### Framing

#### I value morality. The standard is minimizing material violence.

**Pleasure and pain are the starting point for moral reasoning—they’re our most baseline desires and the only things that explain the intrinsic value of objects or actions**

**Moen 16**, Ole Martin (PhD, Research Fellow in Philosophy at University of Oslo). "An Argument for Hedonism." Journal of Value Inquiry 50.2 (2016): 267.

Let us start by observing, empirically, that **a widely shared judgment about intrinsic value** and disvalue **is that pleasure is intrinsically valuable and pain is intrinsically disvaluable**. On virtually any proposed list of intrinsic values and disvalues (we will look at some of them below), pleasure is included among the intrinsic values and pain among the intrinsic disvalues. This inclusion makes intuitive sense, moreover, for **there is something undeniably good about the way pleasure feels and something undeniably bad about the way pain feels**, and neither the goodness of pleasure nor the badness of pain seems to be exhausted by the further effects that these experiences might have. “Pleasure” and “pain” **are** here **understood inclusively**, as encompassing anything hedonically positive and anything hedonically negative. 2 The special value statuses of pleasure and pain are manifested in how we treat these experiences in our everyday reasoning about values. If you tell me that you are heading for the convenience store, **I might ask: “What for**?” This is a reasonable question, for when you go to the convenience store you usually do so, not merely for the sake of going to the convenience store, but for the sake of achieving something further that you deem to be valuable. You might answer, for example: “To buy soda.” This answer makes sense, for soda is a nice thing and you can get it at the convenience store. I might further inquire, however: “What is buying the soda good for?” This further question can also be a reasonable one, for it need not be obvious why you want the soda. You might answer: “Well, I want it for the pleasure of drinking it.” If I then proceed by asking “But what is the pleasure of drinking the soda good for?” the discussion is likely to reach an awkward end. **The reason is that the pleasure is not good for anything further; it is simply that for which going to the convenience store and buying the soda is good**. 3 As Aristotle observes: “**We never ask** [a man] **what** his **end is in being pleased, because we assume that pleasure is choice worthy in itself**.”4 Presumably, a similar story can be told in the case of pains, for if someone says “This is painful!” we never respond by asking: “And why is that a problem?” We take for granted that **if something is painful, we have a sufficient explanation of why it is bad**. If we are onto something in our everyday reasoning about values, it seems that **pleasure and pain are both places where we reach the end of the line in matters of value. Although pleasure and pain thus seem to be good candidates for intrinsic value and disvalue**, several objections have been raised against this suggestion: (1) that pleasure and pain have instrumental but not intrinsic value/disvalue; (2) that pleasure and pain gain their value/disvalue derivatively, in virtue of satisfying/frustrating our desires; (3) that there is a subset of pleasures that are not intrinsically valuable (so-called “evil pleasures”) and a subset of pains that are not intrinsically disvaluable (so-called “noble pains”), and (4) that pain asymbolia, masochism, and practices such as wiggling a loose tooth render it implausible that pain is intrinsically disvaluable. I shall argue that these objections fail. Though it is, of course, an open question whether other objections to P1 might be more successful, I shall assume that if (1)–(4) fail, we are justified in believing that P1 is true itself a paragon of freedom—there will always be some agents able to interfere substantially with one’s choices. The effective level of protection one enjoys, and hence one’s actual degree of freedom, will vary according to multiple factors: how powerful one is, how powerful individuals in one’s vicinity are, how frequent police patrols are, and so on. Now, we saw above that what makes a slave unfree on Pettit’s view is the fact that his master has the power to interfere arbitrarily with his choices; in other words, what makes the slave unfree is the power relation that obtains between his master and him. The difﬁculty is that, in light of the facts I just mentioned, there is no reason to think that this power relation will be unique. A similar relation could obtain between the master and someone other than the slave: absent perfect state control, the master may very well have enough power to interfere in the lives of countless individuals. Yet it would be wrong to infer that these individuals lack freedom in the way the slave does; if they lack anything, it seems to be security. A problematic power relation can also obtain between the slave and someone other than the master, since there may be citizens who are more powerful than the master and who can therefore interfere with the slave’s choices at their discretion. Once again, it would be wrong to infer that these individuals make the slave unfree in the same way that the master does. Something appears to be missing from Pettit’s view. If I live in a particularly nasty part of town, then it may turn out that, when all the relevant factors are taken into account, I am just as vulnerable to outside interference as are the slaves in the royal palace, yet it does not follow that our conditions are equivalent from the point of view of freedom. As a matter of fact, we may be equally vulnerable to outside interference, but as a matter of right, our standings could not be more different. I have legal recourse against anyone who interferes with my freedom; the recourse may not be very effective—presumably it is not, if my overall vulnerability to outside interference is comparable to that of a slave— but I still have full legal standing.68 By contrast, the slave lacks legal recourse against the interventions of one speciﬁc individual: his master. It is that fact, on a Kantian view—a fact about the legal relation in which a slave stands to his master—that sets slaves apart from freemen. The point may appear trivial, but it does get something right: whereas one cannot identify a power relation that obtains uniquely between a slave and his master, the legal relation between them is undeniably unique. A master’s right to interfere with respect to his slave does not extend to freemen, regardless of how vulnerable they might be as a matter of fact, and citizens other than the master do not have the right to order the slave around, regardless of how powerful they might be. This suggests that Kant is correct in thinking that the ideal of freedom is essentially linked to a person’s having full legal standing. More speciﬁcally, he is correct in holding that the importance of rights is not exhausted by their contribution to the level of protection that an individual enjoys, as it must be on an instrumental view like Pettit’s. Although it does matter that rights be enforced with reasonable effectiveness, the sheer fact that one has adequate legal rights is essential to one’s standing as a free citizen. In this respect, Kant stays faithful to the idea that freedom is primarily a matter of standing—a standing that the freeman has and that the slave lacks. Pettit himself frequently insists on the idea, but he fails to do it justice when he claims that freedom is simply a matter of being adequately (and reliably) shielded against the strength of others. As Kant recognizes, the standing of a free citizen is a more complex matter than that. One could perhaps worry that the idea of legal standing is something of a red herring here—that it must ultimately be reducible to a complex network of power relations and, hence, that the position I attribute to Kant differs only nominally from Pettit’s. That seems to me doubtful. Viewing legal standing as essential to freedom makes sense only if our conception of the former includes conceptions of what constitutes a fully adequate scheme of legal rights, appropriate legal recourse, justiﬁed punishment, and so on. Only if one believes that these notions all boil down to power relations will Kant’s position appear similar to Pettit’s. On any other view—and certainly that includes most views recently defended by philosophers—the notion of legal standing will outstrip the power relations that ground Pettit’s theory.

