in tech markets.

We advocate the informed development of a fully structural presumption for potential competition mergers in technology markets. We think that this is how the law of potential competition mergers should have developed after the Philadelphia Bank case but was derailed by United States v. Marine Bancorporation.

[\*511]

Conclusion

Big Tech has demonstrated that it has an insatiable appetite for acquisitions of small startups. The sheer number of acquisitions should raise red flags for the antitrust agencies. After many hundreds of such acquisitions, so few challenges or requests to fully investigate these acquisitions demands some explanation. We argue that one aspect of the problem is that the law of potential competition has developed in a manner that essentially ties the hands of the antitrust agencies because it demands levels of proof that are intractable, particularly for a court.

We have arrived at this point because of the widespread acceptance of the Chicago School's approach to mergers. The Chicago School asserted that only mergers to monopoly were a legitimate antitrust concern, and that mergers that do not result in monopoly are usually efficiency increasing and undertaken for that purpose. With these background presumptions, the Chicago School advocates jettisoned the structural approach to mergers and replaced it with an effects analysis that raised the burden to merger challenges and provided defense counsel with multiple avenues to attack a government challenge.

The efficacy of the potential competition doctrine fell to the same unsound premises beginning in 1974 in United States v. Bancorporation. The doctrine now embraces difficult tests of conduct and performance. In markets where tipping occurs, technology is rapidly changing, and startup firms can scale and challenge dominant incumbents, a viable potential competition law is critical to protect competition and consumers. What is needed is to untie the hands of government antitrust enforcers by articulating a clear structural test to identify acquisitions of potential competition. To achieve this standard, we contend that very little innovation in law or in economics is necessary. We need only reverse the damage brought by the Chicago School and its neoliberal revolution and return to the potential competition doctrine of the 1968 Merger Guidelines.

#### Out method is valuable:

#### 1. Horizon scanning---the future of technology is unpredictable. BUT, only by engaging in future-oriented thinking nullifies its potential detrimental effects.

Gregory Asmolov 21, Lecturer in Digital Entrepreneurship Department of Digital Humanities, King’s College London, "Information Technologies and Civil Society: Why We Need Horizon Scanning," in Horizon Scanning: The Role of Information Technologies in the Future of Civil Society, Chapter 1, 2021, pg. 7-12.

Transformative Technologies

Digital platforms continue to change our society. We are witnessing rapid technological growth: new networking and communication mechanisms, tools for information dissemination and human resources mobilization are emerging. The list of innovations that can transform our future is growing every day. It includes artificial intelligence, new approaches to working with big data, crowdsourcing practices, the Internet of Things, new forms of access to the internet, augmented and virtual reality mechanisms, 3D printing technologies, blockchain and crypto-currencies, biological chips, chatbots, and non-standard forms of virtual community organization.

The scope of information networks extends beyond the human being as such, recalling British ecologist and futurist James Lovelock’s concept of Gaia, according to which all living beings on earth are one super-organism. So, for example, Alexander Pschera writes about the potential of the “Internet of Animals” as a new technology for dialogue between humans and animals. According to Psсhera, “animals in the Internet of animals are not just web content or memes created by humans,” but “data generators and data carriers.”3 Scientists are also studying how to create a “bio-internet of things” by connecting bacteria to the global network.4 Not only bacteria, but even atoms can now be actors in the global network. Researchers are working on the creation of a Quantum Internet, which may allow a qualitative leap in everything concerning the speed and safety of information transfer.5

New technologies make it possible to implement ideas that were previously only to be found on the pages of literary works. And this is not just about science fiction. For example, programmers Damien Riehl and Noah Rubin have implemented an idea explored by Jorge Luis Borges in his story The Library of Babel. The Argentinean write described a book depository containing the results of a combinatorial search for all possible combinations of 25 characters. Such a library would contain absolutely all texts, both created and not yet created by mankind. Although the library invented by Borges would exceed the size of the visible Universe, it turns out that the scale of big data may approach the realization of his vision. The programmers have created an algorithm that generates all possible combinations of eight notes and 12 beats, and uploaded an archive of billions of melodies with free access under the Creative Commons Zero License. The authors of this project thus sought to protect users from lawsuits from the music industry.6

The transformative potential of technologies can be seen both in everyday life and especially in times of crisis, when survival under new threats and rapidly growing uncertainty requires innovation. Digital platforms offer new formats for participation in decision-making, contribute to a greater transparency of public institutions, and form new control mechanisms for traditional government institutions. Experts Alex Berditchevskaia and Markus Droemann, from the British Innovation Foundation (NESTA), have noted that the central innovation supporting social and political transformation is the development of a “collective intelligence” that mobilizes human resources to address a wide range of issues. Among other things, new possibilities for rapid mobilization increase social resilience in a crisis.7

On the other hand, researchers point out that, contrary to what might be expected, information technology is not capable of resolving the problem of economic inequality. In the new digital economy, the rich are still getting richer and egalitarian forms of cooperation are becoming a front for the development of “surveillance capitalism” (Zuboff, 2019),8 which is based on large-scale collection and analysis of personal data.

The story of Cambridge Analytica has shown new possibilities for manipulating the behavior of Facebook users that question freedom of choice. According to Lawrence Lessig of Harvard University, “if we could put up with the need to destroy democracy to stop climate change, what’s happening today is the destruction of democracy to sell advertising more effectively.”9 Lessig goes on to note that the architecture of modern social networks stimulates polarization, because the greater the degree of polarization, the greater the involvement of audiences, which is key to the commercial success of these platforms. Thus, the laws of the market destroy democracy, while democratic political systems are to live by the laws of the market.

Some researchers point out that new forms of digital work have, in fact, offered new forms of exploitation of the working resources of internet users (Fish & Srinivasan 2012).10 Internet activism often turns into so-called “slacktivism” when real offline actions are replaced by the simple click of a mouse, leaving a subjective sense of participation, but less likely to lead to significant change. New surveillance and control technologies threaten media freedom and the right to personal privacy. Social networks are being transformed from a new public space into a space of propaganda, toxicity,11 and social polarization. Finally, a popular saying that “someone has already created a mobile application for that task,” according to publicist Evgeny Morozov (2013), is an example of [false hope] ~~blind faith~~ in the ability of technologies to find an answer to any social or political challenge and, as a result, creates a sense of indifference.12

The coronavirus pandemic is a vivid illustration of the contradictions related to the role of information technology. On the one hand, we have seen a wide range of innovations that have emerged to combat the crisis, from new forms of data analysis to network-based resource mobilization for the development of home-made personal protective equipment. On the other hand, information technology has significantly scaled up the processes associated with the spread of misinformation, which has led the World Health Organization to declare an “infodemic.”13

Moreover, innovations related to viral shedding in the monitoring and observance of quarantine regulations are a significant step in the development of surveillance technologies that violate the right for privacy. Discussion of the coronavirus on social networks has been accompanied by a significant level of emotional tension and contributed to social polarization as well as to the development of digital vigilantism.14 In Russia, internet technologies have been used to bring crisis-related volunteer mobilization under government control, while the role of independent horizontal mobilization was relatively minimized.15

One way or another, the dynamics of information technology development and its impact on social and political processes can hardly be reduced to a linear influence on certain aspects of our lives. With the increasing complexity of present systems, the impact of this or that technology is sometimes unpredictable and is open to an endless series of changes. Moreover, innovative processes often change the power balance between activists and state institutions. On the one hand, activists create new challenges for those in power. On the other hand, those in power mobilize their resources to neutralize independent innovations and to develop new technologies for controlling and managing society. However, despite the binary opposition of power and civil society, many innovations also create new forms of cooperation and synergy between society and state institutions.

Between Cyber-Optimism and Cyber-Pessimism

Researchers and experts increasingly differ in their appraisal of the impact of information technology on our lives. This is especially true of their assessment of the impact of technology on social and political aspects of social development. Researchers can often be divided into groups of cyber-optimists, who emphasize the positive impact and potential of technology, and cyber-pessimists, who focus on the negative aspects of social and political transformation. Between these two is a group of cyber-pragmatists trying to find a balance between the extremes.

According to Brian Loader and William Dutton (first director of the Oxford Internet Institute), internet development has always been accompanied by a mixture of utopian and anti-utopian discourses. Recently, however, “even in academia, there has been a critical turn in discussion of the Internet with a growing prominence of skepticism and concern over the social, economic and cultural underpinnings of the Internet and its consequences for society.” Researchers note that “the Internet is no longer a futuristic innovation that might shape social and economic development, but clearly is a central aspect of contemporary network societies.”16

Pessimism is expressed not only about the nature of the impact, but also about the degree/speed of this impact. David Karpf, a researcher at George Washington University, has analyzed articles from Wired magazine over the last 25 years and concluded that, contrary to expectations, the internet’s development is gradually slowing down.17 According to Karpf, although Facebook in 2019 is different from Facebook seven years ago, the scale of these differences and their impact on our lives is much less than we might have imagined. While the second half of the 1990s and the beginning of the 2000s were a period of revolutionary transformations that changed our way of life, the impact of innovation is now more linear. A number of prophecies, such as that wearable technologies (like Google Glass) or virtual reality would bring a new revolution, have not yet been fulfilled. Even though the Internet of Things has been incorporated into the design of our homes, it has hardly become a transformational technology that has completely changed our lives. This kind of skepticism can also be expressed about the role of blockchain technologies, etc.

Moreover, there are almost no big new players on the innovation market. Alphabet (Google), Apple, Amazon, Microsoft and Facebook remain the key IT companies. Karpf relates this to changes in market regulation capabilities: “During a period of rapid media and technological change, effective regulation is extraordinarily difficult because the regulators cannot keep up with the behaviors they are regulating. But as Internet time slows down and a few massive companies acquire quasi-monopolistic market power, it gets easier to regulate the market effectively.” In addition, the speed of transformations can also slow down because IT giants effectively control the market, acquiring their potential competitors. A powerful wave of “creative destruction” and volatility will be required in order to change the current status quo, one that can push aside monopolists and free the field for new innovators to grow. Therefore, Karpf concludes, “the Internet of 2022 will probably look a lot like the Internet of 2019.”

The solution required to explain how technologies are changing our lives was the emergence not only of abstract theories, but also of methodologies for the critical analysis of cycles of technological innovation, from invention and development to widespread application. For example, the so-called “hype cycle” developed by Gartner, a research and consulting company, describes the development of any technology as a series of phases, starting with the “innovation trigger,” through the buildup of expectations of a particular technology, and thence to disillusionment, work on its shortcomings, and finally the achievement of a state of productive stability.

However, the purpose of this book is not to predict the role that technologies will play in five or ten years’ time. Today, there is a wealth of literature on upcoming trends, and some institutions, such as the Future Today Institute,18 offer a detailed and comprehensive annual analysis of the vector of possible technological development. We do not need a Cassandra, a Nostradamus or even a Ray Kurzweil. Moreover, we would like to avoid a position of technological determinism according to which understanding the future role of technology will help us to predict the dynamics of social and political processes, and the development of civil society in particular

First and foremost, we seek to help critically assess the range of risks and opportunities for civil society associated with the development of information technologies. Isaac Asimov, assessing threats to humanity, wrote a book titled The Choice of Disasters in 1979. The title contains an important element of evolutionary optimism. Even if catastrophes are inevitable, the “choice” we make is ours. The aim of the present book’s authors is to support the development of conditions that will increase the role of individual actors and of civil society at the critical intersections of social and political development and to support the possibility of “choice” based on knowledge and critical thinking.

Such an understanding of the role of information technologies does not indicate that the authors share the position of technological determinism. However, the importance of information technologies is emphasized by researchers from a wide variety of disciplines. For example, Shahar Avin and his colleagues at Cambridge University Centre for the Study of Existential Risk suggest that threat assessment should be considered through three vectors: the role of critical systems in sustaining our existence; the role of global risk in spreading mechanisms; and finally, the role of mechanisms that allow us to respond to new challenges, including those of prevention and mitigation.19

In this system of analysis, information networks have a triple meaning: they are critical to supporting our lives, they can be used to spread different threats (as in the case of the “infodemic”), and they can be an important mechanism for responding to crises. However, the key factor in preparedness for the future, as well as in the ability to not just anticipate this but also participate in its creation, is knowledge, and also the ability to predict a wide range of possible scenarios.

From predicting trends to expanding the imagination

“At first, there was an idea of what might have been at first...” – this formula could perhaps describe the emergence of the internet. Long before the Internet’s creation, various models of global information networks appeared in the works both of humanitarians, such as Teilhard de Chardin, and of those who worked to create technologies, such as Vannevar Bush. One of the important documents that shaped the development of the internet was John Barlow’s Declaration of Independence of Cyberspace, written in 1996. In it, Barlow proclaims the creation of a new world where “anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity.”

At the same time, in the mid-1990s, the ideology of virtual communities was developed by Howard Rheingold. Concepts that envisage how technologies can enable new forms of social interaction, new types of economies and new political systems have played a significant role in the development of these technologies.

The key role of the imagination in the creation of the internet has been highlighted by a number of scholars, including French researcher Patrice Flichy and Professor Robin Mansell at the London School of Economics.20 All these studies are based on the understanding that any technology is the object of social construction. Therefore, the role of technology in socio-political development and, in particular, in the development of civil society, depends above all on the richness of our imagination (the societal “imaginare”) and on our ability to perceive different models for the future development of civil society.

According to Ramesh Srinivasan and Adam Fish, the authors of After the Internet, the ability to deconstruct myths related to the development of information technology, and in particular the myth of the internet, as a technology that can bring us closer to the “end of history,” to global democratization, and to prosperity for all, is equally important. This kind of deconstruction is a prerequisite for creating something new. Speaking about the world “after the internet,” the authors of this book write not about a world without the Internet, but about a world where the role of the internet is qualitatively different from that of its current embodiment.21

On the other hand, amidst the crisis of the current internet models, the demand for new imaginary models, in particular, is increasing. For example, researcher Ethan Zuckerman has called for a fairer internet. However, that would require that we imagine how such an internet could work. According to Zuckerman, Wikipedia remains almost the only platform that continues to realize the original vision of the internet, while the spirit and logic of commerce has transformed much of the global network. Zuckerman wonders if we can imagine a new type of social media design that will promote mutual understanding rather than spread misinformation, and support cooperation even when people have different opinions. “We’ve grown so used to the idea that social media is damaging our democracies that we’ve thought very little about how we might build new networks to strengthen societies. We need a wave of innovation around imagining and building tools whose goal is not to capture our attention as consumers, but to connect and inform us as citizens,” Zuckerman sums up.22

Development of our imagination requires resources that allow us to go beyond visible solutions. Science fiction is a one example of such resources. For instance, Isaac Asimov describes a new type of electronic democracy in his story “Franchise,” in which the popular vote procedures necessary for the election of the President are replaced by the Multivac super-computer. The computer’s decision is based on an analysis of big data and on answers from one person, which allows the computer to make the final decision. Science fiction writers often become pioneers pointing the way for further technical development. For example, Stanislav Lem proposed “ariadnology” as a scientific discipline of information search. Research shows that science fiction movies like the epic Star Wars or the Star Trek series have significantly influenced the development of technical imagination and the process of invention. Cambridge researcher Shahar Avin offers a systematic analysis of various models for exploring a possible future of artificial intelligence, ranging from science fiction literature to computer games.23

Thinking about how technologies are changing society is often limited to the range of technological solutions that already exist. The practice of developing social and technical imagination helps to overcome these limitations. The application of these practices should enable us to suggest the role that different innovations could play in different areas of life. This kind of imagination is not only a reflection of opportunities and risks, but also a driver of innovation.

Our project has two objectives. On the one hand, we want to show the risks and opportunities for the development of civil society associated with the emergence of new information technologies and digital practices. On the other hand, we want to help readers expand their own social and technical imagination. The results of our research can support the development of social and technological innovations. Social and technical imagination is a potential resource with which it is possible to achieve change. We believe that those who are first to grasp future trends will be able not only to effectively use technological developments, but also to become leaders in social innovation.

The Development of Social and Technical Imagination and Horizon Scanning Technique

The future is not only time, but also a discipline. Future analysis practices often evoke skepticism and are associated, at worst, with mediums and, at best, with futurologists. But we must admit that today systemic thinking about the future is a necessary condition for making decisions in the present. The systemic nature of such thinking is ensured by a number of techniques that offer models of thinking about the future and the structure of this thought process. Recently, new technologies of complex system modeling, based on simulations managed by artificial intelligence, have allowed us to analyze millions of possible scenarios.24 However, the purpose of this book is not to identify the most likely scenario vectors, but to expand our readers’ range of thinking about the future. To achieve this, we have chosen the Horizon Scanning technique, used both by researchers and by government agencies.

The Horizon Scanning technique proposes that we imagine several scenarios of the future, among which the authors should indicate three: the possible, the probable and the preferable. Special attention is paid to so-called “wild cards,” also known, thanks to Nassim Taleb, as Black Swans, i.e., events that are unlikely to happen, but with a potentially high impact on the scenarios of certain processes.

The purpose of Horizon Scanning is to analyze a wide range of sources and indicators in order to identify trends in change that can lead to a significant transformation in the world around us. According to one definition, the purpose of Horizon Scanning is “the systematic examination of potential (future) problems, threats, opportunities and likely future developments, including those at the margins of current thinking and planning” (Van Rij, 2010).25 Horizon Scanning has two goals. The first is to provide a “warning.” It tries to identify dangerous trends as early as possible. The second goal is “creative,” allowing one to reflect on new opportunities and take first steps towards their implementation.

In addition to “unpredictable phenomena,” the horizon scanning technique pays special attention to so-called “weak signals.” The term stands for peripheral information that is far away from the spotlight and from topical discussions. This information is complex and difficult to access. Many “weak signals” will lead to nothing, but others have the potential to become harbingers of events and trends that, over time, will have an impact on science and society. When analyzing a weak signal, it is important to consider such factors as the credibility of the source, the degree of possible impact, the level of innovation, and the extent to which the signal can change existing practices and approaches in a given area.

Another important element of analysis is the identification of “axes of uncertainty.” It enables us to identify the areas in which the dynamics of scenarios are least predictable. This analysis can focus on identifying possible bifurcation points beyond which a scenario cannot be determined within probability categories.

Modern scientific literature offers various methods for Horizon Scanning. Some authors suggest starting an analysis with the widest possible range of sources and topics. Wide scanning of weak signals makes it possible, through system analysis, to focus on those topics that are likely to influence future scenarios. Relying on categorization by level of possible significance and credibility, weak signals can be made to cluster and form topics. Other authors suggest focusing initially on analyzing specific topics that may be relevant in the future and on finding weak signals related to these, both confirming and disproving the significance of the topic. Finally, the two approaches can accommodate each other and be integrated within the same study.