**[2] Extinction First –**

**[a] Forecloses future improvement – we can never improve society if we’re all dead**

**[b] Turns suffering – mass death causes suffering because people can’t get access to resources and basic necessities**

**[c] Moral uncertainty – if we’re unsure about which interpretation of the world is true – we ought to preserve the world to keep debating about it**

**[d] Objectivity – only lives can be a metric for impacts but you can’t compare different forms of inequality bc it creates psychological harm that one oppression is worse than another**

### 1AC – Adv - Innovation

#### Innovation’s declining – increasing complexity, mediocre research and patents, and balkanization from university patents

Gold 21, E Richard. [E. Richard Gold is a CIGI senior fellow and a James McGill Professor with McGill University’s Faculty of Law and was the founding director of the Centre for Intellectual Property Policy. “The fall of the innovation empire and its possible rise through open science.” Research policy vol. 50,5 (2021): 104226. doi:10.1016/j.respol.2021.104226]//anop

While Milton (1966, 15) assumed that research productivity per technical person increased at the same time as did costs – “[t]he augmentation by machines, for example, has increased the productivity of the average technical man-year to an unmeasured degree” – this turned out not to be the case. Rates of research and innovation productivity – investments, patents, papers and innovations per technical person as well as health, agricultural and other gains per paper and invention – declined even while investments increased. As Rescher (1978, 87) summarized, “the rapidly – indeed exponentially – increasing pace of effort-investment tends to mask the fact that the volume of high-quality returns per unit investment is apparently declining.” Earlier data regarding patent filings illustrated the problem of declining productivity. As early as 1936, Sanders (1936) concluded that, based on data between 1834 and 1934, while the number of patents per capita increased in the transition from an agricultural to an industrial economy, the rate of patenting seemed “to reach a constant level, or even show some drop” once industrialization took hold. Studies in the 1950s and 1960s refined Sanders's analysis by looking at patents against the number of technical workers rather than the entire population. Schmookler (1954) found that, despite an absolute increase in patent applications between 1870 and 1940, the number of patent applications per technical worker declined. Machlup (1962) found a similar decline between 1941 and 1958. Hausman et al. (1981) determined, based on patent and research and development data from 1968–1974, that firms suffered from a declining ability to translate their R&D investments into patents. Examining a variety of measures of productivity and innovation – GDP, education spending, as well as patents – Huebner (2005, 984) calculated that the US rate of innovation has been declining since 1916. Jones (2002, 220) noted that, despite the fraction of US STEM workers in the population increasing threefold (from 0.25 percent to 0.75 percent) between 1950 and 1993, “the growth rate of U.S. per capita GDP has been surprisingly stable.” Because infinitely increasing the number of STEM workers is unsustainable, he concluded, growth due to technology “must come to an end” (C. I. Jones 2002, 235). Total factor productivity (TFP) – the principal, if imperfect, measure of the pace of innovation and technical progress – peaked in 1940–1950 and has been steadily declining since, with a slight but short-lived increase between the mid 1990s and mid-2000s (Gordon 2016, 547; Griliches 1998; Field, 2006). Looking at similar data, Boniatu argued that “the U.S. economy seems to have reached its first threshold of mutation – and hence entered a phase of diminishing returns on innovation – in the thirties” (Bonaiuti, 2018, 1806). Bloom et al. (2020) conducted one of the most comprehensive studies documenting declining productivity since 1965. They compared economic outputs to investments made in research and development at both the macro and micro levels, and found the same phenomenon: research productivity was in systemic decline. At the macro scale, they measured economic output due to innovation in terms of TFP: “We find that research productivity for the aggregate U.S. economy has declined by a factor of 41 since the 1930s, an average decrease of more than 5% per year” (Bloom et al., 2020, 1105). At the micro level, whether measuring productivity in terms of yield rates for agricultural products, new drugs placed on the market, years of life saved from cancer or heart disease per publication or clinical trial, or chip density for computer chips, they uniformly found a drop. Lest one object that Bloom et al.’s findings only apply to older technologies, in which firms are plumbing the depths of a decreasing potential pool of innovations, Strumsky et al. (2010a, 503) examined new fields of technology, such as solar and wind technology, biotechnology and nanotechnology, where “simpler, basic discoveries can still routinely be made,” yet found a similar decline in productivity as in older fields. Based on their empirical analysis, they concluded that “in industrial economies there may no longer be increasing returns in newer sectors to offset diminishing returns in older ones” (Strumsky et al., 2010, 504). A recent study by Pammolli et al. (2020) suggests that the pharmaceutical industry has seen increased productivity since the early 2000s. This study used, however, a different measure of productivity than other studies in the field: attrition rates of drugs during clinical trials. While the authors found a drop in attrition rates, this may have been due to changes in the regulatory environment that relied increasingly on surrogate end-points5 of dubious value (Chen et al., 2020; Darrow et al., 2020) rather than on a real productivity gain. *It is thus difficult to know whether their finding of increased productivity in the pharmaceutical industry is real or is simply a result of regulatory changes*. 2.3. A divergence over patent data There is one notable exception in the empirical data on the productivity decline: from 1985 to 2013, the US went through a patent explosion. While patent applications per STEM worker were roughly stable between 1965 and 1985, domestic patent applications per STEM worker almost doubled (1.88)6 between 1985 and 2011. In a similar break with history, the number of domestic patent applications per research dollar more than doubled (2.13) between 1985 and 2013.7 This large upsurge in patenting led Gordon (2016, 567) to state that “[t]here is no debate about the frenetic pace of innovation activity, particularly in the spheres of digital technology, including robots and artificial intelligence.” There is, however, good reason to doubt this apparent frenetic pace of innovation between 1985 and 2013 (Gallini 2002). Kortum and Lerner (1999) argued that the patent upsurge was likely due to firms adopting better management or automation of the innovation process rather than increased innovation. Hall (2004) attributed the upsurge to strategic behavior by firms in complex product industries where products depend on multiple