Horizon Scanning is not only a form of analysis, but also a part of constructing the role of technologies and their future direction. Building alternative models of the future is an important element in critical thinking about the present. The ability to imagine the possible, the probable and the desirable, as well as to try to draw images of the unpredictable, is a necessary skill for making strategic decisions and forming long-term strategies in different spheres. Our task is to expand the window of opportunity through reflection on possible and probable future options, to achieve a desired future, and to be ready for unpredictable scenarios that await us beyond the horizon of events.

#### Particularly, positing an outline of current antitrust policy while constructing a solution is epistemologically valuable---it breaks down dogmatism and cognitive biases.

Joshua Polchar 20, Strategic foresight analyst at the OECD and former policy analyst at The Hague Centre for Strategic Studies. M.A., Political Science, University of Amsterdam. B.A., International Studies, University of Warwick, “Unboxing the Future: Finding the Futures Hidden in Plain Sight,” Institute for Security Studies, pg. 1-7, August 2020, JSTOR.

To make policy is to think about the future – usually trying to shape it for the better. In policy, as much as any part of our lives, our thinking is strongly influenced by our perception of time, yet paradoxically this perception of time is usually unconscious and unquestioned.1 Policy experts and decision-makers are futures thinkers whether they realise it or not. Yet like all humans, they tend to rely largely on a set of familiar modes of thinking when it comes to preparing for the future – modes of thinking that are instinctive, intuitive or institutionalised.

No one way of thinking about the future is necessarily better than another, but all of them are limited, and leave some things unchallenged or implicit. As a result, sticking to only one approach means missing potentially valuable insights that could be gained by using other perspectives. Of course there is no guarantee that learning these lessons will result in perfect preparedness for what lies ahead, but if there is great potential in ‘out-of-the-box thinking’, then it helps to better understand and challenge what is boxing our thinking in.

This Brief, and the strategic foresight approaches it outlines, are therefore not intended to introduce thinking about the future where it was absent, but rather to challenge, discipline, and guide the futures thinking already taking place. It will take the reader through five of the ways in which relying only on conventional ways of thinking about the future may be keeping them from seeing a lot more. It will seek to answer the question: how can the discipline of strategic foresight make a positive contribution to the field of foreign policy?

This Brief is not an instruction manual or how-to guide on methodologies of strategic foresight. Less still is it able to help the reader to better predict the future, or make the right call on what to prepare for. Instead it intends to show how thinking differently about the future can help to increase our awareness and knowledge in the present and what it means in terms of the decisions we make.

PROBABLE OR USEFUL? THE ‘RIGHT’ FUTURE(S) TO LEARN FROM

Forecasting based on past evidence can be very useful. Forecasts allow us to better understand trends by analysing the factors underlying them, and envisaging trajectories that they could follow. However forecasting also has limitations. Many high-quality forecasts have turned out to contain errors. Forecasts may use probability or multiple projections to estimate the range of likelihood of an outcome, but this is often misinterpreted, and people may assume the middle of a range of outcomes is the ‘real future’, or discount improbable outcomes as not worth considering.2 Furthermore some future developments simply cannot be forecast because too little is known about the relevant factors.3

While evidence is vital for conclusions about what happened in the past, there can never be complete evidence about the future. Innumerable things will come about in the future which will be truly unprecedented and for which there is little or no hard proof today. The future is emergent and at best only indirectly observable through what is occurring in the present. Ignoring developments with only weak evidence means missing developments from which we could have learned in advance. One such case is the effect of disruptive technology on the defence and security domain. It is not sufficient to refer to previous technological advances to understand, for example, how artificial intelligence may enable transformations not just in accomplishing today’s tasks within today’s frameworks, but in the way defence forces are organised and operate.4

Indications about the future can also be contrasting or even conflicting. In these cases it is common for people without a background in strategic foresight to suggest that the ‘real future’ will ‘probably be a combination’ of diverging alternative outcomes under consideration. This may be true but the statement defeats the purpose of considering alternatives in the first place. ‘We consider the future to be fictional and useful rather than factual and truthful; so it is these fictions that need to be modelled, not “reality.”’5 There is little to be gained from correctly predicting the future if doing so does not enable us to take wiser actions today – and taking wiser actions today does not depend on correctly predicting the future. Taking wiser actions today instead depends on how much we challenge our ideas of the future.

Using the past as a guide is an understandable way to try to prepare for the future. Given that the future is inherently and always uncharted territory, it is intuitive that humans would want to refer to something familiar. In foreign policy in particular, theories and mental models of international relations help to explain the system — and are often used (implicitly or explicitly) to support policy decisions. Theories of international relations may be very appealing for their coherence and explanatory power, however understanding the past does not mean understanding the future. Indeed, scholars of international relations may even use the word ‘prediction’ with reference to their theories’ ability to correctly infer past phenomena, rather than provide forecasts for policymakers to respond to. 6 One proposed response is to make even more future predictions to test the validity of theories and critically evaluate assumptions.7 However if predictions are mainly useful for testing our mental models of the past, rather than preparing for disruptions in the future, then making predictions does not help us take better actions in the present; it only lets us prepare to use hindsight at a later date and possibly learn from the past.

We do not need to wait for the future to pass us by and leave us with hindsight; policymaking should adopt an approach that enables it to take action in the present: foresight. This means letting go of seeking a single most probable future, and turning attention to multiple surprising and significant futures that test our mental models ahead of time. Strategic foresight does not seek to determine which future outcomes will come true. But it also does not base its analysis on fanciful conjecture. Instead the task is to assess which plausible future outcomes can be used and learned from.8 To do that, we need to consider what ideas we are not already attending to (the surprising ones), and what ideas would matter most to our organisation's way of working (the significant ones). The standard by which an idea about the future should be judged is therefore not probability but rather the degree of surprise and significance.

This conception of the future in terms of multiple alternatives was born out of necessity in foreign policy before moving into other fields. Recognising the fundamentally different and unpredictable nature of international relations after 1945, analysts at RAND Corporation used the uncertainty to create multiple alternative contexts – scenarios – in which to test strategies and see how they might fare. This use of multiple futures to provide ‘ersatz experience’9 allowed strategists to go beyond merely attempting to predict and respond to a single future, and to better understand the potential success of their actions in varying conditions.

EVENTS OR CONTEXT? DRAMATIC EVENTS AND THE WORLDS THEY INHABIT

Consider any of the most pivotal events in history (the World Wars, the fall of the Berlin Wall, the coronavirus pandemic, any revolution, war or invention): none of them can be explained without an understanding of the context – the zeitgeist, the paradigms – that prevailed at the time. Take any of the most impactful eras of history (the Cold War, the Golden Age, the Enlightenment): none of them can be explained without an understanding of the events that initiated, sustained or ended them. In any good explanation of the past, analysis always combines elements of action (sequential one-off occurrences) with elements of context (ongoing states of being that paint a picture). The interplay between events and context is complex and we cannot hope to get an understanding of what happened without considering both together.

“History is not just one thing after another”,10 and nor is the future: it is a combination of events and context. Yet in spite of this logic, discussions about the future usually concern only new events, not new contexts. Compared with context, it is perhaps easier to imagine and describe a future event, assess its probability, and later test its correctness.11 But it is vital that we understand that context in the future can and will be different to that of today. There is much more to be learned by thinking about the conditions in which we might be operating for extended periods of the future than there is to be learned from events which come and go.

Likewise, it is clear that certain technologies have indeed catalysed transformations in human civilisation – the printing press, the postage stamp, and the internet being some of the clearest examples. However it was not possible to predict the emergence of these technologies, the form they would take, or how exactly they would transform their societies. None of these important technologies would have achieved widespread use without a society that had a use for them. None of the important developments that followed were inherent in the technologies themselves or in their originally intended applications. They all arose from the ways in which societies made use of the technologies in later years.

Studying an event or new technology which might materialise is a potentially useful yet highly specific field of knowledge to explore and use to develop ideas about the future. Taken in isolation, it only reveals the immediate implications of the event or technology for our own organisation and times, potentially missing the broader social, economic, environmental or political changes in circumstances that might precede or follow the emergence of that event or technology. Without that additional analysis and interpretation (often referred to as ‘sense-making’), studying an event or technology on its own does not support us to imagine ourselves in a very different future – or develop strategies to succeed in it.

One example of the effective use of context rather than events is in the future scenarios project developed by the Dutch ministry of defence, whose scenarios are built in the tradition of NATO’s Multiple Futures and the US National Intelligence Council’s Global Trends projects, as well as work of the German Zentrum für Transformation der Bundeswehr.12 The scenarios focus on which actors matter most, and how they relate to one another – contextual factors which could determine the emergence, significance, and consequences of events. These scenarios, and subsequent foresight processes, have been used in the Dutch government among others to inform policy considerations in terms of what is important to focus attention on in the present, and what capabilities to develop ahead of time. 13

COMPLICATED OR COMPLEX? ALL OTHER THINGS ARE NEVER EQUAL

In the 2020 coronavirus pandemic, there were multiple sets of uncertainties. There were uncertainties surrounding the behaviour of the virus itself (its ability to cause disease in different people, the various routes of transmission, etc.); uncertainties surrounding how the pandemic would unfold (death rate, reproduction rate, etc.); and uncertainties about what would happen next (how many businesses would bounce back from lockdown losses, how countries’ geopolitical relations would be affected, etc.). On all of these matters, governments sought the best available knowledge and advice.

Yet relatively little attention was given to what ties all the above uncertainties together: the underlying characteristics of societies, different all around the world, which determined the behaviour of the virus, the unfolding of the pandemic, and what would happen next. This broader set of factors concerned matters such as the level of physical contact customary in a given culture, the use of mass transit compared with private vehicles, perceptions of risk, and frequency of intergenerational contact. These uncertainties had to be assumed in advance in any epidemiological model used to inform policy decisions on controlling the pandemic. The tendency to make these assumptions implicitly rather than explicitly may explain why some models proved misleading, and why models designed for use in certain places proved useless in others.

The future is strongly shaped by multiple arrays of factors like those above. Yet too often we treat such complexity as if it was merely complicated. The difference is great. Complicated systems like a phone or a car maybe be difficult to understand but there are fixed rules governing interactions. These rules can be learned through empirical observation and expert analysis to reliably predict how the system will behave and the likely effects of any changes made. Complex systems like a phone conversation or a traffic jam contain multiple interrelated causal relationships, uncertainties, feedback loops, tipping points, emergence, and other effects which make them more than the sum of their parts. There is no reliable set of rules which will always apply, and making changes will not always produce the same effect.

In studying complex policy domains like international relations or an economy we tend to try to separate relationships out and infer rules that govern them, all other things being equal. This principle of ceteris paribus can be beneficial and serves a purpose in understanding the aetiology of phenomena and the relationships between them, but its usefulness is limited to complicated problems which can be empirically observed. Those conditions do not apply in the case of the future, since the future is complex and impossible to empirically observe.14

Humans find it challenging to grasp the future as a tangle of interrelated phenomena which cannot easily be separated. One way of making this complexity manageable is not to reduce the number of variables, but instead to weave them together into narratives. Stories are just as valid as models as a guide to the future, if they help us to understand something enough to take effective action.15 One high-profile example of foresight analysis in the security field which views the future in this way is the National Intelligence Council’s Global Trends report, in which scenarios are used to explore how “[future] events unfold in complex ways for which our brains are not naturally wired.”16 Most readers would be struck by the prescience of the storyline in one of the scenarios about a global pandemic in 2023 which ‘dramatically reduced global travel in an effort to contain the spread of the disease, contributing to the slowing of global trade and decreased productivity’. However from a foresight perspective, what is most valuable is not the success of the analysis in spotting a particular development that came to pass, but the complexity and interconnectedness of multiple phenomena. The use of narrative allows these to be perceived, made sense of, and woven into storylines which can be used to challenge and improve strategy in the present – irrespective of whether any of the predictions actually come to pass.17

SHOULD OR MIGHT? SOLVING THE FUTURE BEFORE EXPLORING IT

Economic growth, rules-based trade, free markets, European integration, containment: these have all been presented as the objective of at least one institution or school of thought. To supporters of these institutions or schools, discussions of the future and strategy will usually turn quite quickly to how such objectives can be furthered. But in reality, they are more than objectives: they are solutions pursued in response to challenges such as poverty, war and geopolitical competition. In a world of complex problems, proven approaches cannot be relied on to work every time; what worked last time might not work the next. The risk is that organisations find themselves in new contexts where their trusted models and approaches to deal with challenges and grasp opportunities stop performing as they used to. Yet in many futures dialogues, participants will advocate addressing an imagined future challenge or opportunity with more of the same approach their organisation is already advocating.

Policy is in many respects a problem-solving discipline. By trying to remedy failure or optimise success, we are seeking to find a solution. As a result, when discussing the future, policy experts tend to switch gear immediately upon identifying a phenomenon, moving from observing it to attempting to solve it. However this mode of thinking can divert attention away from another: exploration. Problems may not be how they appear, and by switching to problem-solving mode, we leave observing mode behind and risk missing out on many complex and interconnected factors that may also be of great relevance. This mode of thinking is analogous to proceeding forward down what seems like the best road to a destination without first charting the territory and exploring different routes that may offer a smoother or more efficient journey.

A similar difficulty applies when considering which problems we seek to solve. Most problems in policy are addressable but not solvable. They can be characterised as ‘wicked problems’ because they have innumerable causes, are tough to describe, and do not have a right answer; attempting to tackle wicked problems using conventional strategies, as if they were merely difficult problems, not only risks failure but could even make the situation worse.18 The security field is beset with wicked problems, concerning virtually every major issue – terrorism, cyber threats, natural disasters, and inter- and intra-state conflict to name but a few.

It is also important to recognise that while we believe in the power of policy to change the future, it is not omnipotent. Like any organisation, policy institutions must discipline their conversations to make the distinction between external developments beyond their control and the limited ability of their own actions to shape them. “Perhaps the most important insight of complexity is that policymakers should stop pretending that an economy can be controlled.”19 Problem-solving is not inherently bad, but it should not be allowed to crowd out problem-exploring. During policy dialogue, it is important to give adequate time to observing a situation without judgement, understanding the relevant factors and their linkages, and speculating on the multiple different ways in which the future could develop. Strategic foresight methods such as scenario planning and megatrends analysis are ways to create an artificial future world which can be explored, and subsequently different solutions tried out and rehearsed ahead of time. Doing so will not necessarily lead to the ‘right solutions’, but by considering a fuller picture of problems, we can hope that our solutions will take more relevant factors into account and hence be better informed.

OFFICIAL EXPECTATIONS OR ANTICIPATIONS? UNUSUAL BUSINESS AS USUAL

The coronavirus pandemic was not unforeseen. All of the factors which led to the emergence and spread of the novel virus were known and studied well in advance;20 high-profile and respected experts warned of humanity’s lack of preparedness for an outbreak; and numerous countries had national risk registries and assessments which accounted for the possibility of such a situation developing. Yet in declaring the disease a pandemic, the World Health Organisation (WHO) warned of ‘alarming levels of inaction’ in spite of clear knowledge and advice on what countries needed to do.21 Likewise, it is widely accepted that mitigating the climate crisis and dealing with its consequences will require radical changes in policy and strategy, well beyond the actions of most major organisations and governments today.22 Both coronavirus and the climate crisis are cases of emerging futures from which a great deal can be learned today. A failure to grasp emerging futures proved fatal to makers of traditional mobile phones and film cameras who failed to adapt to their disrupted contexts. So why do organisations not change course, even in the face of strong indications that their current actions are inadequate?

A sense of future is always implicit in our actions, even when we do not realise it. In the absence of conscious foresight, that sense of future is usually ‘business as usual’ — assumptions and expectations that we can continue in the same way as at present and still succeed or at least cope. Such untested assumptions and expectations may be so deeply embedded in an organisation’s actions that its decision-makers are not even aware that they exist until it is too late.

There are also multiple social and institutional factors that protect the incumbency of business as usual. Unorthodox thinkers who tell an organisation that it needs to radically rethink its understanding of a complex issue or admit that it was doing the wrong thing all along rarely make themselves popular. Some may experience groupthink and moderate their views; some may face censorship; others may censor themselves. Sometimes the preservation of business as usual is in the interests of a powerful individual or group. As a result, foresight work is often used to justify the dominant strategy rather than to challenge it. But that does not make controversial ideas about the future any less useful.

The word ‘expectation’ has two meanings in English: the first refers to beliefs about what will happen (anticipation); the second refers to requirements to fulfil an obligation. In this sense, the expected future is an anticipatory phenomenon but also an institutional phenomenon, something that two writers on the subject refer to as the ‘official future’.23 When our organisations expect us to expect something, they are furnishing an otherwise open future with ideas of today – a process which has even been described as ‘colonising the future’.24 By expecting people to expect an approved, official version of the future, organisations fail to make the most of their diverse knowledge, and potentially miss untold opportunities and face needless difficulties. The future does not care if disruptions come at great expense, confusion, or embarrassment to an organisation, but the staff of the organisation do. When it fails to materialise, the expected future is not only a failure of anticipation on an individual level,25 but a failure of cognition on a collective level.

To address these missed opportunities, organisations should make a virtue of the uncertain, undeveloped nature of the future to avoid groupthink and promote a diversity of ideas–including those which imply weaknesses in the organisation’s current way of thinking and strategising. This has been one of the main benefits of scenarios in defence planning in successive US administrations according to RAND Corporation. In a review of force planning scenarios over time, it found that “a portfolio of scenarios that includes a wider range of plausible but stressing scenarios is more likely to yield more useful information about risks, gaps, and mitigation measures than a smaller and less stressing set, and that testing the forces against more combinations of scenarios and scenario variations is better than testing it against only a few.”26

CONCLUSION

People often perceive the future as being in another place at another time. This notion that thinking about the future involves ‘looking ahead’ (and taking our eyes off the present) leads to the misconception that the current situation is so uncertain or urgent that there is no time to think about the future. This is really a false dilemma. The future needs to be demystified: it is not a remote entity that is separate from the present, just waiting to be found. In fact it does not really exist anywhere other than in the present. The only futures we can really anticipate and learn from are the ones we imagine right now!

What does this mean concretely in policymaking? It is not enough simply to use foresight as an alternative ‘method’ to identify the ‘right things’ to think about in the future and then factor them into the traditional policymaking process. ‘Strategic foresight doesn’t help us figure out what to think about the future. It helps us figure out how to think about it.’27 Strategic foresight is a way of thinking and working – not just a one-off process or event, but a long-term shift in mindset.

Strategic foresight does not view the future as a single, objective, knowable entity; therefore it cannot be passively studied as if it were. Multiple ideas about the future require dialogue for a learning process with useful implications for action. The considerations presented in this Brief offer a starting point for readers to pause and take time to use the future today. Strategic foresight practitioners can help organisations take this further by helping to embed the practice in their decision-making.