and broadly held patents. Rather than acquiring patents to protect key innovations, these players acquired large portfolios of patents “even those of dubious quality, that is, even those that they have no intention of enforcing” to attract venture capital to early-stage firms (Hall, 2004, 18). An empirical study by Danguy et al. (2014, 561) similarly concluded that strategy, rather than innovation, was driving global patent rate increases: “[T]he ‘global patent warming’ that is currently underway is essentially the result of the internationalization of patent applications and not a consequence of increased research productivity.” As the above summarizes, the patent explosion that began in the 1980s appears more due to a change in intellectual property management strategy than to effiency of the innovation system. Combined with the data on increasing costs and decreasing productivity, the evidence is strong that we are witnessing an innovation system that is growing less effective in creating wealth and social benefit. This decline has consequences, as I next examine: more risk adverse behavior that signals even greater future decline. 2.4. Increasing risk adverse research and innovation behavior Starting in the 1950s, both firms and academic researchers narrowed the scope of their research and innovation efforts, preferring safer rather than more novel innovations (Strumsky et al., 2011). This occurred at approximately the same time as research and innovation costs ratcheted up, leading to the hypothesis that firms faced with increasing costs decided to reduce their risk by taking on less innovative research. Akcigit et al. (2013b, 4) reasoned that more high risk “ideas are costly to pursue, so inventors focus on reuse/refinements.” On the industrial front, Youn et al. (2015, 6) found that “the proportion of technological combinations (that is, inventions) that are ‘narrow’ began to increase and currently stands at about 50%.” Clancy (2017b) similarly found that “US patents have made increasingly less novel connections among technological constituents since the 1950s.” Similarly, Krieger et al. (2018, 4) documented “a decline in innovativeness of small molecule drugs over time” through their examination of investigational drug databases. Fojo et al. (2014, E7) attribute this decline to a desire to reduce the riskiness of earnings. They concluded that while a breakthrough, if successful, would lead to higher long-term earnings, if this “strategy is so risky that investors lose confidence and sell their shares,” they would suffer a drop in stock price. This complements the finding by Arora et al. (2015, 2, 5) that “large firms are withdrawing from investing in science internally and focusing more on development,” “leaving universities and small firms to generate new ideas.” On the academic side, Edwards et al. (2011) demonstrate how firms and researchers continued to explore the same limited set of research targets while ignoring most targets. For example, they found that 65% of 2009 publications focused on the same 10% of proteins as had been copiously studied between 1950 and 2002. As a result, they concluded that “[m]uch of the work that has emerged from exploring the human genome over the past ten years lies fallow” (Edwards et al., 2011, 165), a significant inefficiency in the system. Similarly, Stoeger et al. (2018, 7) found that “while biomedical research does focus on important genes, a disproportionally high amount of research effort concentrates on already well-studied genes.” Using machine learning techniques, they determined that this conservative selection of research targets meant that “even highly promising genes that could already be studied by current technologies remain ignored” (Stoeger et al., 2018, 10). On the other hand, Pammolli et al. (2020) document an increase in the novelty of pharmaceutical innovation based on two factors: the indication for the drug and its mechanism of action (i.e. its biological target). One possible explanation for this result is that declining regulatory standards reduced innovator risk, adjusting their cost-benefit analysis to support their pursuit of higher-risk research. Alternatively, lower regulatory standards may have led to higher cost medicines with no superior efficacy or safety replacing older, less expensive, medicines (Saluja et al., 2018). This would result in more expensive and less effective medicines entering the market, doing little to increase the efficiency of the innovation system. Go to: 3. Explanations for the decline The question left open from these observations is why, contrary to Milton's beliefs, research productivity has been declining. The literature offers three explanations for this decline: 1) with time, science becomes more costly, requiring greater investments to produce the same level of result; 2) science and science funding is skewing toward mediocrity, including through a misalignment of incentives for researchers and for firms; and 3) increasing reliance on early-stage, university, patenting has led to a balkanization of efforts. I examine each in turn. 3.1. Complexity in science Rescher (2014) has long argued that science is both more expensive and less productive because the questions we pose are increasingly complex. He reasoned that scientists solved the easy problems early on. As science progressed, the difficulty of extracting knowledge – with an increased need for technology, energy and staff – grew. He concluded that “the increasing resource requirement for digging into ever deeper layers of complexity is such that successive triumphs in our cognitive struggles with nature are only to be gained at an increasingly greater price” (Rescher 2014, 64). Weitzman (1998, 333) agreed, suggesting “that the ultimate limits to growth may lie not so much in our abilities to generate new ideas, as in our abilities to process to fruition an ever-increasing abundance of potentially fruitful ideas.” B. F. Jones (2009) examined one aspect of this complexity: the ability to absorb and deploy an ever-richer set of scientific knowledge. As science progressed and required greater knowledge, he hypothesized that scientists would deploy a combination of three strategies: 1) individual researchers would need to absorb more knowledge, delaying when they began their careers; 2) researchers would become more specialized; leading to 3) the need for larger teams. Using U.S. inventor data from 1975 to 1999, he found: “an upward trend in team size that is both general and steep”; an average increase of age of first invention of 0.66 years per decade across all fields; and a 6% increase in specialization per decade. Similarly, Levitt and Levitt (2017) found that the age of scientists winning their first grants from the National Institutes of Health increased from about 36 to 44 years between 1980 and 2011. It is certainly true that some new technologies, such as CRISPR-Cas9 (Doudna and Charpentier, 2014), greatly simplify research and require less expensive technology. Nevertheless, as discussed in 2.2, Strumsky et al. (2010a, 503) found decreasing rates of productivity in new fields generally, including in biotechnology, solar, wind and nanotechnology. Thus, while there are cost-saving new technologies – with even significant savings – the overall trend toward higher costs appears to hold. Following Rescher and others, the problem seems to lie more in the way we organize science and innovation – the institutions, models of organization, use of intellectual property rights, etc. – than the complexity of the questions researchers investigate. 