By recognising that the future is already being formed all around us, we can ‘unbox’ it and understand it better now. This helps us pay attention to surprising and significant developments which seem improbable but from which we can learn, allowing us to broaden our focus from events to context. We can see the complex interconnectedness of drivers of future change. We can pause our problem-solving and go into exploration mode. We can ask ourselves the uncomfortable and unpopular questions. Most of all, we can use the fact that the future is already present to start creating a better future in the present.

#### 2. Intellectual humility---debates over antitrust and competition are constantly in flux, thus requiring openness to error.

Michael C.A. Stork 10, BA, Economics, Boston College, "Untying Cerberus: A Gatekeeper's Guide to Economic Evidence," Boston College, 2010, pg. 25-26.

In the philosophy of science, fallibilism is the realization that our current ideas will probably turn out to be wrong.115 The history of science demonstrates the constant replacement of old theories by new theories, so scientists would be well-advised to anticipate that such a pattern will continue. As Albert Einstein noted, “There are no eternal theories in science. It always happens that some of the facts predicted by a theory are disproved by experiment. Every theory has its period of gradual development and triumph, after which it may experience a rapid decline.”116 Fallibilism is creative destruction in the marketplace of ideas, and it fosters an intellectual humility regarding our economic theories. The impact of fallibilism can be found in the way that statisticians talk about hypothesis testing; they are careful to either “reject the null hypothesis” or “fail to reject the null hypothesis,” never confirming either way.117

Because fallibilism is well-supported in the philosophy of science,118 it is important for judges to rely on evidence that deals with the problems that fallibilism presents. In sum, judges must prefer empirical approaches because only empirical approaches progress; empirical approaches offer the best chance to avoid applying false theories. If fallibilism is like creative destruction, then empiricism is like the price system; empiricism is in constant flux, rejecting theories that become inconsistent as we gather more data or improve how we make observations. To complete the analogy, theoretical approaches are like a planned economy; a priorism does not respond to observation, meaning that the a priori conclusions are static in spite of any changes or improvements. If the caution of fallibilism is correct, then we should be eager to embrace empiricism—the approach that helps us weed out bad theories.

Now a praxeologist may view this type of constancy as an advantage of a theoretical approach. In fact, a praxeologist would probably point to the constant uncertainty in empirical studies as an indication of problems with empiricism.119 To refute such a claim, one only needs to study the history of an empirical discipline—whether economics or a natural science—and conclude that contemporaneous scientists have more predictive power than earlier scientists. A number of factors, whether technological, cultural, or institutional, affect the stock of scientific knowledge, and it would be radical to argue that human beings have the same understanding of the world today as we had in ancient times. Such a growth in the stock of knowledge is characteristic of empirical, not theoretical, approaches. Because the axiom of human action is true at all times for all people, the same conclusions should hold today and two millennia from now. What empirical economists know today, however, may be only a fraction of what they will know in the future.

To clarify the need for a progressive approach, consider the evolution of tying law over the past century. Initially, tying arrangements were treated as per se illegal by the courts, means that they were considered inherently anti-competitive. 120 As antitrust became more economically-based in the second half of the twentieth century, however, courts began to judge tying arrangements according to the rule of reason, meaning that the consequences of the arrangements had to be considered before a ruling could be made. If the courts had insisted on using the a priori per se rule, there would be no way for an efficient tying arrangement to survive. An arrangement that would benefit consumers, therefore, would be deemed illegal. The advantage of the rule of reason and for empiricism is clear: as judges come to better understand the world, they can adjust their rulings to generate better consequences.

#### That’s vital to inculcate epistemic tolerance---refines decision-making and improves advocacy.

Vlasta Sikimić et al. 20, Carl Friedrich von Weizsäcker Center, University of Tübingen; Tijana Nikitović, Institute of Psychology, Department of Psychology, Faculty of Philosophy, University of Belgrade; Miljan Vasić, Institute for Philosophy, Department of Philosophy, Faculty of Philosophy, University of Belgrade; Vanja Subotić, Institute for Philosophy, Department of Philosophy, Faculty of Philosophy, University of Belgrade, "Do Political Attitudes Matter for Epistemic Decisions of Scientists?" Review of Philosophy and Psychology, 08/25/2020, Springer.

As mentioned, the principal aim of our research was to operationalize and empirically test epistemic attitudes, with epistemic tolerance construed as an epistemic virtue, epistemic authoritarianism as an epistemic vice, and skepticism towards the scientific method as a Janus-faced epistemic attitude, rather than virtuous at all times. The first step concerns the confirmation of the quality of the newly proposed scales and the interpretation of the descriptive statistics of all scales presented in the previous section.

When it comes to descriptive statistics, from skewness and kurtosis values, as well as from Kolmogorov-Smirnov tests of normality, we see that none of the relevant variables are normally distributed. This does not necessarily indicate a problem with the used scales but rather reflects upon the underlying nature of the measured phenomena, as well as the characteristics of the scientific community. Our sample of researchers is shown to group around high values in cases of epistemic tolerance and beliefs about the theory of evolution. On the other hand, the participants’ scores group around low values in cases of epistemic authoritarianism, skepticism towards the scientific method, and beliefs in astrology. It is important to note that the standardized skewness of conservatism did not deviate from the normal distribution. The high negative value of kurtosis indicates a higher number of cases with extreme values than expected in a normal distribution. Therefore, we were able to ensure the diversity of the sample with regard to conservatism, which cannot be said for the political orientation. Namely, there was a small number of participants who classified themselves as being on the far-right side of the political spectrum. This could be a specific characteristic of the scientific community, though it should be noted that we used convenient sampling methods.

As indicated by the internal reliabilities and measures of representativeness, the three proposed scales for epistemic attitudes performed well. The adequateness of the scales is further demonstrated by the results of the confirmatory factor analysis that reproduced the factors of the three scales with the corresponding items. The fact that epistemic authoritarianism and tolerance are moderately correlated, with skepticism being related to epistemic authoritarianism but not tolerance, as well as the results of the principal component analysis, suggest that these constructs cannot be theoretically reduced to one another.Footnote7

An overview of the main relationships found in the study can be seen in Fig. 4. The relationships between conservatism and epistemic attitudes (epistemic tolerance, epistemic authoritarianism, and skepticism towards the scientific method) are present but weak. This, alongside the fact that our second hypothesis was not confirmed, i.e., that the political orientation does not affect the epistemic attitudes, implies that, contrary to common expectations, political attitudes do not strongly affect professional beliefs and decisions of scientists. This finding goes in the direction that science could be free of political views (cf. Mattes 2019). Moreover, the effect of the scientific field on epistemic attitudes was more relevant than the effect of sociopolitical views. Natural scientists were, on average, more epistemically authoritarian and less epistemically tolerant. This is to be expected given the nature of their field, i.e., the methods used by natural scientists are stricter in comparison to the ones of social scientists. Nonetheless, it is worth noticing that both natural and social scientists are, to a large extent, tolerant, even though social scientists exhibit higher levels of epistemic tolerance.

[Chart omitted]

The career stage also plays a role in the skepticism towards the scientific method, with junior social researchers being more skeptical than seniors in the same field. On the other hand, there are no differences between junior and senior researchers among natural scientists. These results may indicate that with their professional development, researchers’ trust in the scientific method increases. On the other hand, it seems that junior researchers in the field of natural sciences do not consider the option of questioning the methods used in their field. This is further supported by the finding that there are no differences in beliefs about the theory of evolution between junior and senior researchers in natural sciences. However, junior researchers in the field of social sciences question the theory of evolution more than seniors. This could indicate that researchers in social sciences develop a greater trust in the scientific method in general during their careers.

We have also investigated the sociopolitical views of scientists. Conservatism has a weak positive correlation with beliefs in astrology. A medium effect was found between the participants’ political orientation and their beliefs about the theory of evolution. These results are in line with the finding that participants who score higher on the conservatism scale are more prone to questioning the theory of evolution (Miller et al. 2006). This is in accordance with our expectations: the results are compatible with the previous findings that different forms of scientific acceptance and rejection are generally grounded in conservatism (Rutjens et al. 2018).

The novelty of our findings stems from the fact that participants in our study are researchers from natural and social sciences. Our study challenges the conclusions of Bayir et al. (2014), who found no differences in natural and social scientists’ views on the nature of science.Footnote8

As previously mentioned, this is an exploratory study, pioneering measures of novel constructs, that are essentially attitudes, some of which are socially desirable. Most notably, our participants showed high levels of epistemic tolerance and low levels of epistemic authoritarianism, as well as little skepticism towards the scientific method. They declared themselves as predominantly liberal and held the theory of evolution in high regard, while the same could not be said about astrology. Therefore, it is important to take these characteristics of the scientific community into account when drawing conclusions and implications from the results. The question remains whether our sample represents the scientific community as a whole and if greater effects would be found if there were more variations within our sample.

Conclusions

Epistemic tolerance and epistemic authoritarianism play an important role whenever scientists make epistemic decisions about competing theories in their discipline. Epistemically tolerant researchers do not dismiss the work of their peers with opposing views, while epistemically authoritarian scientists are less willing to revise views that they adopted. On the other hand, skepticism towards the scientific method is connected with the tendency to question and investigate the limits of science. Both epistemic tolerance and epistemic authoritarianism of scientists, as well as their level of skepticism towards the scientific method, were empirically measured for the first time. We proposed three measuring scales. The conducted analyses showed that all of the scales capture independent phenomena and that they are statistically reliable. Additionally, we compared the epistemic attitudes with the sociopolitical views of our survey participants in order to examine whether their epistemic attitudes are in any way “sullied” by their political orientation and level of conservatism.

Our results represent a positive finding regarding the scientific community: scientists, at least on a declarative level, see themselves as epistemically tolerant towards opposing theories and approaches, and not epistemically authoritarian. These values influence their epistemic decisions, such as equal consideration of rivaling theories in their field. On the other hand, the results revealed that the epistemic attitudes of scientists are, to a certain degree, dependent on their discipline and the level of their experience. As expected, given the irregular patterns governing their field of expertise, social scientists are to some extent more epistemically tolerant. Moreover, junior researchers in social sciences tend to relativize the scientific method more than their experienced colleagues. We attribute this finding to the fact that they are new to science and most likely did not yet become advocates for any specific approach. When it comes to endorsing pseudoscience, scientists dismissed believing in astrology almost unanimously, regardless of their political orientation, field of expertise, or career stage. Interestingly, junior researchers in social sciences also tend to believe less in evolutionary theory than the senior researchers, while such a difference was not found between junior and senior researchers in natural sciences. Finally, as for the impact of sociopolitical views on the corpus of epistemic attitudes, we pointed out that the tested epistemic values are not influenced by political orientation and are only weakly correlated with conservatism. Rather, the specific scientific field directs one’s level of epistemic tolerance. Hence, based on our findings, the influence that political attitudes have on the epistemic decisions of scientists is marginal.

#### Err towards more humility---its benefits are numerous and arise at the margins.

---SIH = Sociopolitical Intellectual Humility.

Elizabeth J. Krumrei-Mancuso & Brian Newman 20, Professor of Psychology, Social Science Division, Seaver College; Professor of Political Science, Social Science Division, Seaver College, "Intellectual Humility in The Sociopolitical Domain," Self and Identity, Vol. 19, Issue 8, 2020, T&F.

Our analysis of the links between SIH and political engagement confirm that SIH is distinct from political disengagement or not caring about politics, a finding consistent with Porter and Schumann (2018). All else equal, people with higher SIH were actually a bit more interested in politics, less likely to avoid political discussions, and no more or less likely to report voting in the 2018 elections or otherwise participate in political life. Future research might examine whether these findings can be explained on the basis of people with different levels of SIH having different experiences in civic and political life. There is also room for future research to explore whether people with different levels of SIH are mobilized into political action on the basis of different motivations or via different routes (e.g., calls to action on behalf of positive values or on behalf of values threatened by opponents).

Consistent with previous research (e.g., Iyengar et al., 2012; Iyengar & Westwood, 2015), we observed evidence of substantial affective polarization within our sample. Republicans and Democrats, and conservatives and liberals, gave strongly diverging feeling thermometer ratings. We found support for our hypothesis that SIH depresses such affective polarization. The differences in feeling thermometer ratings of politically relevant target groups between strong Democrats and strong Republicans and between extreme liberals and extreme conservatives were smaller among participants with higher levels of SIH. Since affective polarization has negative effects on important and diverse outcomes such as personal and family relationships, political governance, and economic exchange (e.g., Hetherington & Rudolph, 2015; Iyengar et al., 2012; McConnell et al., 2017), finding that SIH can mitigate affective polarization points toward the importance of SIH. This suggests there may be value in exploring whether and how SIH can be cultivated.

SIH was mostly unrelated to belief in under-supported claims. SIH was unrelated to the belief that agents acting on behalf of the Russian government tampered with vote totals in the 2016 presidential election. Higher SIH initially predicted less belief in the claim that millions of immigrants voted illegally in the 2016 presidential election. However, the effect was no longer significant when controls were included (though the p-value remained somewhat close to statistical significance, p = .07). Based on these data, SIH approached significance in predicting more skepticism about under-supported claims, but did not reach a level of significance in predicting skepticism (or gullibility) with regard to under-supported political claims. These findings may have been the result of the particular claims assessed and the extent to which they were asserted in news and social media. Therefore, future research seems warranted regarding the links between SIH and belief in a variety of types of truth claims.

Finally, we examined two potential manipulations with regard to change in the strength or direction of people’s views on a specific political topic (crime rates among immigrants), observing significant, but small, effects. The lack of robust findings may have related to the fact that the sample, on average, already disagreed at the outset of the study with the statement that crime rates were higher among immigrants than nonimmigrants, which concurred with the factual information provided.

SIH played some role, albeit small, in motivated reasoning. When participants were exposed to an accuracy motivation condition, their levels of SIH were not predictive of change in levels of agreement after being exposed to factual information. In contrast, for participants assigned to a defense motivation condition, SIH was linked to change in levels of agreement. Low SIH participants in this condition did not change from their original view much at all, whereas high SIH participants shifted by about 0.6 points consistent with the content of the information they were exposed to. This suggests that SIH may provide a buffer against the effects of defense motivated thinking. That is, SIH seems to make a difference for individuals who are placed in a position of defending their own viewpoint, as may happen frequently in American society, particularly in public discourse and social media.

Here again, SIH may prove beneficial to the body politic. The consequences of motivated reasoning are often challenging for the democratic system and corrosive of the social fabric. Motivated reasoning makes it difficult for Republicans and Democrats to agree on the current state of the world (e.g., economic conditions are good or bad, immigration causes harms and/or benefits, climate change is happening or not happening) much less the best policies for making improvements. Moreover, motivated reasoning can undermine accountability and the doling out of punishment and reward for a political job done poorly or well, when such responses may be appropriate. Some have argued American politics is in this state now, with compromised accountability (e.g., Achen & Bartels, 2016; Donovan et al., 2019). Moreover, motivated reasoning can further polarize the public when people encounter information that challenges their existing views and they are motivated to argue against the new information. When this happens, the original views can be strengthened and may become more extreme (Levendusky, 2013). SIH may mitigate these effects by encouraging people to attend more to the conflicting or inconclusive nature of evidence and consider their conclusions as provisional and open to revision, rather than fixed and in need of reaffirmation. To the degree that SIH dampens motivated reasoning, interventions that can boost SIH may reap important benefits. Although the effect sizes in this study are quite small, any positive impact in the often toxic domain of sociopolitical discussion could be important, and at least encourages further research.

Finally, this study examined a second potential, simple intervention: calling explicit attention to the fallibility of one’s knowledge on a particular topic. We did this by having participants complete a brief self-assessment of specific IH about the topic being assessed (Hoyle et al., 2016). The results indicated that priming participants to think about the fallibility of their knowledge about a topic was an effective method of making them more responsive to information for participants with high trait-levels of SIH, but not for those with low trait-levels of SIH. In fact, individuals with low SIH seemed more resistant to change on the basis of information when they were asked to assess the level of fallibility of their knowledge of the issue compared to those with similar levels of SIH who had not been asked to reflect on the fallibility of their knowledge. Presumably, the self-assessment resulted in these individuals reflecting on their assumed lack of fallibility of thinking on the topic. Although some individuals will have gained substantial expertise in an area that may minimize the fallibility of their knowledge within the particular domain, the current findings suggest that for those who falsely presume a lack of fallibility, educating them about common cognitive fallacies and biases may be a first step in helping them to recognize their IH on a particular topic. On the basis of the current findings, it seems that high characteristic levels of SIH relate to responsiveness to information particularly when IH is made salient to the person in the moment, on the topic in which the person is engaged. The findings were very small in magnitude, yet provide an incentive to replicate. Future research would be required to establish whether a general IH prime, rather than a specific IH prime, would also have demonstrated an effect. Given that IH intervention work is at its beginning stages, the current findings provide some hints about when and how IH primes may function as interventions.

Notable limitations of the current research include that the findings are based on mostly cross-sectional data from one sample. In addition, SIH was assessed on the basis of a measure of general IH that was adapted to instruct participants to answer specifically within the context of their sociopolitical views. As levels of IH may depend both on a person’s trait levels of IH and on the particular domain that is being assessed (Hoyle et al., 2016), ongoing work should continue to tease apart how assessments of general IH and specific IH function differently within the literature. To date, the specific intellectual humility scale (Hoyle et al., 2016) has successfully been applied to multiple, diverse domains. Certainly, the potential of IH in general and SIH in particular to mitigate some of the most pressing problems in the political domain encourage additional work on this topic.

Conclusions

Our results expand on the small number of studies exploring IH’s role in the political domain. Previous studies have demonstrated connections between general IH and a handful of political outcomes like openness to new arguments (Porter & Schumann, 2018) and leniency toward politicians who changed their issue positions (Leary et al., 2017). A small number of studies have explored the links between IH in the specific context of the sociopolitical domain and a small set of broad sociopolitical outcomes, like social dominance orientation and social justice values (Hoyle et al., 2016; Krumrei-Mancuso & Newman, 2019). Here we presented evidence that SIH is distinct from political disengagement and is unrelated to believing in under-supported claims. Further, SIH may have significant, positive sociopolitical consequences, since it was linked to less affective polarization and seems to buffer against defense motivated thinking. Our findings suggest that SIH may be most impactful when individuals are provided an opportunity to reflect on the fallibility of their thinking on a particular topic. Future research should continue to build on these findings given their potential to reshape the public square, even if only in circumscribed ways.

#### Competition is a complex web of systems that requires a pluralist lens for an accurate assessment.

Clive L. Spash & Adrien O.T. Guisan 21, Chair, Public Policy and Governance, Vienna University of Economics and Business; PhD, Vienna University of Economics and Business, "A Future Social-Ecological Economics," Real World Economics Review, No. 6, 09/07/2021, pg. 203-214.