3.2. Mediocrity and misalignment Tainter proposed a second reason for decreasing productivity in the face of increasing costs: that research trends toward mediocre, middle of the road, and non-disruptive science and away from high-risk, breakthrough explorations. Tainter's argument, building on that of de Solla de Solla Price, 1986, 92), was that the average scientist today is of a lesser quality than that of yesterday due to the greater expansion in the number of researchers (Tainter, 1988). Indeed, between 1950 and 1993, C. I. Jones (2002, 220) found that the fraction of STEM researchers in the US tripled. While Tainter argues that this extra mass of researchers dilutes the effect of extraordinary scientists, there is no evidence to support this and seems to buy into a biased understanding of assessing quality (Kaatz et al., 2016; Wang et al., 2017). It further ignores the reality that the era of the lone scientist has given way to team science (B. Uzzi et al., 2013). Mediocrity comes in various guises, however. To render the concept more objective, and thus tractable, we can interpret mediocrity to mean a trend toward average, rather than exceptional, creativity. The literature on creativity and its component parts has grown over the decades (Amabile, 1983). In particular, Lee et al. (2015) identified two aspects of creativity that apply to scientific outputs: impact and novelty. A decline in research impact may help explain the cost and productivity problem. As Lee et al. (2015, 695) noted, impact is “realized through a social process interacting with the community and is therefore ultimately an ex post and subjective judgment” of the value of research. With this in mind, we can ask whether the incentives (and discentives) universities and firms establish to encourage teams to innovate lead to less productive outcomes. Specifically, do these incentives lead teams to expend ever more resources to obtain fewer innovations or innovations that offer ever lower productivity gains in health, the environment or the economy? Assessing real impact – the effect of a journal publication or innovation on changing real world outcomes – is difficult so both universities and firms measure something else: impact factor for universities and patent applications for firms. Neither captures impact fully, setting up perverse incentives. Universities and funding councils generally assess academic impact through citation analysis (McKiernan et al., 2019), not on the basis of the direct impact an artifact has on health or the economy. Because of the assumption that the more a paper is cited, the more important and, hence, novel it is, universities and funding councils only peripherally assess real impact. Wang et al. (2017, 1417) find, however, that the assumption that impact measures novelty is wrong. They conclude that more novel papers are actually less likely to be published in high Impact Factor journals – journals with a high average number of citations. They attribute this conclusion, in part, to the fact that novel papers take longer – more than 5 years – to achieve a high number of citations. As Journal Impact Factor is calculated on the basis of citations to articles published in that journal over only the previous two years (Garfield, 1999), the calculation ignores the higher long-term impact of novel articles. Given the two-year window for assessing impact, journals focus on publishing papers that generate short-term impact as they obtain no advantage from a paper with only a long-term impact. At the same time, academic researchers focus on publishing papers that generate short-term citations, even at the expense of novelty. Given how much weight peer review committees place on Journal Impact Factor, Wang et al. (2017, 1425) argue that there is a bias against novelty that applies “not only to funding decisions but to science policy more generally.” Because of this bias, “competitive selection procedures encourage relatively safe projects, which exploit existing knowledge, at the expense of novel projects that explore untested approaches” (Wang et al., 2017, 1416). Bhattacharya and Packalen (2020b, 17) concur, arguing that “[p]eer reviewers—a conservative lot if there ever was one—abet this tendency since grant applicants can credibly reassure them the proposed work is likely to produce visible, if marginal, successes.” Both Rzhetsky et al. (2015, 14,572) and Packalen and Bhattacharya (2018) give empirical support to this argument. Analysing millions of biomedical papers over a 30-year period, Rzhetsky et al. found that most researchers pursue conservative, low-risk, strategies, focusing on well-known molecules and “rarely wander far across the knowledge network or bridge disconnected chemicals.” This is exacerbated by the scarcity of funding opportunities that encourage risk-taking (Azoulay et al., 2011). Industry also leans towards lower impact research. In the pharmaceutical field, Fojo et al. (2014, E9) argue that “the rapidly rising cost of cancer therapies, the regulations governing their adoption by public and private insurers, and the increasing economic risk of drug development have had the unintended consequence of stifling progress by diverting enormous amounts of time, money, and other resources toward therapeutic indications that are arguably marginal.” More broadly, Strumsky et al. (2011) found that commercially-oriented researchers increasingly turn toward exploiting existing knowledge to generate small improvements rather than undertake riskier research that would expand product development in new directions. They speculate that researchers do so “[u]nder pressure to generate patents in copious amounts” (Strumsky et al., 2011, 8). This was particularly true during the patent explosion that started around 1985, discussed earlier at 2.3. Feldman (2018) documents that, between 2005 and 2015, pharmaceutical firms focused more on protecting past drugs through additional patents than on discovering new medicines. Due to strategic uses of patent law, “there is a complete undermining of the system for pharmaceutical innovation as the repeated addition of protections, one after another, pushes competition further into the future, threatening innovation in the process” (Feldman, 2018, 639). For both industry and universities, the incentives they provide to encourage impact actually decrease novelty and have little to do with real world impact. There is thus a deep misalignment between incentives and innovation, leading to lower novelty. 3.3. Balkanization through university intellectual property The economics literature is frustratingly in no better position today than it was in the 1950s to answer the question of whether patents increase or decrease overall innovation (William, 2017; Gallini, 2017; Sampat and Williams, 2018; Hall, 2019). Further, there is evidence that, while intellectual property and economic growth are correlated, the direction of causation may be from growth to higher levels of intellectual property protection, mediated by politics, rather than from intellectual property to growth (Morin and Gold, 2014; Gold et al., 2019). We do know that certain industries have constructed themselves around the availability of patents and hence incumbents remain dependent on them (Hall and Harhoff, 2012; Galasso and Schankerman, 2015). These industries include the chemical, pharmaceutical and biopharmaceutical industries. We also know that the availability of patents shapes the fields and nature of innovation, even if their effect on overall levels of innovation is uncertain (Moser, 2013). We have increasing evidence concerning the effect of university-held patents on innovation, although the literature is not yet conclusive. On the positive side, there are certainly technologies that emerged from universities through patenting into socially valuable innovations (Hockstad et al., 2017; Allard et al., 2018; Reinhart, 2020). Some of these relied on patents as a key instrument used to attain those benefits (Bremer et al., 2009). Further, Walsh et al. (2003) point out, using interview data, that broadly licensed university biotechnology research tools – such as PCR and recombinant DNA methods – impose relatively small extra costs and delays. On the negative side, university patents impose a number of transaction costs, whether through decreased freedom-to-operate (Gaessler et al., 2019) or through increased university patenting – documented by Bremer et al. (2009) – that entails not only the direct costs of obtaining a patent but accompanying litigation and negotiation costs. One must also be mindful that the benefits of university patenting are tempered by three factors. First, as Williams (2010) demonstrated, increased costs of accessing knowledge decreases the level of follow-on use of that knowledge. Second, the fact that universities used patents as a mechanism to transfer inventions to the private sector does not imply that the private sector could not have obtained the inventions through other mechanisms as efficienly. For example, a firm working in concert with a non-patenting university could develop and patent its own invention based on the collaboration. This is what occurred when Celgene acquired a patent over a drug directly building on previous unpatented research done in collaboration with the Structural Genomics Consortium (“The Ontario Institute for Cancer Research and the Structural Genomics Consortium Develop and Give Away New Drug-like Molecule to Help Crowd-Source Cancer Research” n.d.). Beyond this, universities have under-explored alternative intellectual property regimes – such as regulatory data protection – that provide fewer restrictions on use of the invention than do patents. Third we do not – and may never truly – know the quantity of university-originated innovations that would have come about but never materialized because of lack of freedom to operate, the threat of patent litigation from universities or their licensees (Gold and Carbone, 2010), restrictive licensing, or delays caused by negotiations over patents. Thus, one needs to temper assertions that the absence of university patents “would inevitably slow the development and reduce the availability of new treatments and vaccines” (Reinhart, 2020) with the reality that the empirical literature is mixed at best. Still, it is quite plausible that, in the absence of university patents, certain technologies would either be delayed or (less plausibly) never developed. On the other hand, the empirical literature also suggests that in the presence of those patents, other technologies are likely delayed or never developed. It is thus unsurprising that the literature suggests that the move to university-owned and controlled patents, accelerated, in part, through the 1980 Bayh-Dole Act (Mowery et al., 2001), did not demonstrably achieve either of the two overarching goals of the practice: to increase the level of innovation in the economy and to increase revenue gains for universities (Eisenberg and Cook-Deegan, 2018; Ouellette and Tutt, 2020; Corredoira et al., 2019). There are several reasons put forward to explain why a university patenting strategy has not had the desired results, including decreased downstream development and upstream duplication (Egelie et al., 2019), increased difficulty and delays in establishing contractual relationships with university technology transfer offices (Dahlborg et al., 2017; Hertzfeld et al., 2006; Kira R. Fabrizio, 2006), lack of university expertise and market knowledge (Swamidass and Vulasa, 2009), delayed dissemination and uptake of results (Williams, 2013; Fabrizio, 2009; Kira, 2006; West, 2006), perverse university incentive structures (Ouellette and Tutt, 2020; Eisenberg and Cook-Deegan, 2018) and the use of university patents to sue firms that have developed products without the aid of university patents (Eisenberg and Cook-Deegan, 2018, 82; Rooksby, 2011). Other forms of intellectual property rights, notably trade secrets (Williams, 2013; Gallini, 2017; Sampat and Williams, 2018) and university contractual relations (Walsh et al., 2005) also reduce the subsequent use of knowledge. Secrecy leads to data silos that hamper further research, especially when combined with privacy and informed consent rules (Rai, 2017). Negotiations over intellectual property rights with universities create complexity and thus either delay or result in the failure to reach a deal (Hertzfeld et al., 2006; Kira R. Fabrizio, 2006). In summary, the argument in favor of Bayh-Dole is mixed at best. There exist reasons to believe that not only do university-held patents, but other forms of intellectual property such as trade secrets, increase the costs of both current research efforts – through delay in establishing research collaborations – and future research. *Whatever benefits that may arise from university patenting are likely outweighted by the balkanization of knowledge that they create*. 3.4. Summary While none of the three explanations explored above – increased complexity, misaligned incentives, and knowledge silos protected by intellectual property – may alone explain the increasing inefficiency of the innovation system to create wealth and attain socially beneficial innovations, together they threaten the logic of the status quo approach to innovation policy. In the short-term, governments can only maintain current levels of innovation through increasingly large injections of resources. Meanwhile, at the individual and firm level, actors continue to move away from risk, toward less radical and less productive innovation. Consumers, patients and firms seeking productivity gains through innovation will see declining benefit from them both in terms of quality of life and economic growth. Measures of innovation based on patents and impact factors may rise, but these are illusions caused by strategic behavior rather than increased productivity. With declining economic productivity and declining rates of socially beneficial innovations, at some point governments may no longer be willing to fund research and development. With firms increasingly unwilling to fund the development of the basic knowledge to spur innovation, the result could very well be a further, steeper, decline in the efficiency of the innovation system.