Economies are the socially structured institutional process involving the interaction of humans with the natural world. Social reproduction is achieved only within the bounds of the given structure and mechanisms of biophysical reality. The form and scale of economic processes depends upon a set of spatially and temporally contextual social institutions. That is economics concerns the form and function of social provisioning process which can take various forms and are far from limited to price-making market or capitalist institutions. Starting from processes of social provisioning, economics becomes the study of plural historical, actual and potential economies with their underlying institutional arrangements and biophysical basis rather than a singular abstract idealised “economy”. This broadens analysis not only to what institutions, norms and values shape the economic process and agents’ behaviours, but also to what are socially desirable and ecologically sustainable systems of social provisioning. Economics is neither value free nor ethically neutral but its stance on both should be made explicit. It must also be realist about how economies are reproduced via social and ecological mechanisms. That means linking to both power relations and ethical and just means of provisioning, but also material and energy throughput that respects others (human and non-human). The aspirations of economists to provide for the well-being of humanity, if taken seriously, mean a revolutionary change in economics is long overdue.

The philosophical basis of the approach is argued to be closest to critical realism. Core aspects of correspondence here are depth ontology raising the profile of both structure and mechanisms as opposed to a sole focus on empirical facts. Structure as a metaphysical reality with multiple causal mechanisms operating in open systems then poses challenges for how economics conducts itself as a science. While following critical realism in its epistemic pluralism there is also a recognised need for structuring interdisciplinary research and uniting diverse fields via common ontological understanding leading to a structured methodological pluralism (not the eclecticism of constructionism and conventionalism). Potential methods for research are selected on the basis of the qualities of an object of study and research question and as such remain open and diverse (quantitative/qualitative, intensive/extensive, see Sayer, 2010). Economic science is then neither deductivist, empiricist nor reducible to a set of idealised methods.

We start this explanation of SEE by taking issue with the hegemonic definition of economics based on choice and offer an alternative based on social provisioning. This clarifies the failure of economics to address different forms of economies both in theory and as actualised and operational both historically and at present. The relationship of economies to needs and their satisfaction with an associated material and energy throughput then becomes part of economic analysis. As noted, a clarified relationship between the ecological economic and the social is required and we explain some basic aspects of the relationship to social reality. This coverage is an outline of the ontological commitments of SEE, that is how reality is understood, its key constituents as far as an social-ecological economic system is concerned and some of their relationships. Next we outline the way in which economics can be conducted from the perspective of two other aspects of philosophy of science, namely epistemology and methodology.

II. Economics as the study of social provisioning

A rather obvious approach to defining what constitutes economics as a subject is to determine its primary object of study. Economics as an orthodoxy has for some time been dominated by a neo-Austrian dogma that was introduced significantly via Lionel Robbins (1932) and adopted into the mainstream, not least in microeconomic theory. This placed the concepts of resource scarcity and individual choice at the centre of a liberal political economy that was supposedly value free. The economic problem became meeting unlimited and competing wants and the supposed solution was meant to be resource allocation via “the market”, soon supplemented by (macro-)economic growth. In fact a single institutional process associated with capitalism was being advocated, namely, what Karl Polanyi (1957) termed, the price-making market. Robbins neo-Austrian definition then merged into Chicago school neoliberalism, where choice in a market setting, subject to price incentives, became the essence of economics and this has since permeated its meaning. This approach permitted an imperialistic expansion of economics into all sorts of subject areas, simply based on the idea that humans must make decisions as individuals so that any decision became an economic topic, e.g. equating everything from buying a cup of coffee to suicide (as infamously proposed by Becker, 1976).

In stark contrast, an older tradition regards the core of economics as determining the social and institutional arrangements for providing the needs of a community (or nation). Here the aim is to achieve a common good or well-being of all. What constitutes the good/well-being for a group then requires explicit ethical judgment. Modern times reduced the goal of seeking the “common weal” (i.e., the ability to fare well, prosper and have good fortune) into accumulating wealth and making money. Economics then simply became the study of capital accumulation using money and market prices and ultimately leading to economists’ claims of being able to determine optimally efficient public policy.

SEE immediately takes issue with reducing the subject down to studying something as singular as the economy, as if there were only one such entity or form. The term “the economy” is merely unthinking code for market capitalism, while denying actualised varieties of capitalism and that this is only one form of economic system (Hodgson, 2016). So rather than reduce economics to the study of one generic form meant to approximate the currently dominant system, a far broader approach is required, and not least so because this system is failing and creating catastrophic social and ecological crises.

A more comprehensive approach is to define economics as the study of social provisioning to meet human needs within an ethical framework of care and justice for others, both human and non-human. Social provisioning is a necessary activity for any social group whether a household, village, town, city, region, nation state or global collective. It concerns the ways in which people organise as social groupings to satisfy their needs. Markets as mechanisms for allocation are merely one form of arrangement and themselves diverse in structure.

Economics can then be seen as concerned with the variety of institutions for ensuring the satisfaction of needs and the reproduction of a society. Institutions here are to be understood as inclusive of conventions, norms, rules and regulations (Vatn, 2005). This immediately opens up economics for the consideration of alternatives and potentialities rather than the nihilistic claim that there are no alternatives.

A common objection to a focus on needs is that this is deterministic and fails to allow for the variety that appears evident in human society. Such a claim can be seen as confusing objective requirements with subjective means of their fulfilment. Thus Max-Neef (2009 [1992]) makes the distinction between needs and the satisfiers that enable their actualisation. He identifies nine fundamental needs – subsistence, affection, understanding, participation, leisure, creation, identity, freedom – that are regarded as universal and only changeable over extremely long time periods of species evolution (Max-Neef, 2009[1992]: 138). Meeting needs is regarded as a necessary prerequisite for human flourishing, while their means of fulfilment is socially contextual and varies across space and time (Rauschmayer and Omann, 2017). Satisfiers relate to the institutions, norms and practices that structure the satisfaction of needs, and will influence how economic goods and services contribute to their fulfilment or inhibition (Max-Neef, 1992). As such, while needs remain objective, how they are expressed, perceived, and fulfilled will always be subjective, conditioned by institutional arrangements and wider social and cultural contexts. This embeddedness and emergence of an economy from and with social structure forms one of the foundational ontological commitments of SEE.

In turn, social and economic systems are understood as being embedded in, and fundamentally constrained by, biophysical structures (Spash, 2017; Spash and Smith, 2019). All economic processes interact with their environment. There is a straight forward and basic dependency of economic systems upon flows of materials and energy as well as sinks for the necessary removal of waste material and energy. Economies are open social-ecological systems. Their processes operate within a set of limits prescribed by ecosystems structure and functioning, and social structure represented by actors and their institutional context.

III. The biophysical in economics

A basic fact, although absent from most economic thinking, is that natural resources and waste sinks are required to ensure social provisioning. The reproduction of societies must address the maintenance of ecosystems structure and their functioning or fail. Production fundamentally requires energy, or, more precisely, available energy termed “exergy”. That is, humans require energy capable of performing useful “work”, which is defined, as in physics, to mean the exertion of a force against some form of resistance (Ayres and Warr, 2009). Such work can be performed by humans, animals or machines, but will always require some input of exergy, whether it is the solar radiation embodied in food that fuels human and animal labour, or fossil fuels to power a heat engine. This dependency of societies on flows of energy and materials is captured in the concept of “social metabolism” (Krausmann, 2017). There is no single social metabolism because it will vary depending upon the structure of an economy and its social provisioning mechanisms, and there-in lies the potential of alternative socialecological economies.

The metabolic nature of human societies emphasises the role of materials and energy in their reproduction. This make the laws of thermodynamics central to any economic process as explored by Georgescu-Roegen (1971). The first law of thermodynamics stipulates that The metabolic nature of human societies emphasises the role of materials and energy in their reproduction. This make the laws of thermodynamics central to any economic process as explored by Georgescu-Roegen (1971). The first law of thermodynamics stipulates that

Human, and non-human, survival depends upon material and energy exchange which means on being open systems. Giampietro (2019) notes how Schrödinger described living organisms and ecosystems as having the capacity to seemingly avoid, or even reverse, entropic decay through interaction with their surroundings but this requires gathering available energy and concentrated materials from, and disposing of waste into, other systems. Entropy is not actually reversed because it continues in the larger system with which living organisms interact and are dependent. As biophysical entities living organisms are open systems. In general, open systems can maintain organisation, a given size and level of activity, but this has consequences for the systems with which they must interact. The growth of any organism, ecosystem or population is therefore fundamentally limited by the biophysical structure of its environment. These are termed horizontal limits by Devictor (2017: 120-121), because they relate to the spatial-temporal boundary for a given population, assemblage or ecosystem. The same principle applies to human societies and their economies, which depend upon ecosystems for flows of materials and energy as well as sinks for the waste they generate. Giampietro (2019) remarks that this implies that the processes ensuring the reproduction of elements of a “technosphere” (i.e. a social economy) must not interfere with the reproduction of elements in its associated “biosphere” (i.e. ecosystems structure and function) upon which they depend for maintaining a given scale of activity and organisation. Different societies have attempted to address this requirement in different ways with varying degrees of success in sustaining themselves.

Human history consists of a long period in which social provisioning was organised by free roaming, migratory, hunter gatherers prior to the rise of sedentary agricultural settlements. The former appear highly sustainable, long lived and relatively low impact, although some extinction of species is implicated. The latter consisted of small bioregional economies, with regional material flows and solar radiation as the main source of exergy, reliant on agriculture and forestry for various reproductive processes. The industrial revolution marked the start of a major transformation of social metabolism in human social and economic systems. The use of fossil fuels – coal then gas then oil – became the main source of exergy driving production processes, while increasing use of concentrated minerals replaced solar dependent plant and animal materials. This expansion of production, along with the development of artificial fertilizers, facilitated the growth of economic activities and populations beyond their previous limits (Spash, 2017).

This social metabolism appears highly unsustainable. After a few hundred years operating in just parts of the global provisioning system the results appear headed towards catastrophic collapse. The move away from exergy derived from solar radiation to finite stocks of concentrated minerals, combined with economic growth, has meant the social metabolism of industrialised human societies rapidly depleted the “entropic dowry” upon which it depends (Georgescu-Roegen, 1971). As a physically closed system, the Earth exchanges flows of energy but not of materials with its surrounding (at least not in any significant sense), while the reproduction of biospheric entities is made possible by the existence of various climatic systems that dispose of thermal energy into outer space, maintaining favourable conditions for life (Mayumi, 2017). Once used the stocks of low entropy are in effect irreversibly lost. In theory, the flows of exergy from solar radiation could be harnessed to reverse the dispersal of available energy on Earth, but to date this remains science fiction, while the ability to reconcentrate all dissipated materials to original quality on a substantive scale appears equally implausible (Spash and Smith, 2019). Recognising the biophysical reality of the economic process then leads to the inevitable conclusion that industrial economies are dependent on finite stocks exergy and their continued operation, let alone continual growth, is impossible over any extended period of time.

While the exhaustion of finite resources remains an ultimate limit on human activity, an arguably more pressing limit is the accumulation of waste. Industrial social metabolism “merely transforms low entropy into waste” (Georgescu-Roegen, 1971). As such, pollution should not be treated as a problem outside the system (i.e. an externality), or an anomaly, that could somehow be solved through increased efficiency, or correcting prices, but as an integral part of the economic process (Spash, 2021b). The Laws of Conservation indicate the inevitability of pollution because mass remains the same, but the quality of materials, like energy, declines. Ecological economists such as Daly (1992) have emphasised the scale of impacts from human activity (e.g. waste accumulation). What has been given less attention is the qualitative aspect arising due to the creation of artificial substances and interventions that would not have otherwise occurred and to which natural systems and entities are unable to adjust. Such unnatural impacts on the biosphere and ecosystems lie at the heart of the ecological crisis, such as the on-going mass extinction of species. Thus, not just the scale of human activity (e.g. quantity of waste, population size) but also its qualities determine the consequences for the environment and functioning of ecosystems. The importance of the form of intervention is why technology is never neutral, and also what determines the extent to which something is unnatural (Deckers, 2021). Humans are then engaged in processes of change not equilibrium and stability.

The development of ecology in the 1970s brought new insights into the structure of complex systems and their interconnections. This was mainly driven by the realisation of the disruptive impact of human activities on ecosystems’ structure and function, which in turn affected human systems (Spash and Smith, 2019). Contrary to previous views of ecosystems as isolated, self-regulating and stable systems, they became recognised as complex and dynamic open systems. The potentiality to change ecosystem structure dramatically following systems collapse was highlighted by Holling (2009[1986]), who described this organisation and reorganisation process as part of a cyclical pattern. The evolution of an ecosystem or population can be chaotic with abrupt changes in trajectory. Besides the “horizontal limits”, mentioned earlier, “vertical limits” are emergent and arise due to interactions between ecological levels and dependencies between different components of the system (Devictor 2017). Human activities interacting with ecosystems have uncertain and indeterminate consequences for their structure and function. In the face of such partial ignorance and indeterminacy over human intervention, public policy would better be precautionary than risk taking (Stirling, 2017), and society prepared to adapt rather than lock itself in to a specific “optimal” pathway (e.g. infrastructure, technologies, energy and materials).

IV. The social dimension of economics

Social reality is the dynamic outcome of human practices from which it emerges and by which it is reproduced (Lawson, 2006). However, emergence means that social structure while dependent upon is not reducible to human practices (e.g. individual behaviour). Social structure enables coordinated interactions through collective practices. Collective practices refer to accepted ways of doing things in a community, and can emerge in various ways, notably because of their functionality, but also simply by chance or repeated occurrences (Lawson 2012). They form a basis for individuals to form expectations as to the appropriate course of actions to follow in order to coordinate with others. Interconnected obligations and rights may evolve that are relationally constituted and constitutive of social positions (Lawson 2006). For example, the positions of employer and employee exist in relation to each other and entail associated rights and obligations for both parties.

How, and to what degree the actions of agents are pre-determined by social structure, as opposed to being autonomous, is a fundamental point of debate. Mainstream economics reduces “society” to being an aggregation of individuals who act purely out of individual selfinterest (i.e. maximising their own personal utility) and are basically identical (both ethically and psychologically). As such it cannot explain the historical variety in social provisioning systems – production and consumption patterns – throughout history and across contemporary cultures. This requires understanding human variety and social relations as emergent and mediated through institutions and values that interact with, shape and form economic structures. Human action is always relative to a particular context in space and time and set within social structure. While agency is restricted it is neither denied nor entirely pre-determined.

Following Jessop’s (2001, 2005, 2007) “strategic-relational” approach, structure and agency can be viewed as dialectical concepts beyond an artificial dualism. He considers structures as strategically selective, but not absolutely constraining, leaving some room for agency. His main argument is that structures generally tend to favour some actions over others. In this sense, he emphasize the importance of a strategic context for action: agents will strategically reflect on their (usually incomplete) understanding of structural constraints and opportunities and act accordingly. Action is therefore both structured, and “structuring” as it tends to reproduce structures and their patterns of strategic selectivity. These recursive interactions between agency and structure create tendencies because structures are not absolutely constraining. There is then only relative and temporary stability to patterns of strategic selectivity, with the possibility for actions to circumvent structural constraints or change them.

As structures are the product of human agency, they are dynamic and are open to change (Lawson, 2012). Through their practices and interactions, humans continuously (and often unintentionally) reproduce and transform the social structures that influence these practices. The employer-employee relation for example has evolved, with a changing set of rights and obligations as unions have negotiated better working conditions. Likewise, the social positioning of women has changed as emancipatory movements have fought for equal rights as citizens.

That major social structures can change (if generally only slowly) is evident from the contrast between modern society and archaic societies. For example, Sahlins (1972) described how hunter-gatherer economies were characterised by a high degree of underproduction and disdain towards accumulating material possessions. Modern industrialised societies promote over production and waste in a throwaway, fashion conscious mode of conspicuous consumption. Thus, modern consumer behaviour is not an ahistorical trait of human nature, but a specific form of social structure which helps reproduce the capitalist mode of production. The change in economic and social structure during the rise of capitalism and associated market economies has sometimes been described as a change in terms of the extent to which “the economy” is embedded in society. A prime example is the work of Karl Polanyi (1957) which argues that such modern market economies should be understood using a “formal” economic approach (i.e. individual choice in price-making markets). He regards most of human history as having been spent in “primitive” economies, where market exchange was largely or totally absent, and distribution occurred via reciprocity and kinship groups (Polanyi, 1957). Economic (provisioning) activities were described as being embedded in social relations and institutions. Understanding such economies required a “substantive” approach to economics in contrast to the formal approach, which he accepted as valid only for modern economies. The latter are governed by rational logic, efficiency, self-interest and prices which he believes means they can be regarded as disembedded from social relations (Gemici 2008; Polanyi, 1957).

While Polanyi highlights aspects of institutional differences between capitalist market economies and past economies, the division he draws between socially embedded primitive economies and socially disembedded modern economies is erroneous and only serves to reify the utopia of the “self-regulating market” that he painfully attempted to deconstruct (Spash, 2019; Gemici, 2015). The notion of (dis-)embeddedness fails to capture the changing qualities of social provisioning, and ultimately denies their social aspects. This encourages the separation of the social and economic, rather than their conceptual distinction and actual connection. Modern market economies are instituted differently than their historical counterparts, but market relations remain embedded-in, and built upon networks of social relations (Granovetter, 1985).

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Price-making markets have little, or in fact nothing, in common with perfectly competitive markets, where each firm has no power to set prices or control other factors of production. Actual market economies evidence oligopoly and monopoly power institutionalised in the corporation. Prices are the result of power relations and that includes the power to structure markets and regulations in ones own favour. Multi-national corporations and the Davos elite do not wait to be regulated; they lobby and influence government action in their favour opting for self-regulation when other choices are unavailable.

Power in the market place also means creating demand for products. Large firms have means to manipulate social attitudes, and therefore to manage what consumers buy and at what price (Galbraith, 1979; Kapp, 1978 [1963]; Spash and Dobernig, 2017). Promotion of dissatisfaction is the essence of modern marketing via normalising comparison with others, status-seeking (i.e. keeping up with the Jones’s), fashions, in-group/out-group identity, shopping as therapeutic and possessing the latest technology. Rather than industrial production leading to material satiation, and the need for less work, the consumer society has evolved with more work and more disposable products. This process has long been recognised as involving conspicuous consumption (Veblen 1991 [1899]) and manipulation by corporate and business enterprises (Galbraith 1969 [1958], 2007 [1967]; Kapp 1963).