#### Pharma patent practices serve to keep drug prices high: evergreening, product hopping, patent thickets, pay for delay

Richards et al 20[ Kevin T. Richards, Coordinator is a Legislative Attorney Kevin J. Hickey is a Legislative Attorney Erin H. Ward is a Legislative Attorney Drug Pricing and Pharmaceutical Patenting

Practices [https://fas.org/sgp/crs/misc/R46221.pdf 2/11/2020](https://fas.org/sgp/crs/misc/R46221.pdf%202/11/2020) Congressional Research Service ] // aaditg

Intellectual property (IP) rights in pharmaceuticals are typically justified as necessary to allow manufacturers to recoup their substantial investments in research, development, and regulatory approval. IP law provides exclusive rights in a particular invention or product for a certain time period, potentially enabling the rights holder (e.g., a brand-name drug manufacturer) to charge higher-than-competitive prices. If rights holders are able to charge such prices, they have an incentive to lengthen the period of exclusive rights as much as possible. Indeed, some commentators allege that pharmaceutical manufacturers have engaged in patenting practices that unduly extend the period of exclusivity. These critics argue that these patenting practices are used to keep drug prices high, without any benefit for consumers or innovation. Criticisms center on four such practices:  “Evergreening”: So-called patent “evergreening” is the practice of filing for new patents on secondary features of a particular product as earlier patents expire, thereby extending patent exclusivity past the original twenty-year term. Later-filed patents may delay or prevent entry by competitors, thereby allowing the brand-name drug manufacturer (the brand) to continue charging high prices.  “Product Hopping”: Generic drug manufacturers allege that as patents on a particular product expire, brand manufacturers may attempt to introduce and switch the market to a new, similar product covered by a later-expiring patent—a process known as “product hopping” or “product switching.” This practice takes two forms: a “hard switch,” where the older product is removed from the market, and a “soft switch,” where the older product is kept on the market with the new product. In either case, the brand will focus its marketing on the new product in order to limit the market for any generic versions of the old product.  “Patent Thickets”: Generic and biosimilar companies also allege that the brands create “patent thickets” by filing numerous patents on the same product. These thickets allegedly prevent generics from entering the market due to the risk of infringement and the high cost of patent litigation.  “Pay-for-Delay” Settlements: Litigation often results when a generic or biosimilar manufacturer attempts to enter the market with a less expensive version of a branded pharmaceutical. Core issues usually include whether the brand’s patents are valid, and whether the generic or biosimilar product infringes those patents. Rather than litigate these issues to judgment, however, the parties will often settle. Such settlements may involve the brand paying the generic or biosimilar to stay out of the market—referred to as “reverse payment” or “pay-for-delay” settlements. These settlements are allegedly anticompetitive because they allow the brand to continue to charge high prices without risking invalidation of its patent, thus unjustifiably benefiting the settling companies at the expense of the consumer.

#### That fuels monopolies stifling innovation.

Bryan Mercurio 14, Law Professor at The Chinese University of Hong Kong, “TRIPs, Patents, and Innovation: A Necessary Reappraisal?” <https://e15initiative.org/wp-content/uploads/2015/09/E15-Innovation-Mercurio-FINAL.pdf>

Identifying the factors that stimulate innovation is difficult (Lemley 2000), and attention must be paid to the different kinds of innovation--cumulative innovation; horizontal (basic) innovation; and vertical (applied) innovation. The impact of patent protection can differ on each of these types of innovation. For instance, where cumulative innovation occurs--that is, where a single product may rely on inventions owned by a number of firms--“there is good reason to think that the patent system may discourage innovation overall rather than encouraging it” (Bessen and Maskin 2009; Chu et al. 2012). Shapiro (2001) finds that “with cumulative innovation and multiple blocking patents, stronger patent rights can have the perverse effect of stifling, not encouraging innovation.” In such a situation, multiple licences have to be purchased; uncertainty regarding the status of the technology persists; and the value of patent licensing is questioned (Heller 2008; Boldrin and Levine 2008). Lawsuits become the norm; costs rise as firms defend claims and play the game by defensively purchasing patents; and innovation suffers (Boldrin and Levine 2013; Bessen and Muerer 2008). One only needs to look at the present situation in the high-tech sector to see this cycle playing out, where as much as US$20 billion was spent in 2010-11 on patent litigation and purchases, and where a “patent tax” of up to 20 percent of R&D costs exists (Duhigg and Lohr 2012). That a limited monopoly can stifle innovation should not come as a surprise given that competition is generally seen as a positive force in a market economy. Competition is widely thought to provide incentives for the efficient use of resources; motivation for constant progress; and protection for consumers (Vickers 1995). To some, there is an inherent contradiction between innovation and patent protection, as the latter impedes diffusion and obviates potential gains to be made from collaboration and competition (Rothbard 1962; Mises 1966; Palmer 1989; Lemley 2000; Stiglitz 2008). Thus, while Shumpeter acknowledges that competition for innovation led to temporary monopolies and argues that these monopolies were in turn replaced when new firms further innovated (1976), Stiglitz demonstrates that the established monopolies became entrenched as costs and externalities reduced incentives for displacement (Stiglitz and Walsh 2005). In turn, insufficient diversity among patent holders (a lack of so-called “equilibrium diversity”) encourages them to focus R&D on improving existing technologies through incremental improvements, as opposed to investing in R&D to develop new technologies and products (Acemoglu 2011).In essence, this is what the European Commission alleged in its prosecution of Microsoft for anti-competitive behaviour. There, the Commission deemed Microsoft to be a dominant player, which used its near-monopoly power to reduce “talent and capital invested in innovation” in a manner that “limits the prospects for ... competitors to successfully market innovation and thereby discourages them from developing new products” (2004). The negative effect on innovation is exacerbated by a number of factors, including the growing problem of patent thickets. Owing to the“difficulty of determining the boundaries” of patent claims, there are often multiple and competing claims over one or more aspects of an invention- -situations which, Stiglitz states, “especially impede innovation” (2008). While patent thickets have existed for more than a hundred years (a patent thicket impeded the development and commercialization of the airplane), they have more recently become particularly widespread in the electronics industry (GAO 2013). Other factors, such as defensive patenting and the extortion-like practices of socalled patent trolls, have likewise substantially increased the risk of net welfare loss and less innovation (Bessen et al. 2011; Tucker 2011). Recent studies even find that patent pool arrangements result in reduced innovation by member-firms (Lampe and Moser 2010; Joshi and Nerkar 2011; Lampe and Moser 2012). Evidence also exists to show that stronger patent protection leads not to enhanced innovation or an improvement in overall welfare, but to firms protecting their interests by advocating even more protection (Landes and Posner 2003). In so doing, firms divert resources away from R&D, and into lobbyists and lawsuits. Boldrin and Levine (2013) refer to this as the political economy effect, where patent protection keeps increasing due to the lobbying efforts of entrenched firms, and without regard to the system as a whole. In their view, such behavior distorts the optimum range of protection and unbalances the entire system. In conclusion, while it is a certainty that patent protection increases patent applications and the number of patents granted, there is little to no solid evidence that it leads to increased innovation (Boldrin and Levine 2013; Scherer 2009; Lerner 2009; Gallini 2002; Jaffe 2000). Since the evidence suggests that “policy changes that strengthen patent protection … [do] not spur innovation” (Lerner 2002; UNCTAD 2011), it is unsurprising that “there is widespread unease that the costs of stronger patent protection may exceed the benefits” (Jaffe 2002). POTENTIAL RESPONSES To establish the economic significance and value of patents, it is necessary to weigh their social costs against their social benefits. Hall et al. (2012) explain, In principle a patent will function to increase fixed (and most likely sunk) costs of entry into a market where the invention protected by the patent is practiced. This will reduce entry and therefore competition. From a welfare perspective, this is the price society pays in order to encourage invention and innovation by the initial entrant. What results is a trade‐off between the interests of the incumbent holding the patent and the potential entrant excluded by it. In the case of patents, policy makers need to come to a view of how much protection to afford the patentee in order to create incentives for R&D. Given the trade-off between innovation and access, policy should be designed to reach the “optimal scope of IPRs protection”--that is, a “balance between the social benefit of innovation and the social cost of monopolistic distortion” (Nordhaus 1969). It is this balance that some believe is now lopsided. This section focuses on what can be done within the confines of the WTO to ensure that patent protection stimulates innovation and that the benefits are in balance with social costs. It goes beyond merely describing the available flexibilities offered by TRIPS to Members or analyzing the use of such tools. This work has been done (Mercurio 2013; Declaration on Patent Protection 2014), but does not go to the heart of the issue-- that of the link between IPRs and innovation. Moreover, given the definitional vagueness and uncertainty of the boundaries of patent claims and rights, countries have become risk averse and are unlikely to take action that may be viewed as inconsistent with the TRIPS Agreement. The discussion and debate must now move beyond the well-known but little used flexibilities to encompass the broader and more fundamental issue of whether IPRs--and correspondingly the TRIPS Agreement-- actually encourage innovation. In a sense, all the potential responses are radical in that they all require a shift from the status quo and amendment to the TRIPS Agreement. For this reason, none are likely to be feasible in the short, and perhaps even medium, term. This does not mean that potential responses should not be discussed. As the economic data and evidence against the current form and level of patent protection mounts, alternatives will become more realistic options. Radical proposals aimed at promoting innovation deserve to feature in the debate. The remainder of this section raises four alternatives to the status quo for discussion.