V. Philosophy of economic science

Mainstream economics has attempted to employ and maintain discredited philosophical approaches to conducting itself as a science. On the one hand it aspires to finding objective truths through empiricism as if theory was unnecessary and data could speak for themselves. On the other it promotes a form of deductivism that places abstract mathematical models at its core with unquestionable foundational axioms divorced from any reality. Sometimes the two are combined in a pseudo logical empiricist approach,1 or claims to some vague form of positivism with epistemological positions such as a fact-value dichotomy, a naïve objectivism and the search for universal laws (Spash, 2012). None of this has been neutral, but has rather hidden an implicit conceptualisation of reality. Thus, the particular worldview of mainstream economics has tended to favour regarding economies as physically isolated, mechanical, self-regulating, equilibrating and predictable systems. Leaving an ontology to be defined by a methodology (whether deductivist or empiricist) means falling foul of the epistemic fallacy. That is, objects and their relationships only become accepted as valid, or even recognisable as relevant, if they conform to the methodology, e.g. if something cannot be measured it is ignored, effectively not existing in the analytical approach. Thus mainstream economics is blinkered by its methodological choices and methods (e.g. cost-benefit analysis) come to dictate understanding of reality (e.g. Nature must have a monetary price to be of value). In addition, contrary to the approaches of mainstream economists, the second half of the 20th Century saw a general recognition that science operates in a social context, and that our knowledge is fallible. However, the failings of mainstream philosophy of science are not the primary concern here (see Tacconi, 1998; Lawson, 2006; Spash, 2012, 2020), but rather we aim to suggest what would be a way forward in relation to SEE.

The search for philosophical foundations led Tacconi (1998) to propose a combination of post-normal science and constructionism. However, in its strong form constructionism denies realism and is incompatible with the ontological commitments of ecological economists to a biophysical reality independent of the human mind. Post-normal science is also not a philosophy of science, but an epistemological critique of traditional naïve objectivism in the natural sciences and its transference into the social sciences. As Tacconi (1998) seems to recognise his mixture of inconsistent approaches results in contradictions. Puller and Smith (2017: 19) summarise the problem as follows:

“Ecological economists seem to be searching for a way to combine a perception of the world as independent of our knowledge, while at the same time admitting the social construction of knowledge and the role of meaning-making in the social realm”

They then detail how a philosophical well-grounded approach can be found in critical realism, which combines ontological realism with epistemic relativism.

The form of critical realism of relevance here is associated with the early works of Roy Bhaskar (1975 [2008], 1979). As explored by Lawson (1997) in relation to economics, a strong emphasis is placed on the importance of addressing ontological issues. More specifically critical realism propose a depth ontology that goes beyond empiricist and actualist philosophies to give place to structure and the causal powers of their mechanisms. Structures and mechanisms make events happen. What is actualised is merely part of the potential and the result of which mechanisms and counter mechanisms are operative and which ones dominate. The empirically observable is then merely a subset of what is actualised based on human ability to take events into account.

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While social structures are human constructs they are no less real for that. Capitalism is, for example, a recognisable system with real mechanisms and effects (as described earlier). Reality is further conceived as stratified, with hierarchically ordered strata, starting from a physical dimension, followed by chemical, biological, social and economic dimensions (Collier 1994b). All biological entities are physical, but physical structure is independent of biological structure. Similarly, the co-dependent social and economic strata are dependent upon the biological, the chemical and physical, but not vice versa. However, as consistent with the earlier discussion, higher strata are irreducible to lower from which they are emergent. Similarly, Georgescu-Roegen (2009[1979]) exemplifies such properties by considering how an elephant is composed of physical and biological structure but its behaviour (an emergent property) cannot be explained purely form physics or chemistry. As we have noted society is not simply the aggregation of the individuals of which it is composed.

This stratified and layered understanding of reality also results in a concept of causality that differs from traditional realist approaches. Instead of being explicable as event regularity, critical realism explains actualised events using the concept of causal powers of mechanisms based on structures and mechanisms (Collier 1994a). In open systems, there are multiple mechanisms at play that can either enable or prevent the actualisation of potentialities. Rather than seeking universal and timeless “laws” of Nature there are law like conditions where certain tendencies of mechanisms become actualized (Puller and Smith, 2017).

Bhaskar describes the scientific process as “the social production of knowledge by means of knowledge” (Collier, 1994a: 54). In this view, “transitive” knowledge or thought objects, provide the concepts, models and theories that are simultaneously the raw material and the product of science, and which seek to explain “intransitive” reality or real objects (Sayer, 2010). Science seeks descriptive and explanatory knowledge if natural and social entities, phenomena, events and their relationships. While social structure is subject to change it is not so easily or quickly, it has durability (Lawson, 2006), and that means the same transitive / intransitive approach to understanding knowledge can be applied. Those who emphasise change as undermining all knowledge (e.g. Goddard, Kallis and Norgaard, 2019) fail to allow for durable structure and mechanisms which are the essence of the ability to know anything. There is also a tendency to over play the role of social scientists in affecting their objects of study.

As Sayer (2010: 33) states “social scientists and historians produce interpretations of objects, but do not generally produce the objects themselves”. He argues that a clear distinction is required between an object of inquiry and our knowledge of it, which consists in the language, concepts or images that we use to describe reality. Thought objects are therefore referents to their “real” counterparts, but he regards knowledge of true correspondence as impossible, i.e. all knowledge is fallible.

Experience of the external world consists of ideas (percepts, sense data, qualia) involving socially contextual conceptualisation (e.g. language, culture, prior knowledge). The extension of knowledge involves reconceptualization and involves the role of metaphors and analogies which relate to existing ways of thinking e.g. the current prevalence of computing metaphors and analogies. The transitive or thought object in critical realism involves weak constructionism and is termed epistemic relativity or (sometimes) epistemological relativism. This weak constructionism contrast with the radical relativism of strong constructionism where knowledge is simply a matter of shared conventions among researchers. In such accounts the relation to real structures, mechanisms and objects is regarded as irrelevant or even the existence of a reality beyond the human mind is denied.

Although knowledge is fallible, it is not equally so. Choices can be and are made between difference explanations and descriptions. Representations of the world are of practical use and their employment in our actions and practices has consequences which can be evaluated, help us navigate it and enable us to have an impact on it. We judge what works well and what does not. In Sayer’s (2010: 48) terms intersubjectively shared conventions must prove themselves to be practically adequate, so that our expectations about the world and results of our actions are actually realised. This is more than just the usefulness of a theory, because the adequacy of knowledge is also judge in terms of descriptive realism relative to the structure of reality. Thus critical realism is distinct from instrumentalism (such as found in American Pragmatism) because the aim is not simply prediction but causal explanation. Prediction can be equated with explanation only if one assumes event regularity, which fails to hold in open systems like economies. Indeed, prediction is unnecessary for the explanation of a phenomenon (Collier, 1994a).

Investigation of open systems requires a distinct approach from the idealised laboratory experiment which tries to create a partially isolated system through controlling mechanisms. The limited applicability of such methods for social phenomenon means alternative methods are typically required, such as the use of counterfactuals. However, as Danemark et al. (2002b) point out, there is no specific “method of critical realism”. Indeed the method for investigation is relative to the object of study and research question. Critical realism also recognises a wider range of modes of inference than the traditional induction and deduction. It includes the roles of retroduction and abduction (see Danermark et al., 2002a), as forming part of the process of providing causal explanation, which opens up the methodological toolbox of social sciences and changes understanding of methodology as supposedly (but not actually) conducted in traditional sciences. An inference always implies a form of generalisation and can either refer to extrapolation in an empiricist sense or to conceptualisation of the “hidden essence of things” in a realist sense. Danemark et al. (2002a: 100) suggest five strategies that can help us discern the hidden underlying structures and mechanisms: (1) counterfactual thinking; (2) social experiments; (3) studies of pathological cases; (4) studies of extreme cases and (5) comparative studies.

There are also grounds for judging which methods are appropriate. Methods and related theories must be adequate to their objects of study (Puller and Smith, 2017; Spash, 2012). For example, evolutionary theory, and its associated tools for analysis, is inadequate for understanding the operation of a mechanical clock. Thus, Hodgson’s (2008) argument that evolutionary theory should replace mechanistic theory in economics is flawed because it simply repeats the same mistaken belief that all objects of relevance to economic must be of one form (i.e. evolutionary rather than mechanical). Similarly the imposition of mathematical formalism as defining economics fails not because the methods is inherently wrong but because it cannot address the object of study, i.e. the characteristics of economic systems. More specifically quantifying everything with arithmomorphic concepts excludes all qualitative aspects (Georgescu-Roegen, 2009[1979]). This indicates the need for a structured methodological pluralism, where theories and methods are informed by the qualities of the object under study and cooperation occurs between those with common understanding (Spash, 2012).

A final aspect of note is the emancipatory role of social science research. Investigating the real (structural) cause(s) of a social phenomenon means the explanation of the social scientist will inevitably clash with the existing ideas of some people, that is new evidence may appear, theories brought into question, previously confirmed positions be undermined. Such is the nature of scientific research. Social scientists criticise those holding fallacious ideas. If there are institutions holding those false ideas then the research is also a criticism of them and the social scientists has a role in removing wrong beliefs. Collier (1994a) argues the role of the social scientist is not just to criticize but should be to undermine institutions promoting false ideas. Emancipation is then seen as transforming structure. When considering environmental research the case being made here is clear because research showing beliefs about the benefits of economic growth, fossil fuels, chemicals, plastic, asbestos, genetic modification and so on, to be false then criticise the institutions promoting such things. Research is neither neutral nor value free and facts have ethical implications for both the researcher and society.

VI. Conclusion

The multiple social, ecological and economic crises of our age, and the failings of mainstream economics to explain or address the structural causes of these crises, means new approaches to economics are essential. SEE has been outlined here as a necessary and emerging paradigm. Economics has become increasingly detached from its object of study and the orthodoxy is fundamentally flawed as a social science because it advocates a prescriptive methodology while lacking any serious engagement with epistemology and ontology. The resulting epistemic fallacy means it promotes a narrow implicit world view as if a factual truth. Failures here include imposition of limited quantitative methods and mathematically formalist methodology that exclude qualitative aspects of reality and the use of isolated/closed systems thinking for an open system reality.

Economies are the socially structured institutional process involving the interaction of humans with the natural world. Social reproduction is achieved only within the bounds of the given structure and mechanisms of biophysical reality. The form and scale of economic processes depends upon a set of spatially and temporally contextual social institutions. That is economics concerns the form and function of social provisioning process which can take various forms and are far from limited to price-making market or capitalist institutions. Starting from processes of social provisioning, economics becomes the study of plural historical, actual and potential economies with their underlying institutional arrangements and biophysical basis rather than a singular abstract idealised “economy”. This broadens analysis not only to what institutions, norms and values shape the economic process and agents’ behaviours, but also to what are socially desirable and ecologically sustainable systems of social provisioning. Economics is neither value free nor ethically neutral but its stance on both should be made explicit. It must also be realist about how economies are reproduced via social and ecological mechanisms. That means linking to both power relations and ethical and just means of provisioning, but also material and energy throughput that respects others (human and non-human). The aspirations of economists to provide for the well-being of humanity, if taken seriously, mean a revolutionary change in economics is long overdue.

# 2AC

## Emerging Technology ADV

## OFF

### Aymara CP---2AC

#### Over-emphasis on the discursive elements of difference trades-off with recognizing hierarchies of power created by structural conditions.

Sandy Grande 04, “Red Pedagogy, Native American Social and Political Thought”, https://academictrap.files.wordpress.com/2015/03/sandy-grande-red-pedagogy-native-american-social-and-political-thought.pdf

In a postmodern world where "everything is everything," critical scholars critique the practice of framing questions of "difference" exclusively in terms of the cultural and discursive (e.g., language, signs, tropes), cutting them off from the structural causes and material relations that create "difference." They argue that reducing political struggles to discursive arguments not only displaces explanation—knowledge for social change—with resignification but also authorizes a retreat from social and political transformation. According to McLaren (1998, 242) such postmodern tactics promote "an ontological agnosticism" that not only relinquishes the primacy of social transformation but also encourages a kind of "epistemological relativism" that calls for the tolerance of a wide range of meanings without advocating any single one of them. Therefore, critical scholars contest the overblurring of boundaries, the reduction of difference to matters of discourse, and the emphasis on local over grand narratives, contending that such "tactics" serve to obfuscate and, in effect, deny the existing hierarchies of power.

#### Their attempt to make linguistic “safe spaces” reinforces anti-native violence

Luhui Whitebear-Cupp 16, “Oppression from Within: AIM, Heteropatriarchy, Settler Colonialism, and the Death of Anna Mae Aquash”, https://ir.library.oregonstate.edu/concern/graduate\_thesis\_or\_dissertations/k643b5580

Part of the dialogue about what happened must look at the ways in which spaces are occupied. By being a part of the American Indian Movement, the perception can be made that this was a safe circle to belong to. However, it can be argued that this sense of safety is based on assumptions. Louis Esme Cruz (2011) points out that the notion of “safe spaces” becomes a process of asserting power and privilege that in turn creates a hostile space instead in his article “Medicine Bundle of Contradictions”. As Cruz (2011) explains, “‘safety’ is a value worth looking at. Being a ‘safe place’ implies that harm will not happen while people are sharing that space” (p. 53). AIM can be viewed as an avenue in which a “safe space” was created to resist a society that systematically oppresses Indigenous people. Even with the best intentions, there was still hostility felt and power used in a manner that oppressed some within the circle of AIM. Andrea Smith (2013) challenges us to look beyond the notion of “safe spaces” because “The problem with safe space is the presumption that a safe space is even possible” (np). This presumption can leave individuals in very dangerous, sometimes lethal, situations as can be seen with Anna Mae.

#### Decolonizing discourse is a move to settler innocence.

Eve Tuck & K. Wayne Yang 12, “Decolonization is not a metaphor”, https://www.researchgate.net/publication/277992187\_Decolonization\_Is\_Not\_a\_Metaphor

There is a long and bumbled history of non-Indigenous peoples making moves to alleviate the impacts of colonization. The too-easy adoption of decolonizing discourse (making decolonization a metaphor) is just one part of that history and it taps into pre-existing tropes that get in the way of more meaningful potential alliances. We think of the enactment of these tropes as a series of moves to innocence (Malwhinney, 1998), which problematically attempt to reconcile settler guilt and complicity, and rescue settler futurity. Here, to explain why decolonization is and requires more than a metaphor, we discuss some of these moves to innocence: i. Settler nativism ii. Fantasizing adoption iii. Colonial equivocation iv. Conscientization v. At risk-ing / Asterisk-ing Indigenous peoples vi. Re-occupation and urban homesteading Such moves ultimately represent settler fantasies of easier paths to reconciliation. Actually, we argue, attending to what is irreconcilable within settler colonial relations and what is incommensurable between decolonizing projects and other social justice projects will help to reduce the frustration of attempts at solidarity; but the attention won’t get anyone off the hook from the hard, unsettling work of decolonization. Thus, we also include a discussion of interruptions that unsettle innocence and recognize incommensurability.

### Queerness K---2AC

#### Utopianism is necessary – queer negativity theory serves no practical application.

Ruti 17—Professor of critical theory and of sexual diversity studies at the University of Toronto [Mari, *The Ethiscs of Opting Out: Queer Theory’s Defiant Subjects*, New York: Columbia University Press, p. 88-93]

Let me put some of my cards on the table right away: I think that this critique misses its mark quite drastically in the sense that, whatever faith Munoz and Dean might have in new social collectivities, they do not, as Edelman implies, support liberal humanism's dreams of redemption through greater inclusion; they do not believe that simply allowing previously marginalized subjects to enter the existing system would miraculously conjure away the system's problems. Quite the contrary, both are deeply critical of the homonormative quest for social respectability that characterizes much of liberal gay and lesbian politics. In Cruising Utopia (2009), Munoz in fact explicitly condemns homonormative gays and lesbians who allow themselves to be seduced by the material and symbolic rewards of neoliberal capitalism. One could of course point out that Edelman could not have known in 2006 what Munoz was going to say in a book that was published three years later. But this does not change the fact that Edelman's accusation rings false for the simple reason that it is aimed at two progressive critics who are so well versed in the basics of posthumanist theory that they in many ways take the demise of the humanist self for granted. I cannot think of a single critic within queer theory who naively endorses the sovereign subject of liberal humanism. If anything-as I have already noted and will discuss in greater detail in the next chapter-the field, like the rest of American progressive theory, seems to be caught up in a compulsive cycle of needing to repeatedly expunge this subject even when very little of it remains. Furthermore, the idea that utopian thinking is by definition liberal, that there is no room for utopianism within posthumanist paradigms, is an indication of the extent to which certain strands of posthumanist theory have solidified into lifeless patterns that no longer serve a critical function; in such instances, the monotonous repetition of poststructuralist dogmas-in Edelman's case, "hopefulness bad, negativity good" (which, notably, has the same starkly binaristic structure as Butler's "autonomy bad, relationality good")-serves to bar alternative perspectives that might revitalize contemporary theory by allowing us to think beyond bad-good archetypes. In this sense, Munoz's statement regarding Edelman's "well-worn war chest of poststructuralist pieties" (2009, 10) is right on target, as is his rebuke of the "various romances of negativity" that have, within queer theory, become so predictable as to be "resoundingly anticritical" (12). If Edelman's accusations against Munoz are relatively easy to dismiss, the reverse is not the case, for Munoz's indicts Edelman for perpetuating a clandestine-and therefore all the more insidious-form of white gay male identity politics: a politics that flees from the (supposedly) contaminating impact that a consideration of gender, racial, economic, and global inequalities might have on queer theory and that refuses to recognize that the white gay male subject is just as "identitarian" as any other subject. Munoz asserts that the only reason Edelman is able to dodge the specter of identity politics is that, in Edelman's work, white masculinity falsely configures-as it has always done-the "universal;' "neutral" subject position that (seemingly) resides beyond identitarian concern. More generally speaking, Munoz believes that antisocial queer theories "reproduce a crypto-universal white gay subject that is weirdly atemporal" (2009, 94). Hiram Perez makes an analogous point when he criticizes not only the ways in which whiteness, in the work of many white gay men, "makes itself transparent" (2005, 187) but also the ways in which poststructuralist rhetoric is used to level charges of essentialism against anyone who dares to call attention to this problem. Along the same lines, Halberstam rails against the "invisible identity politics of white gay men," adding that when "white men (gay or straight) pursue the interests of white men (gay or straight), there's a heap of trouble for everyone else" (2006, 231). Munoz adds a final blow when he concludes that "imagining a queer subject who is abstracted from the sensuous intersectionalities that mark our experience . . . is a ticket whose price most cannot afford" (2009, 96). The battle lines are thus clearly drawn between those-(some) white gay men-for whom sexuality is the sole axis of theoretical investigation and those for whom sexuality is just one among many such axes. Munoz does not pull his punches, notoriously calling-in the course of the PMLA exchange-the antisocial thesis "the gay white man's last stand" (2006, 825). In Cruising Utopia, he in turn argues that Edelman "anticipates and bristles against his future critics with a precognitive paranoia'' by predicting that some identitarian critics might contest his polemic by arguing that it is "determined by his middle-class white male positionality" (2009, 95). Munoz's candid assessment of Edelman's efforts to inoculate himself against this critique is that it "does not do the job'' (95). The stakes of Munoz's accusation are high, revolving around the question of who can afford to relinquish all hope of a better future in the way that Edelman's rendering of queer negativity-with includes the derisive critique of the child as a sentimental emblem of reproductive futurity that I mentioned in chapter 1-calls for. Munoz suggests that only those who "have" a future in the first place have the luxury of flirting with the idea of rejecting it; conversely, those whose futures are concretely (empirically) threatened are unlikely to advocate the annihilation of these futures. More specifically, Munoz contends that it would be disastrous to "hand over futurity to normative white reproductive futurity," arguing that the fact that this version of futurity is currently winning "is all the more reason to call on a utopian political imagination that will enable us to glimpse another time and place: a 'not-yet' where queer youths of color actually get to grow up" (2009, 95-96). In this manner, Munoz alerts us to the fact that while Edelman elevates the child to an icon of reproductive futurity, "the future" has never been the province of all children; that is, though Munoz agrees with the broad outlines of Edelman's critique of reproductive futurity, he reminds us that this critique does not apply to the vast majority of the world's children, that "racialized kids, queer kids, are not the sovereign princes of futurity'' (95). Like Edelman, Munoz admits that the world as it stands is "not enough" (2009, 96), not able to offer adequate resources for subjective flourishing. But in his view, the way to deal with the world's insufficiency and messiness is not to reject the future wholesale but rather to reconfigure its parameters. This, Munoz asserts, can only be done by resurrecting "various principles of hope that are, by their very nature, relational" (94). As he elaborates, relationality may not always be "pretty," "but the option of simply opting out of it, or describing it as something that has never been available to us, is imaginable only if one can frame queerness as a singular abstraction that can be subtracted and isolated from a larger social matrix" (94).

#### Material impacts matter, especially extinction.

Singer 17 – Dr. Peter Singer, Ira W. DeCamp Professor of Bioethics at Princeton University and Laureate Professor at the School of Historical and Philosophical Studies at the University of Melbourne, PhD from Oxford University, Ethics in the Real World: 82 Brief Essays on Things That Matter, p. 184-187

We won’t try to address those questions here. Instead, we’ll focus on this question: How bad would human extinction be?

One very bad thing about human extinction would be that billions of people would likely die painful deaths. But in our view, this is, by far, not the worst thing about human extinction. The worst thing about human extinction is that there would be no future generations.

We believe that future generations matter just as much as our generation does. Since there could be so many generations in our future, the value of all those generations together greatly exceeds the value of the current generation.

Considering a historical example helps to illustrate this point. About 70,000 years ago, there was a supervolcanic eruption known as the Toba eruption. Many scientists believe that this eruption caused a “volcanic winter” which brought our ancestors close to extinction. Suppose that this is true. Now imagine that the Toba eruption had eradicated humans from the Earth. How bad would that have been? Some 3,000 generations and 100 billion lives later, it is plausible to say that the death and suffering caused by the Toba eruption would have been trivial in comparison with the loss of all the human lives that have been lived from then to now, and everything humanity has achieved since that time.

Similarly, if humanity goes extinct now, the worst aspect of this would be the opportunity cost. Civilization began only a few thousand years ago. Yet Earth could remain habitable for another billion years. And if it is possible to colonize space, our species may survive much longer than that.

Some people would reject this way of assessing the value of future generations. They may claim that bringing new people into existence cannot be a benefit, regardless of what kind of life these people have. On this view, the value of avoiding human extinction is restricted to people alive today and people who are already going to exist, and who may want to have children or grandchildren.

Why would someone believe this? One reason might be that if people never exist, then it can’t be bad for them that they don’t exist. Since they don’t exist, there’s no “them” for it to be bad for, so causing people to exist cannot benefit them.

We disagree. We think that causing people to exist can benefit them. To see why, first notice that causing people to exist can be bad for those people. For example, suppose some woman knows that if she conceives a child during the next few months, the child will suffer from multiple painful diseases and die very young. It would obviously be bad for her child if she decided to conceive during the next few months. In general, it seems that if a child’s life would be brief and miserable, existence is bad for that child.

If you agree that bringing someone into existence can be bad for that person and if you also accept the argument that bringing someone into existence can’t be good for that person, then this leads to a strange conclusion: being born could harm you but it couldn’t help you. If that is right, then it appears that it would be wrong to have children, because there is always a risk that they will be harmed, and no compensating benefit to outweigh the risk of harm.

Pessimists like the nineteenth-century German philosopher Arthur Schopenhauer or the contemporary South African philosopher David Benatar accept this conclusion. But if parents have a reasonable expectation that their children will have happy and fulfilling lives, and having children would not be harmful to others, then it is not bad to have children. More generally, if our descendants have a reasonable chance of having happy and fulfilling lives, it is good for us to ensure that our descendants exist, rather than not. Therefore we think that bringing future generations into existence can be a good thing.

The extinction of our species—and quite possibly, depending on the cause of the extinction, of all life—would be the end of the extraordinary story of evolution that has already led to (moderately) intelligent life, and which has given us the potential to make much greater progress still. We have made great progress, both moral and intellectual, over the last couple of centuries, and there is every reason to hope that, if we survive, this progress will continue and accelerate. If we fail to prevent our extinction, we will have blown the opportunity to create something truly wonderful: an astronomically large number of generations of human beings living rich and fulfilling lives, and reaching heights of knowledge and civilization that are beyond the limits of our imagination.

#### Catastrophic representations of warming are accurate and necessary to break complacency and mobilize effective large-scale action

Wells 19 – David Wallace-Wells, National Fellow at the New America Foundation, Columnist and Deputy Editor at New York Magazine and Author of the forthcoming “The Uninhabitable Earth: Life After Warming”, Former Deputy Editor at the Paris Review, “Time to Panic”, New York Times, 2-16, <https://www.nytimes.com/2019/02/16/opinion/sunday/fear-panic-climate-change-warming.html> [language modified]

This, to me, is progress. Panic might seem counterproductive, but we’re at a point where alarmism and catastrophic thinking are valuable, for several reasons.

The first is that climate change is a crisis precisely because it is a looming catastrophe that demands an aggressive global response, now. In other words, it is right to be alarmed. The emissions path we are on today is likely to take us to 1.5 degrees Celsius of warming by 2040, two degrees Celsius within decades after that and perhaps four degrees Celsius by 2100.

As temperatures rise, this could mean many of the biggest cities in the Middle East and South Asia would become lethally hot in summer, perhaps as soon as 2050. There would be ice-free summers in the Arctic and the unstoppable disintegration of the West Antarctic’s ice sheet, which some scientists believe has already begun, threatening the world’s coastal cities with inundation. Coral reefs would mostly disappear. And there would be tens of millions of climate refugees, perhaps many more, fleeing droughts, flooding and extreme heat, and the possibility of multiple climate-driven natural disasters striking simultaneously.

There are many reasons to think we may not get to four degrees Celsius, but globally, emissions are still growing, and the time we have to avert what is now thought to be catastrophic warming — two degrees Celsius — is shrinking by the day. To stay safely below that threshold, we must reduce greenhouse gas emissions by 45 percent from 2010 levels by 2030, according to the United Nations report. Instead, they are still rising. So being alarmed is not a sign of being hysterical; when it comes to climate change, being alarmed is what the facts demand. Perhaps the only logical response.

This helps explain the second reason alarmism is useful: By defining the boundaries of conceivability more accurately, catastrophic thinking makes it easier to see the threat of climate change clearly. For years, we have read in newspapers as two degrees of warming was invoked as the highest tolerable level, beyond which disaster would ensue. Warming greater than that was rarely discussed outside scientific circles. And so it was easy to develop an intuitive portrait of the landscape of possibilities that began with the climate as it exists today and ended with the pain of two degrees, the ceiling of suffering.

In fact, it is almost certainly a floor. By far the likeliest outcomes for the end of this century fall between two and four degrees of warming. And so looking squarely at what the world might look like in that range — two degrees, three, four — is much better preparation for the challenges we will face than retreating into the comforting relative normalcy of the present.

The third reason is while concern about climate change is growing — fortunately — complacency remains a much bigger political problem than fatalism. In December, a national survey tracking Americans’ attitudes toward climate change found that 73 percent said global warming was happening, the highest percentage since the question began being asked in 2008. But a majority of Americans were unwilling to spend even $10 a month to address global warming; most drew the line at $1 a month, according to a poll conducted the previous month.

Last fall, voters in Washington, a green state in a blue-wave election, rejected even a modest carbon-tax plan. Are those people unwilling to pay that money because they think the game is over or because they don’t think it’s necessary yet?

This is a rhetorical question. If we had started global decarbonization in 2000, according to the Global Carbon Project, we would have had to cut emissions by only about 2 percent per year to stay safely under two degrees of warming. Did we fail to act then because we thought it was all over already or because we didn’t yet consider warming an urgent enough problem to take action against? Only 44 percent of those surveyed in a survey last month cited climate change as a top political priority.

But it should be. The fact is, further delay will only make the problem worse. If we started a broad decarbonization effort today — a gargantuan undertaking to overhaul our energy systems, building and transportation infrastructure and how we produce our food — the necessary rate of emissions reduction would be about 5 percent per year. If we delay another decade, it will require us to cut emissions by some 9 percent each year. This is why the United Nations secretary-general, António Guterres, believes we have only until 2020 to change course and get started.

A fourth argument for embracing catastrophic thinking comes from history. Fear can mobilize, even change the world. When Rachel Carson published her landmark anti-pesticide polemic “Silent Spring,” Life magazine said she had “overstated her case,” and The Saturday Evening Post dismissed the book as “alarmist.” But it almost single-handedly led to a nationwide ban on DDT.

Throughout the Cold War, foes of nuclear weapons did not shy away from warning of the horrors of mutually assured destruction, and in the 1980s and 1990s, campaigners against drunken driving did not feel obligated to make their case simply by celebrating sobriety. In its “Doomsday” report, the United Nations climate-change panel offered a very clear analogy for the mobilization required to avert catastrophic warming: World War II, which President Franklin Roosevelt called a “challenge to life, liberty and civilization.” That war was not waged on hope alone.

But perhaps the strongest argument for the wisdom of catastrophic thinking is that all of our mental reflexes run in the opposite direction, toward disbelief about the possibility of very bad outcomes. I know this from personal experience. I have spent the past three years buried in climate science and following the research as it expanded into ever darker territory.

The number of “good news” scientific papers that I’ve encountered in that time I could probably count on my two hands. The “bad news” papers number probably in the thousands — each day seeming to bring a new, distressing revision to our understanding of the environmental trauma already unfolding.

I know the science is true, I know the threat is all-encompassing, and I know its effects, should emissions continue unabated, will be terrifying. And yet, when I imagine my life three decades from now, or the life of my daughter five decades from now, I have to admit that I am not imagining a world on fire but one similar to the one we have now. That is how hard it is to shake complacency. We are all living in delusion, unable to really process the news from science that climate change amounts to an all-encompassing threat. Indeed, a threat the size of life itself.

#### Particularly, its key to NETs.

Fred Krupp et al. 19. Nathaniel [Keohane](https://search-proquest-com.libproxy2.usc.edu/indexinglinkhandler/sng/au/Keohane,+Nathaniel/$N?accountid=14749), and Eric Pooley. \*President of Environmental Defense Fund, a United States-based nonprofit environmental advocacy group. \*\*Vice president for international climate at the Environmental Defense Fund. He used to be in academia at Yale University and served in the White House as special assistant to President Barack Obama. \*\*\*Senior Vice President, Strategy & Communications at the Environmental Defense Fund. 4-1-2019. "Less Than Zero: Can Carbon-Removal Technologies Curb Climate Change?" Foreign Affairs. https://search-proquest-com.libproxy2.usc.edu/docview/2186099162/594BA6C689D844ABPQ/13?accountid=14749/.

When it comes to generating support for climate policy, a warranted sense of alarm is only half the battle. And the other half-a shared belief that the problem is solvable-is lagging far behind. The newfound sense of urgency is at risk of being swamped by collective despair. A scant six percent of Americans, according to the Yale study, believe that the world "can and will" effectively address climate change. With carbon dioxide emissions from fossil fuels having risen by an estimated 2.7 percent in 2018 and atmospheric concentrations of carbon dioxide, which will determine the ultimate extent of warming, at their highest level in some three million years, such pessimism may seem justified-especially with a climate change denier in the White House. But it is not too late to solve the global climate crisis. A decade of extraordinary innovation has made the greening of the global economy not only feasible but also likely. The market now favors clean energy: in many U.S. states, it is cheaper to build new renewable energy plants than to run existing coal-fired power plants. By combining solar power with new, efficient batteries, Arizona and other sunny states will soon be able to provide electricity at a lower cost per megawatthour than new, efficient natural gas plants. Local, regional, and federal governments, as well as corporations, are making measurable progress on reducing carbon pollution. Since 2000, 21 countries have reduced their annual greenhouse gas emissions while growing their economies; China is expected to see emissions peak by 2025, five years earlier than it promised as part of the negotiations for the Paris climate agreement in 2015. At the UN climate talks held late last year in Poland, countries agreed on rules for how to report progress on meeting emission-reduction commitments, an important step in implementing the Paris accord. What's more, an entirely new arsenal is emerging in the fight against climate change: negative emission technologies, or nets. Nets are different from conventional approaches to climate mitigation in that they seek not to reduce the amount of greenhouse gases emitted into the atmosphere but to remove carbon dioxide that's already there. These technologies range from the old-fashioned practice of reforestation to high-tech machines that suck carbon out of the sky and store it underground. The window of opportunity to combat climate change has not closed-and with a push from policymakers, nets can keep it propped open for longer. THE HEAT IS ON How much time is left to avoid climate catastrophe? The truth is that it is impossible to answer the question with precision. Scientists know that human activity is warming the planet but still don't fully understand the sensitivity of the climate system to greenhouse gases. Nor do they fully comprehend the link between average global warming and local repercussions. So far, however, most effects of climate change have been faster and more severe than the climate models predicted. The downside risks are enormous; the most recent predictions, ever more dire. The Paris agreement aims to limit the increase in global average temperatures above preindustrial levels to well below two degrees Celsius, and ideally to no more than 1.5 degrees Celsius. Going above those levels of warming would mean more disastrous impacts. Global average temperatures have already risen by about one degree Celsius since 1880, with two-thirds of that increase occurring after 1975. An October 2018 special report by the un's Intergovernmental Panel on Climate Change, a body of leading scientists and policymakers from around the world, found that unless the world implements "rapid and far-reaching" changes to its energy and industrial systems, the earth is likely to reach temperatures of 1.5 degrees Celsius above preindustrial levels sometime between 2030 and 2052. Limiting warming to that level, the ipcc found, would require immediate and dramatic cuts in carbon dioxide: roughly a 45 percent reduction in the next dozen years. Even meeting the less ambitious target of two degrees would require deep cuts in emissions by 2030 and sustained aggressive action far beyond then. The ipcc report also warns that seemingly small global temperature increases can have enormous consequences. For example, the half-degree difference between 1.5 degrees Celsius and two degrees Celsius of total warming could consign twice as many people to water scarcity, put ten million more at risk from rising sea levels, and plunge several hundred million more people into poverty as lower yields of key crops drive hunger across much of the developing world. At two degrees of warming, nearly all of the planet's coral reefs are expected to be lost; at 1.5 degrees, ten to 30 percent could survive. The deeper message of the IPCC report is that there is no risk-free level of climate change. Targets such as 1.5 degrees Celsius or two degrees Celsius are important political markers, but they shouldn't fool anyone into thinking that nature works so precisely. Just as the risks are lower at 1.5 degrees Celsius than at two degrees Celsius, so are they lower at two degrees Celsius than at 2.5 degrees Celsius. Indeed, the latter difference would be far more destructive, since the damages mount exponentially as temperatures rise. To manage the enormous risks of climate change, global emissions of greenhouse gases need to be cut sharply, and as soon as possible. That will require transforming energy, land, transport, and industrial systems so they emit less carbon dioxide. It will also require reducing short-lived climate pollutants such as methane, which stay in the atmosphere for only a fraction of the time that carbon dioxide does but have a disproportionate effect on near-term warming. Yet even that will not be enough. To stabilize the total atmospheric concentration of carbon dioxide and other greenhouse gases [GHGs], the world will have to reach net negative emissions-that is, taking more greenhouse gases out of the atmosphere than are being pumped into it. Achieving that through emission reductions alone will be extremely difficult, since some emissions, such as of methane and nitrous oxide from agriculture, are nearly impossible to eliminate. Countering the emissions that are hardest to abate, and bring concentrations down to safer levels, requires technologies that actually remove carbon dioxide from the atmosphere. That's where nets come in-not as a substitute for aggressive efforts to reduce greenhouse gas emissions but as a complement. By deploying technology that removes existing carbon dioxide from the atmosphere, while accelerating cuts in emissions, the world can boost its chances of keeping warming below two degrees and reduce the risk of catastrophe. Scientists and activists have tended to regard these technologies as a fallback option, to be held in reserve in case other efforts fail. Many fear that jumping ahead to carbon dioxide removal will distract from the critical need to cut pollution. But the world no longer has the luxury of waiting for emission-reduction strategies to do the job alone. Far from being a Plan B, nets must be a critical part of Plan A. What's more, embracing nets sooner rather than later makes economic sense. Because the marginal costs of emission reductions rise as more emissions are cut, it will be cheaper to deploy nets at the same time as emission-reduction technologies rather than waiting to exhaust those options first. The wider the solution set, the lower the costs. And the lower the costs, the easier it is to raise ambitions and garner the necessary political support. THE FUTURE IS NOW Even though removing carbon dioxide from the atmosphere may sound like the stuff of science fiction, there are already nets that could be deployed at scale today, according to a seminal report released by the National Academies of Sciences, Engineering, and Medicine in October 2018. One category involves taking advantage of carbon sinks-the earth's forests and agricultural soils, which have soaked up more carbon dioxide since the Industrial Revolution than has been released from burning petroleum. To date, the growth of carbon sinks has been inadvertent: in the United States, for example, as agriculture shifted from the rocky soils of the Northeast to the fertile Midwest, forests reclaimed abandoned farmland, breathing in carbon dioxide in the process. But this natural process can be improved through better forest management-letting trees grow longer before they are harvested and helping degraded forests grow back more quickly. The large-scale planting of trees in suitable locations around the world could increase carbon sinks further, a process that must go hand in hand with efforts to curb tropical deforestation and thereby continue to contain the vast amounts of carbon already stored in the earth's rainforests. Farmland provides additional potential for negative emissions. Around the world, conventional agricultural practices have reduced the amount of carbon in soils, decreasing their fertility in the process. Smarter approaches can reverse the process. Small and large landholders alike could add agricultural waste to soil, maximize the time that the soil is covered by living plants or mulch, and reduce tilling, which releases carbon dioxide. All these steps would decrease the amount of carbon that is lost from soil and increase the amount of carbon that is stored in it. The most technologically sophisticated net available in the near term is known as "bioenergy with carbon capture and storage," or BECCS. It is also the riskiest. Broadly defined, beccs involves burning or fermenting biomass, such as trees or crops, to generate electricity or make liquid fuel; capturing the carbon dioxide produced in the process; and sequestering it underground. It is considered a negative emission technology, and not a zero emission technology, because growing the biomass used in the process removes carbon from the atmosphere. What makes BECCS so exciting is its potential to remove significantly more carbon from the atmosphere than other approaches do. But it also brings challenges. For one, it is expensive: electricity generated from beccs could cost twice as much as that generated with natural gas, because biomass is an inefficient fuel source and capturing and sequestering carbon dioxide is costly. The technology would also require careful monitoring to ensure that the carbon dioxide pumped underground stays there and clear rules for legal liability in the event of leaks. But the fact that private companies have been successfully injecting carbon dioxide into depleted oil and gas reservoirs for decades offers good evidence that permanent storage is possible on a large scale. More worrying are the additional climate risks that BECCS poses. If BECCS drives demand for biomass and more of the carbon that is stored in the forest ecosystem is released as a result, it could end up raising the level of carbon in the atmosphere rather than reducing it. Another concern is competition for land: converting farms or forests to grow energy crops, something that the large-scale use of BEccs might require, could drive up the cost of food, reduce agricultural production, and threaten scarce habitats. These problems could be mitigated by using only biomass waste, such as residues from logging and agriculture, but that would reduce the potential scale. Although BEccs deserves consideration as part of the arsenal, these risks mean that its contribution will likely end up being smaller than some proponents claim. Taking all these land-based nets together, and factoring in the considerable economic, practical, and behavioral hurdles to bringing them to scale, the National Academies report concludes that by midcentury, nets could remove as much as five billion tons of carbon dioxide from the atmosphere annually. Given the significant risks involved, that estimate is probably too bullish. Even if it were not, that's still only half of the ten billion tons of carbon dioxide that will likely need to be removed each year to zero out the remaining greenhouse gas emissions, even with aggressive cuts. CLOSING THE GAP Removing from the atmosphere the balance of the carbon dioxide necessary will require perfecting technologies currently in development. Two deserve particular mention; both are full of promise, although neither is ready for widespread use. The first is called "direct air capture"- essentially, sucking carbon from the sky. The technology is already being tested in Canada, Iceland, Italy, and Switzerland at pilot plants where massive arrays of fans direct a stream of air toward a special substance that binds with the passing carbon dioxide. The substance is then either heated or forced into a vacuum to release the carbon dioxide, which is compressed and either stored or used as feedstocks for chemicals, fuels, or cement. These technologies are real-albeit prohibitively expensive in their current form. As a recent study led by David Sandalow of Columbia University's Center on Global Energy Policy concludes, taking them to scale means solving a variety of technological challenges to bring down the costs. Above all, these processes are highly energy intensive, so scaling them would require enormous amounts of low-carbon electricity. (A direct-air-capture facility powered by coal-fired electricity, for example, would generate more new carbon dioxide than it would capture.) These obstacles are serious, but the surprising progress of the past decade suggests that they can be overcome in the next one. The second technology, enhanced carbon mineralization, is even further from being realized, but it is full of even more possibility. Geologists have long known that when rock from the earth's mantle (the layer of the earth between its crust and its core) is exposed to the air, it binds with carbon dioxide to form carbon-containing minerals. The massive tectonic collisions that formed the Appalachian Mountains around 460 million years ago, for example, exposed subsurface rock to weathering that resulted in the absorption of substantial amounts of carbon dioxide from the atmosphere. That took tens of millions of years; enhanced carbon mineralization seeks to fast-forward the process. Scientists are exploring two ways to do this. In one approach, rocks would be brought to the surface to bind with carbon from the air. Such natural weathering already occurs in mine tailings, the waste left over from certain mining operations. But mimicking this process on a large scale-by grinding up large quantities of rock containing reactive minerals and bringing it to the earth's surface-would be highly energy intensive and thus costly, roughly on par with direct air capture. Another potential approach is pumping the carbon dioxide underground to meet the rock. As the National Academies report explains, carbon-dioxide-rich fluids injected into basalt or peridotite formations (two kinds of igneous rock that make up much of the earth's mantle) react with the rock, converting the dissolved carbon dioxide into solid carbon-containing minerals. Pilot projects in Iceland and the United States have demonstrated that this is possible. There is also evidence for how this could work in the natural world. Peridotite usually lies deep inside the earth, but some rock formations around the globe contain pockets of it on the surface. For example, scientists are studying how the surface-level peridotite in Oman's rock formations reacts with the air and absorbs large amounts of carbon. In theory, this approach offers nearly unlimited scale, because suitable rock formations are widespread and readily accessible. It would also be cheap, because it takes advantage of chemical potential energy in the rock instead of costly energy sources. And since the carbon dioxide is converted to solid rock, the effect is permanent, and it carries few of the side effects that other nets could bring. GETTING TO LESS These technologies do not come cheap. The National Academy of Sciences recommends as much as $1 billion annually in U.S. government funding for research on nets. And indeed, such funding should be an urgent priority. But to make these technologies economically viable and scale them rapidly, policymakers will also have to tap into a much more powerful force: the profit motive. Putting a price on carbon emissions creates an economic incentive for entrepreneurs to find cheaper, faster ways to cut pollution. Valuing negative emissions-for example, through an emission-trading system that awards credits for carbon removal or a carbon tax that provides rebates for them-would create an incentive for them to join the hunt for nets. Forty-five countries, along with ten U.S. states, have put in place some mechanism to price carbon. But only a handful of them offer rewards for converting land into forest, managing existing forests better, or increasing the amount of carbon stored in agricultural soils, and none offers incentives for other nets. What's needed is a carbon pricing system that not only charges those who emit carbon but also pays those who remove it. Such a system would provide new revenue streams for landowners who restored forest cover to their land and for farmers and ranchers who increased the amount of carbon stored in their soils. It would also reward the inventors and entrepreneurs who developed new, better technologies to capture carbon from the air and the investors and businesses that took them to scale. Without these incentives, those players will stay on the sidelines. By spurring innovation in lower-cost nets, incentives would also ease the way politically for an ambitious pollution limit-which, ultimately, is necessary for ensuring that the world meets it climate goals. Simply put, humanity's best hope is to promise that the next crop of billionaires will be those who figure out low-cost ways to remove carbon from the sky. The biggest hurdle for such incentives is the lack of a global market for carbon credits. Hope on that front, however, is emerging from an unlikely place: aviation. Currently responsible for roughly two percent of global greenhouse gases, aviation's emissions are expected to triple or quadruple by midcentury in the absence of effective policies to limit them. But in 2016, faced with the prospect that the eu would start capping the emissions of flights landing in and taking off from member states, the un body that governs worldwide air travel, the International Civil Aviation Organization, agreed to cap emissions from international flights at 2020 levels. The airline industry supported the agreement, hoping to avoid the messy regulatory patchwork that might result if the eu went ahead and states beyond the eu followed suit with their own approaches. The resulting program, called the Carbon Offsetting and Reduction Scheme for International Aviation (corsia), requires all airlines to start reporting emissions this year, and it will begin enforcing a cap in 2021. Once in full swing, at least 100 countries are expected to participate, covering at least three-quarters of the forecast increase in international aviation emissions. Airlines flying between participating countries will have two ways to comply: they can lower their emissions (for example, by burning less fuel or switching to alternative fuels), or they can buy emission-reduction credits from companies. Because the technologies for reducing airline emissions at scale are still a long way off, the industry will mostly choose the second option, relying on carbon credits from reductions in other sectors. It is estimated that over the first 15 years of corsia, demand for these credits will reach between 2.5 billion and 3.0 billion tons-roughly equal to the annual greenhouse gas emissions from the U.S. power and manufacturing sectors. With this new option to sell emission-reduction credits to airlines, there is a good possibility that a pot of gold will await companies that cut or offset their carbon emissions. In short, corsia could catalyze a global carbon market that drives investment in low-carbon fuels and technologies-including nets. To realize its promise, corsia must be implemented properly, and there are powerful forces working to see that it is not. Some countries, including ones negotiating on behalf of their state-owned companies, are trying to rig the system by allowing credits from projects that do not produce legitimate carbon reductions, such as Brazil's effort to allow the sale of credits from huge hydroelectric dams in the Amazon that have already been built and paid for (and thus do not represent new reductions). Allowing such credits into the system could crowd out potential rewards for genuine reductions. But there are also powerful, sometimes unexpected allies who stand to gain from a global carbon market that works. For example, some airlines are motivated to act out of a fear that millennials, concerned about their carbon footprint, may eventually begin to shun air travel. The new regulations, by creating demand for emission reductions and spurring investment in nets to produce jet fuel, could be the industry's best hope of protecting its reputation-and a critical step toward a broader global carbon market that moves nets from promising pilot projects to a gamechanging reality. Skeptics say that nets are too speculative and a possibility only, perhaps, in the distant future. It is true that these innovations are not fully understood and that not all of them will pan out. But no group of scholars and practitioners, no matter how expert, can determine exactly which technologies should be deployed and when. It is impossible to predict what future innovations will look like, but that shouldn't stop the world from pursuing them, especially when the threat is so grave. The fact remains that many nets are ready to be deployed at scale today, and they might make the difference between limiting warming to two degrees and failing to do so. Ultimately, climate change will be stopped by creating economic incentives that unleash the innovation of the private sector-not by waiting for the perfect technology to arrive ready-made, maybe when it's already too late. No one is saying that achieving all of this will be easy, but the road to climate stability has never been that. Hard does not mean impossible, however, and the transformative power of human ingenuity offers an endless source of hope.

#### Legal action’s key to challenge heteronormativity

Campbell 12 (Peter, Prof of Communication @ Northwestern Univ., "The Procedural Queer: Substantive Due Process, Lawrence V Texas, and Queer Rhetorical Futures, Quarterly Journal of Speech, p. Academic Search Premier)

For those attempting to challenge heteronormativity in the United States and forward ‘‘queer’’ or ‘‘mainstream’’ ‘‘gay and lesbian’’ political agendas,2 the question of the best method and venue to effect change that is at once significant, durable, and resistant to appropriation by oppressive institutions and structures is of particular concern. Should those seeking to challenge heteronormativity locate the struggle for liberation in legislative, judicial, or anti-statist arenas, and what stakes are involved in such decisions?3 In the field of rhetoric in the United States, this question has been asked and answered by scholars working at the intersection of ‘‘critical legal rhetorical studies’’4 and ‘‘queer rhetorical studies.’’5 Queer scholarship in rhetoric6 and other fields7 has expressed deep skepticism with respect to the potential of ostensibly pro-gay and lesbian judicial decisions in the United States to aid or further queer political goals. Such skepticism is warranted. But given the significant and material effect that legislative and judicial rhetoric can have on queer lives in the United States,8 radical queer challenges to heteronormativity in US politics and culture must take place not only through the methods and venues of often anti-statist and extra-institutional ‘‘radical’’ queer activism,9 but also through those institutional locations most highly circumscribed by heteronormative politics, including the United States Supreme Court. Rhetorical analysis can contribute to radical queer politics by exploring how legislative and judicial pronouncements on sexuality in the United States can be framed and understood in ways that matter for radical queer futures, even as such pronouncements originate within, are circumscribed by, and reproduce the logic of heteronormative institutions.

#### Refusal of queer critique to engage the state promotes an inaccessible movement that is doomed to failure

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As Foucault himself warns state-phobia is deeply inscribed in liberal and neo-liberal ideas of civil society. The wickedness of the state is juxta- posed against the inherent goodness of civil society, so that the aim is the ‘whithering away of the state’. This anti-state-centric approach to political power, locates radical politics in extra-state space of innovation. This is why Puar and others reject pragmatic politics of same-sex marriage or anti-discrimination legislations. In contrast they support civil society campaigns like pink-watching that increasingly deploy the strategy of surveillance for shaming states into good behavior. Even as one critiques the harnessing of gender and sexuality by neo-liberal capitalism, the rejection of all feminist- queer politics oriented towards the state as part of a biopolitical agenda is disingenuous state-phobic rhetoric.

Postcolonial-queer-feminists are caught in an ambivalent, double-bind vis-à-vis the state: On the one hand, the state has historically been the source of violence and repression through the criminalization and pathologization of non-normative sexual practices. And yet, queer strategies seek to instru- mentalize the state to promote sexual justice. Even as the state is known to perpetuate heteronormative ideologies, which are founding myths of nations, the hope is that the state can function as a site of redress of gender and sexual inequality. Despite the problematic track-record with regard to sexual politics of all nation-states, whether European or non-European, it is dangerous to disregard the immense political implications of state-phobic positions, which are increasingly popular in radical discourses in the West.

As the recent re-criminalization of homosexuality in Uganda, India and Nigeria demonstrate, negotiations with state are indispensable and imperative for emancipatory queer politics in the global South. This is not a plea for statism; rather, one must be aware of the dangers of the replacement of state with non-state actors as motors of justice. Against this background, the recent anti-statist stance within postcolonial queer scholarship is alarming, as it ignores the importance of the state for those citizens who do not have access to transnational counterpublic spheres to address their grievances.

Decolonization, whether in USA, Israel or India, cannot be achieved merely through a strategy of shaming the state. Rather in the Gramscian- Spivakian sense, it is imperative to enable vulnerable disenfranchised indi- viduals and groups to access the state (Dhawan 􀀲􀀰􀀱􀀳). Accordingly, instead of a for or against position vis-à-vis the state, the more challenging question is how to reconﬁgure the state, given that its institutions and policies are the mobile eﬀect of a regime of multiple governmentalities. Thus the chal- lenge is how to pursue a non-statephobic queer politics that at the same time neither rationalizes the biopolitical state project nor makes the queer bodies governable. In postcolonial contexts, the state is like a pharmakon , namely, both poison and medicine. Postcolonial queer politics must explore strategies of converting poison into counterpoison (Spivak 􀀲􀀰􀀰􀀷: 􀀷􀀱).

Herein the ambivalent function of the state must be addressed. As Pharmakon, the inherent condradictions must be engaged with: Violence and justice, ideology and emancipation, law and discipline. If, following Foucault, the state has no stable essence, then it is marked by undecidability or doubleness. The sole focus on the negative aspects of the Pharmakon, namely the destructive and repressive traits, neutralizes and ignores the enabling and empowering aspects. Thus postcolonial-queer-feminist poli- tics must transform poison into remedy and formulate critique of the state beyond state-phobia. A challenging task, but anything else would be too risky!

#### Pragmatic consequentialism is prerequisite to queer flourishing---the framework their links assume is a paranoid reading that interrupts queer becoming.

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I want to attend to the reading practices that inform my own work here to be transparent to my readers, but also provide lessons on the different ways in which “theory” informs reading as a practice. I first came to think about reading practices through pragmatism—not queer theory. For some this might seem rather unqueer. There has been little written looking at the ways in which pragmatism and queer theory could be productive together, although I’ve tried (Greteman & Wojcikiewicz, 2014). Nor have pragmatists in general taken up a queer project, despite pragmatism being a little queer. That’s neither here nor there. What is of interest to me in this chapter are reading practices. As Cleo Cherryholmes (1999) illustrated, reading is more than meets the eye. Pragmatism itself is, as well, more than meets the eye. Pragmatism presents a particular form of reading that attends to action. I dwell on pragmatism here to reveal my own pragmatic leanings. I like pragmatism. I also tend to read things I like as I sense, as argued elsewhere, there are pedagogies and politics tied to liking (Greteman & Burke, 2017). Cherryholmes (1999) began Reading Pragmatism, noting that the reason to engage pragmatism was “that pragmatism looks to the consequences that we endlessly bump up against” (p. 3). And we bump up against consequences all day, every day. Those consequences are the results of things we—ourselves and others—have done as well as things far outside of our control. “Pragmatists conceptualize the world where we, all of us,” Cherryholmes argued, “are constantly thrown forward as the present approaches but never quite reaches the future” (p. 3). It is, in his estimation, “a discourse that attempts to bridge where we are with where we might end up” (p. 3). A key word, of course, being “might,” as pragmatism cannot predict what will come, but attends to contemplating conceivably what might come. We don’t know what will come, but we suspect we will come in some way to a future. Pragmatism is less a theory. Instead, it is a way of doing things in the world attending to the conceivable consequences of our actions. Queers come in the world, and in coming they encounter consequences, and not just theoretically. I sense pragmatism’s attention to consequences is important decades into the existence of various queer theories that have offered readings of various types of objects—films, performances, novels, policies, experiences, and more. Those readings—once scandalous in the academy—have now become part of the academy. They have in infiltrating the institutions they once critiqued or parodied or subverted become practices that can inform work that more, now than ever, has the backing of the institution . And, with such institutionalization we can more, now than ever, contemplate the conceivable consequences of queer theory and its attendant practices. We might now be able to think about if and how queer theories have had and could continue to have consequences for the worlds we inhabit—through discourse, material practices, and more. What are the conceivable consequences of various types of queer readings? What do such readings do for readers as those readers encounter the daily work of living? This is a question I will hopefully provide responses to throughout the remainder of this book as I contemplate how queer theory—as I have read and encountered it—has allowed me to contemplate queer thriving. Reading is—this might seem obvious—contingent and contextual. It is informed by our time, objects we have encountered, relationships we have had, and much more. Our readings are not, nor can they be, ahistorical. They will become dated, outdated even, becoming instead signs of a time gone by. Such times gone by might be read—in the present—as a sign of progress. See, things have gotten better as texts written years ago show things were pretty shitty. However, such times might also be read nostalgically as a time one wished one had lived in. “Wow, the 1970s sound fabulous! What happened to us?” I will, I suspect fall into reading things as signs of progress and nostalgically. I hope you’ll forgive me, but I think progress and nostalgia can serve us in various ways. Theoretical traditions serve us in various ways as well. Different theoretical traditions have offered different ways of reading texts . Cherryholmes (1999) illustrated this by providing readings that take an “authoritative” perspective or are informed by deconstruction, new historicism, and, of course pragmatism. This move was pedagogical, providing readers with a strategy to distinguish between related, but different, reading practices. Reading practices, Cherryholmes illustrated, have different consequences for how a text impacts readers and beyond. In addition, his readings illustrated distinctions between particular critical traditions (under the banner of poststructuralism and postmodernism) and pragmatism . Cherryholmes argued: Poststructural and postmodern investigations tend to be investigatory, interpretive, critical, and analytic. They are not forward-looking. They are oriented to commentary and criticism instead of consequences and action. Poststructuralism and its postmodern relatives do not have a project that looks to action, nor do they seek one. (p. 4) “Pragmatism,” as an alternative, “looks to results” (p. 4) but not just any results. The products of pragmatic readings “are never finished. They are interpreted, reinterpreted, and criticized indefinitely” (p. 4). Continuing, Cherryholmes wrote, “as a result, [pragmatic readings] are continually open to new experiences and problems and opportunities. Pragmatist productions deconstruct, they do indeed. And their deconstruction invites, indeed requires, revision and replacement” (p. 4). Pragmatism and its readings embrace the interpretive, analytic, critical options provided by poststructuralism. They are, I think, more alike than they are different. However, pragmatism moves beyond poststructuralism and postmodernism to contemplate action, to roll with the punches in order to make decisions about how to do things in the world. I have, I sense, quoted rather liberally from Cherryholmes above so let me provide my reading. Poststructural and postmodern theories—in which queer theory would be included—do interesting and important work. They deconstruct, interpret, provoke with their readings. They play with words and read against the grain. The work they do is critical since they seek, in part, to expose injustices. Additionally, their work is interpretive, as they do not propose Truth, but offer truths. They are also primarily backward looking. They look back at texts to expose or reveal in those texts their limitations or how the text deconstructs, or how texts illustrate the formation of things. What such ways of readings fail to do (and every reading does some things well and other things less well) is to look forward to the consequences of what they are doing. Deconstructionists or new historicists have not immediately been interested or concerned with contemplating the possible consequences of their readings, although I suspect they are not unconcerned with consequences; being “critical” would imply a certain interest in consequences. Pragmatism on the other hand is forward looking. It attends to the conceivable consequences of its readings. Reading—with a pragmatic bent—is an exercise in reading into the conceivable future that could be the result of actions. It gathers together, assembles, conceivable consequences of doing this, that, or another thing in the world. And this requires interpretive and imaginative thinking. This generally seems rather wishy-washy. How do we determine conceivable consequences? What types of results are we looking for? And what limits help us “conceive” the conceivable? And how do we make choices about what results and consequences we want to help bring to fruition? These are, as Cherryholmes illustrated, important questions to ask and questions that are answered carefully. We seek results that are fulfilling, we decide inclusively, we expose our ideas to multiple interpretations and criticism so as to deal with the ever-changing realities we encounter. We do, in a sense, the work we often are already doing living in the world, except we do so attentively. Such answers are, to be clear, not “idealistic,” rather: At the beginning and end of the day pragmatists are realists because they value what happens. They are interested in results, in consequences. They understand that pragmatist experiments are social constructions. These constructions come from experience and ideas and knowledge and power. Proposed material/ideal and realistic/idealistic distinctions deconstruct because the material conditions in which we find ourselves contribute to and shape what we can conceptualize and enact. Pragmatists try to bring about beautiful results in the midst of power and oppression and ignorance . (Cherryholmes, 1999, p. 5) Pragmatism accepts the contingent realities that we face in our everyday lives where we have to make choices. And those choices are informed and limited in all kinds of ways. We cannot base our decisions on some foundation or truth. Pragmatism is “anti-foundational” since such foundations and “Truth” are already conditioned and constructed. Rather, pragmatism makes its decisions attending to consequences that are satisfying and fulfilling within the complex milieu where we come to understand those very concepts themselves. It exists in the present, is informed by the past, with an eye toward a beautiful future. Reparative Readings Pragmatism—in looking forward —attends to contemplating pleasure and beauty as desired consequences of our actions. Pragmatism is, I suggest, an approach committed to bringing into existence positive affects and actions. This is something decidedly different from most critical traditions. Most critical traditions, as Eve Sedgwick (2004) aptly argued, embrace a hermeneutics of suspicion and this embrace, by the start of the twenty-first century, had become a problem. Sedgwick was concerned that there was a wide spread habit within critical work to engage a hermeneutics of suspicion. And while such hermeneutics—what she calls “paranoid” reading—is an important reading practice, there is a side effect when such reading practices become habitual. Critical theorists—variously situated in queer, feminist, race-conscious, and related theories—for Sedgwick , “may have made it less rather than more possible to unpack the local, contingent relations between any given piece of knowledge and its narrative/epistemological entailments for the seeker, knower, or teller” (p. 124). Paranoid reading, while excellent at exposing things may, in becoming a “mandatory injunction rather than a possibility among other possibilities,” limit encountering, intervening, and creating other possibilities. Or put differently, if we are mandated to do particular types of readings to be considered critical, we become limited in the work that we can do. We find ourselves always looking over our shoulder, paranoid about what enemies are chasing us without looking ahead to things that could trip us up (a paranoid option) or provide us support against our enemies. Reading practices, I hope you see, are never neutral, but always bring with them assumptions and viewpoints about what counts and what does not count. Reading practices inform what we look at, how we look, and where we look. They inform why we look at all. Reading practices frame the world before us and, just as a “frame” does, it sets us up to see (or be seen) in particular ways. Frames—like our reading practices—limn the scene for better and for worse. There are always frames, one task is to begin to see different frames and what they do for the objects they capture within the borders and what they, then, by definition, exclude. Sedgwick illustrated that queer reading practices, by and large, took up a paranoid position, which made sense. Within the history of sexuality, she argued, there was a clear relationship between homosexuality and paranoia. Homosexuality, as theorized by Freud, was connected to paranoia and anti-homophobic inquiries in a similar vein took up the paranoid position, in an attempt to expose the violence of, for instance, heteronormativity (Warner, 1991) or homonormativity (Duggan, 2002) or homonationalism (Puar, 2007). The paranoid position was critical to resistance as it assisted in recognizing and exposing the enemies to queer lives and practices not only at the interpersonal level, but at the cultural, institutional, and disciplinary levels.1 However, as Sedgwick aptly noted, “just because you have enemies doesn’t mean you have to be paranoid” (p. 127). “Indeed,” Sedgwick continued, “for someone to have an unmystified view of systemic oppression does not intrinsically or necessarily enjoin that person to any specific train of epistemological or narrative consequences” (p. 127). Recognizing the realities of oppressions—in their diversity—does not require that one engage in a particular type of critical project. In fact, limiting oneself to a particular type of project would eliminate the possibility of surprise. Instead, it would leave readers over time with the sense that they are being beat over the head with a bat of the same information. “There’s oppression. Do you see the oppression? Do you see the oppression? It is there, there is the oppression. Do you see it?” This type of exposure is, as Sedgwick noted, a central tenet of paranoid reading practices. However, as she noted “[paranoid strategies] represent a way, among other ways, of seeking, finding, and organizing knowledge” (p. 130). And to be clear, there are important things that paranoid strategies do. Pointing out and exposing oppression is important. However, there are also important things that such strategies fail to adequately address; this being a lesson the tunnel of oppression I addressed in the preface taught me early on. The tunnel of oppression was rooted in exposing, but the moment it sought to promote, to assemble objects that did different work, its work became contested. As an alternative to paranoid reading, but not as a replacement, Sedgwick developed what she called reparative reading, arguing that “to read from a reparative position is to surrender the knowing, anxious paranoid determination that no horror, however apparently unthinkable, shall ever come to the reader as new” (p. 146). To read from a reparative position is to allow for the possibility of surprise and leave open space that things could be different. This is “because the reader has room to realize that the future may be different from the present” (p. 146). Additionally, she continued, “it is also possible for her to entertain such profoundly relieving, ethically critical possibilities as that the past, in turn, could have happened differently from the way it actually did” (p. 146). Reparative reading practices—embracing the contingent and positive—similarly to pragmatism, are concerned with how things could be different. There is with Sedgwick’s reparative readings, like Cherryholmes’s pragmatism, an opening for work looking forward done under the banner of queer theory. Queers do not have to maintain and be determined by their historical connection to paranoid positions, but can invent additional ways of positioning themselves in and against the world. Such a move makes sense as it recognizes the changing realities and needs of queers.

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### AT: Climate Reps Bad

#### Downplaying the real impacts of warming crushes mobilization and ethical change---our moderate stance avoids an avalanche of anxiety and including the plan solves

Tim Myers 14, Oregon philosophy professor, “Understanding Climate Change as an Existential Threat: Confronting Climate Denial as a Challenge to Climate Ethics”, A Journal of Philosophical, Theological and Applied Ethics, Volume 1, Number 1, JSTOR

An existential ethics of this kind, however, requires a receptivity to change that is in short supply today. Two opposing strategies seem available to address this, both of which have merit but remain problematic. The first seeks to motivate public responsibility by presenting the grave implications of climate change as ‘hard medicine’ that needs to be injected directly into the veins of a society that otherwise refuses to swallow it. Perhaps the case of Tim DeChristopher lends credibility to this approach. If one is ill-prepared to receive this news, however, this strategy risks threatening ontological security—thus inviting forms of denial bent on containing the anxiety that results. Those sensitive to this problem, therefore, typically opt for a ‘positive vision’ message to motivate action. Perhaps rhetorical frames, narratives, and symbols that make ethical change more palatable should be encouraged instead. Giddens, for example, agrees with Michael Shellenberger and Ted Norhaus who remind gloom-and-doom environmentalists that Martin Luther King Jr. inspired the American civil rights movement with an ‘I have a dream’ speech, not an ‘I have a nightmare’ speech.28 A full defense of the positive vision approach is found in climate scientist Mike Hulme. He argues that we need to find ways of mediating the idea of climate change to empower new ways forward. For one thing, we cannot successfully address climate change if we continue to approach it scientifically as a physical problem in need of policy solutions. Technical thinking that jumps from problems to solutions, he says, limits our imaginations by effectively hollowing out cultural forms of meaning that could help us confront this condition more comprehensively. At the same time, however, he also believes that using cultural symbols—the ‘dominant trope [of which] has been one of climate change as a threat’—to motivate individuals by fear is equally unproductive.29 Common to both approaches, Hulme explains, is a dualism that ignores socio- cultural experience as the middle ground of ethical reflection. Hence, instead of relying on reason or fear as the lynchpins of social change by presenting this issue as an ominous threat to be averted, he suggests that we creatively mobilize the idea of climate change to redefine the human project itself by asking what climate change ‘can do for us’. Such a reversal in logic, he maintains, would treat climate change as ‘a stimulus for societal adaptation, a stimulus that—rather than threatening a civilization—can accelerate the development of new complex civil and social structures.’30 Despite important insights, Hulme’s positive vision approach remains problematic from an existentialist perspective. By turning the implications of climate change around so that this issue ‘works for us’, the anxiety stage risks being comfortably bypassed. To the extent that climate change is indeed a crisis that our culture is not prepared for, a certain measure of anxiety is appropriate as sign that we are indeed in a bad situation that calls for courageous change. We need this signal. So in contrast to those who encourage us to present climate change in a positive light, we might agree with Speth’s hard medicine rejoinder to Shellenberger and Norhaus that sometimes we need to be ‘reminded of the nightmare ahead’. As Speth remarks, African Americans during the civil rights movement were already living in a nightmare—they needed the dream to pull them forward. Many of us comfortable in denial, by contrast, are simply living a dream. My own view is that adequate ethical reform for an issue like climate change requires a lifeworld shift in values and perception that will compel us to own up to the various mitigation and adaptation efforts demanded by this issue in authentic ways. If positive visions for the future end up softening the implications of climate change too much, they could undermine the need to reform lifeworld sensibilities and norms in more responsible directions. And yet it’s also true that clear and compelling visions are needed to collectivize action towards lifeworld futures worthy of realization. The historic challenge of climate change, as inextricably bound to innumerable other pressing social and ecological issues today, calls for new narratives. This tension between the hard medicine and positive future approaches, it’s worth adding, is precisely the kind of problem that demands practical wisdom and care over uniform prescriptions. Ultimately, ethical discourses have to walk a tightrope in which background assumptions that preserve lifestyles inimical to a healthy climate are squarely challenged, yet without triggering an avalanche of anxiety impossible to cope with. Hence, the challenge of an existential climate ethics is to approach the ‘the nightmare ahead’, but without getting stuck in it as a paralyzing situation with no meaningful alternatives.31 If done well, perhaps ethical discourses can invite communities to confront, work through, and ultimately accept the anxiety appropriate to the situation they find themselves in. What this largely comes down to is collectively cultivating the lifeworld wisdom needed to confidently respond to anxiety in ways that lead to consistently good decisions.

#### Rejecting images of environmental collapse is worse because it locks in inaction---and there’s no cooption

Schatz 12 – J.L. Schatz, PhD Candidate in English at SUNY Binghamton, “The Importance of Apocalypse: The Value of End-Of The-World Politics While Advancing Ecocriticism”, Journal of Ecocriticism, Volume 4, Number 2, July

It is no longer a question that human interaction with the world is destroying the very ecosystems that sustain life1. Nevertheless, within academic communities people are divided over which discursive tactic, ontological position, or strategy for activism should be adopted. I contend that regardless of an ecocritic’s particular orientation that ecocriticism most effectively produces change when it doesn’t neglect the tangible reality that surrounds any discussion of the environment. This demands including human-induced ecocidal violence within all our accounts. Retreating from images of ecological collapse to speak purely within inner-academic or policymaking circles isolates our conversations away from the rest of the world—as it dies before our eyes.

This is not to argue that interrogating people’s discourse, tactics, ontological orientation, or anything else lacks merit. Timothy Luke, Chair and Distinguished Professor of Political Science at the Virginia Polytechnic Institute, explains that

Because nothing in Nature simply is given within society, such terms must be assigned sig- nificance by every social group that mobilizes them[.] ... Many styles of ecologically grounded criticism circulate in present-day American mass culture, partisan debate, consumer society, academic discourse, and electoral politics as episodes of ecocritique, contesting our politics of nature, economy, and culture in the contemporary global system of capitalist production and consumption. (1997: xi)

Luke reminds us that regardless of how ecocritics advance their agenda they always impact our environmental awareness and therefore alter our surrounding ecology. In doing so he shows that both literal governmental policies and the symbolic universe they take place within reconstruct the discourses utilized to justify policy and criticism in the first place. This is why films like The Day After Tomorrow and 2012 can put forth realistic depictions of government response to environmental apocalypse. And despite being fictional, these films in turn can influence the reality of governmental policy. Even the science-fiction of weather-controlling weapons are now only steps away from becoming reality2.

Oftentimes it takes images of planetary annihilation to motivate people into action after years of sitting idly by watching things slowly decay. In reality it takes awareness of impending disaster to compel policymakers to enact even piecemeal reform. On the screen it takes the actual appearance of ecological apocalypse to set the plot in motion. What is constant is that “as these debates unfold, visions of what is the good or bad life ... find many of their most compelling articulations as ecocritiques ... [that are] mobilized for and against various projects of power and economy in the organization of our everyday existence” (Luke 1997: xi). We cannot motivate people to change the ecological conditions that give rise to thoughts of theorization without reference to the concrete environmental destruction ongoing in reality. This means that, even when our images of apocalypse aren’t fully accurate, our use of elements of scientifically-established reality reconstructs the surrounding power structures in beneficial ways. When we ignore either ecological metaphors or environmental reality we only get part of the picture.`

In recent years, many ecocritics have shied away from the very metaphors that compel a sense of urgency. They have largely done so out of the fear that its deployment will get co-opted by hegemonic institutions. Such critics ignore how what we advocate alters our understanding of ourselves to the surrounding ecology. In doing so, our advocacies render such co-optation meaningless because of the possibility to redeploy our metaphors in the future. In the upcoming sections, I will provide an overview of how poststructuralist thinkers like Michel Foucault and Martin Heidegger influence some ecocritics to retreat from omnicidal rhetoric. This retreat minimizes the main objectives of their ecocriticism. I argue that rather than withdrawing from images of apocalypse that we should utilize them in subversive ways to disrupt the current relationship people have to their ecology. Professor of Sociology at York University, Fuyuki Kurasawa argues that “instead of bemoaning the contemporary preeminence of a dystopian imaginary ... it can enable a novel form of transnational socio-political action ... that can be termed preventive foresight. ... [I]t is a mode of ethico-political practice enacted by participants in the emerging realm of global civil society ... [by] putting into practice a sense of responsibility for the future by attempting to prevent global catastrophes” (454-455).

By understanding how metaphors around the environment operate we can better utilize discourse to steer us away from the brink of apocalypse. The alternative of abandoning apocalyptic deployments is far worse. Put simply, “by minimizing the urgency or gravity of potential threats, procrastination appears legitimate” (Kurasawa 462). In the final section of my essay, I outline how ecocritics can utilize images of omnicide to motivate the evolution of successful tactics that can slow the pace of environmental destruction.

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### Alt---1AR

#### Failure to engage in an institutional program shows its weakness and cedes too much power to unaccountable elites.

David Chandler 07, Westminster IR professor, “Deconstructing Sovereignty: Constructing Global Civil Society,” in Politics Without Sovereignty: A Critique of Contemporary International Relations, pg. 164-5

Global civil society theorists focus their ire on what they understand to be the narrow, exclusionary bias of the sovereign state. In turn, they view a wide constellation of transnational actors, from the global mega-NGOs to local farming cooperatives, as representing a radical alternative that opens up the space for new kinds of political organization and activity. In fact, what the celebration of ‘bottom-up’ politics and the critique of the state really express is a deep disenchantment with mass society and the demands of formal accountability that go along with representative democracy.72 A consequence of rejecting the political sphere is that it leaves political struggles isolated from any shared framework of meaning or from any formal processes of democratic accountability. The quest for individual autonomy and the claim for the recognition of separate ‘political spaces’ and the ‘incommunicability’ of political causes, each demonstrate the limits of these radical claims for the normative project of global civil society [END PAGE 164] ‘from below’. Far from reflecting the emergence of new global political forces

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, the global civil society, by virtue of its social isolation, is marked by political weakness. As such, the only strategy left to it is a retreat into elite lobbying and individualized ethical postures. It is important to stress that I am not claiming that the key problem with radical global civil society approaches is their rejection of formal engagement per se in existing political institutions and established parties. The point I am making here is that the rejection of state-based politics, which forces the individual to engage with and account for the views of other members of society, reflects a deeper problem – an unwillingness to engage in political contestation per se. Proponents of global civil society ‘from below’ therefore seek to legitimize their views as the prior moral claims of others. This has the effect of transforming global civic actors into the advocates of those unable to make moral claims themselves. Alternatively, they put themselves in harm’s way and would lead by inarticulate example. What they avoid doing is pursuing their own interests or seeking to build political solidarity around shared interests. What can actually be achieved through their chosen methods is limited. Radical lobbying and calls for recognition may in some cases precipitate a generational turnover in the establishment. However, the rejection of social engagement is more likely to lead to a further shrinking of the political sphere, reducing it to a small circle of increasingly unaccountable elites. If the only alternative to the political ‘game’ is to threaten to ‘take our ball home’ – the anti-politics of rejectionism – the powers that be can sleep peacefully in their beds.