#### Err aff – offensive patents are more likely to be used than defensive patents

Gubby 19 (Helen Gubby, Is the Patent System a Barrier to Inclusive Prosperity? The Biomedical Perspective, Wiley Online Library, 06 September 2019, <https://onlinelibrary.wiley.com/doi/full/10.1111/1758-5899.12730)//ww> pbj

Patent system manipulation The patent system has become the context in which many innovations reach society. Patented inventions are everywhere: from everyday kitchen items like coffee machines and cleaning products to inventions that have a significant global impact, such as advances in medicinal drugs, systems to purify water and increasing the harvest from crops. In return for disclosing the information necessary for others ‘skilled in the art’ to make the invention, inventors of new and useful products and processes are rewarded with a monopoly, usually for 20 years. The patent is the legal instrument that protects that monopoly. The ideology behind the development of the patent system was to create a win-win situation: increased prosperity for inventors as they could make use of their market monopoly position to establish their reputation, recover research costs and make a profit, and increased prosperity and welfare for society which could benefit from these new inventions. But does the patent system deliver a win-win result? The patent application must describe how to make the invention and this information is published during the patent application process. Typically applicants will keep this information to the absolute minimum necessary in order to obtain the patent. Patenting only selected aspects of an invention can obscure the overall configuration of the invention. The use by corporations of patents as strategic tools has further undermined the original goals of the patent system and skewered the patent bargain in favour of the inventor. Biomedical innovations are vital to healthcare: they should not be controlled by private companies through patent monopolies. 1 The patent monopoly The monopoly awarded to the patentee gives the patent holder the right to exclude all others from making, using, selling, offering to sell, keeping the product or importing anything covered by the patent claims in all countries where patent protection has been granted. In general, this exclusionary right persists (if renewal fees are paid) until the expiration of the patent protection period. This yields the patent owner significant power. Even Adam Smith, who considered most exclusive privileges to be detrimental to society, did not consider this to be the case with respect to patent monopolies. These, Smith considered, ‘are harmless enough’: For if the legislature should appoint pecuniary rewards for the inventors of new machines, etc., they would hardly ever be so precisely proportioned to the merit of the invention as this is. For here, if the invention be good and such as is profitable to mankind, he will probably make a fortune by it; but if it be of no value he also will reap no benefit. (Smith, 1762-3, p. 83) This too was Jeremy Bentham's justification of the patent system: the utilitarian ground of efficiency. An exclusive privilege, Bentham argued, is ‘of all rewards the best proportioned’ (Bentham, 1843, p. 71). If the invention were not useful there would be no reward; if it was useful then the reward would be proportionate to its utility. 2 The distortion of the patent system: the patent as a strategic tool As the economy has largely shifted from industrial manufacturing to high-tech, life science and information processing industries, intellectual property has become more and more important. Corporations have become increasingly aware of the potential of the patent, not just as a shield to protect against imitation, but as a strategic tool to block competition and dominate markets. Patents have come to have a broader strategic function in which innovation may only play a small part. Although many patents do not produce any income: ‘In terms of strategy, though, the patent can be much more valuable’ (Macdonald, 2004, p. 143). Patent strategy is directly related to the business context. The Carnegie Mellon Survey of the US manufacturing sector in 1994 revealed that firms often used patents as strategic tools, rather than as simply a means of protecting an invention from wrongful imitation (Cohen et al., 2000). In their examination of motives to patent, Blind et al. (2009) recognised that, although protection from imitation was still the most important factor, ‘the importance of the strategic motives to patent are confirmed’ (Blind et al., 2006, p. 671). Patent strategies The decision to patent has become in part uncoupled from the original core purpose of the patent: to protect an invention from unfair imitation by other market participants. Larger firms, with the capital assets to pay for the cost of patenting, use their patent portfolios strategically. Patents have become useful as bargaining chips; they provide leverage. Large patent portfolios are a means to get access to important co-operations or cross-licensing arrangements (Blind et al., 2009, p. 431). Yet while building the portfolio requires enormous legal costs, it contributes little to research incentives. Furthermore, these portfolios can be used not just to oblige competitors to take licences, but also the terms of these licences can restrict competitors to certain areas of technology (Barton, 2000). Larger firms can afford to play the ‘wrap around’ strategy. Instead of applying for a single patent to cover an invention, other patents are filed around the main patent. These related patents lock down the discrete features of an invention. The tactic hinders entry to the market. Competitors will be put to time, effort and cost to fight their way through all the relevant patents covering the technology. Furthermore, the chance that the competitor's invention may infringe one of the many claims in one of the many patents is high. Not only can damages be awarded for infringement, but also an injunction. Injunctions prevent the party accused of infringement from producing any products that require the use of the technology covered by the infringed patent and all infringing products are removed from the market. Patents may be used simply to block competitors. Using a patent as a blocking strategy is common practice (Neuhäusler, 2012). Defensive blocking is used to protect a firm's own freedom to operate: it does not want to be shut out by the patents of its rivals. An offensive blocking strategy is where patents are filed to cover products or processes that the firm does not intend to practice itself, but which could be viable alternatives to competitors. By patenting all conceivable alternatives, research by competitors that might threaten their own technological lead can be thwarted. As in general a patentee is under no obligation to license out its technology to another, the strategy can deter market entry or new product launch. This offensive blocking of competitors by means of patents, ‘is clearly a case of the patent system being used for purposes other than for which it was originally intended’ (Blind, 2009, p. 436). However, both defensive and offensive blocking should be a policy concern, as they can reduce economic efficiency. Defensive patenting increases cost to firms without necessarily producing any benefit and offensive patenting can reduce technological progress and increase consumer costs by reducing competition (Thumm, 2004, p. 533). Using data from a large-scale survey of patent applications, Torrisi discovered that a substantial share of patents remained unused and a substantial number of patent applications were filed to block other patents. There were institutional differences; there were more unused patents in Japan and the EU than in the USA. Although cautious to make generalisations about unused patents, as some unused patents are there to ensure freedom to operate or simply because of management inefficiency, Torrisi et al. did conclude that: ‘[o]ur results highlight that there might be substantial benefits that patent owners draw from being able to keep patent rights unused. These would have to be balanced against possible harm imposed on other economic agents’ (Torrisi et al., 2016; , p. 1384). These strategies show a disconnect with the original purpose of the patent system. Patent strategies impact on innovation, and this in turn impacts on society. Concern was already expressed quite forcibly some years ago by Turner: Surely when the framers of the [US] Constitution empowered Congress to grant monopolies to ‘promote the progress of science and the useful arts’, they did not envision the beneficiaries of this grant would use it to bury new technologies to protect market share or capital investments. (Turner, 1998, p.209) Administrative failures Patent offices have been struggling to cope with the increasing number of patent applications: in 2017, more than 3 million patent applications were filed worldwide (WIPO, 2018). This influx has resulted in substantial application backlogs, with an increasingly long time between the patent filing and the patent grant: five years is not unusual. Complaints of poor quality control have been made concerning the US Patent and Trademark Office as well as the European Patent Office (Abbott, 2004; Mabey, 2010). The WIPO recognised a consistent upward trend in patent filings is putting patent offices under enormous pressure (WIPO, 2017, p. 13). Why are these administrative failings dangerous from a societal perspective? Patents grant a monopoly that can impact innovative processes for 20 years or more. Patents have been granted that should not have been granted. When an overly broad patent is granted, this can block further innovation by others. Broad patents may mean that access to vital research is not available because the results of that research are covered by patent claims. In particular, broad basic patents on fundamental research can block and deter follow-on research. The incentive to innovate is reduced (Barton, 2000; Henry and Stiglitz, 2010).1 Back in 1966, the societal implication of overly broad grants was expressed clearly by the US Supreme Court when it rejected a broad claim covering a group of chemicals: ‘Such a patent may confer power to block off whole areas of scientific development without compensating benefits to the public.’2 3 The exclusionary effects of patent system manipulation: the biomedical sector Biotechnical inventions have a fundamental impact on healthcare, with applications in medical diagnosis, research tools and pharmaceutical drugs. Knowledge has become a very valuable asset. Its commercialisation opens up lucrative business opportunities. The strategic use of patents in the biomedical sector is intended to protect those business interests. However, those patent strategies have societal repercussions. Intellectual property rights and biomedical research A common argument is that there is a distinction between fundamental research and the application of that research; fundamental research should remain in the public domain, while applications can be the province of patents. That is a misguided distinction. As Eisenberg and Nelson point out, the conventional view that basic research is a public enterprise while applied technology is a private enterprise conducted in the hope of earning profits, ignores the ways in which basic science and applied technology can frequently overlap: public and private interest may then conflict (Eisenberg and Nelson, 2002). Fundamental research can become proprietary. A patent should only give protection to an invention. According to US law, this invention must be ‘useful’ (35 US Code, Section 101) and the European Patent Convention 1973 (EPC) requires that an invention is capable of ‘industrial application’ (Art. 52, EPC). Patent law therefore mandates that there must be a practical application. Consequently, a patent does not extend to a discovery, the terrain of fundamental research, as this is explicitly excluded from patentability. The line between ‘discovery’ and ‘invention’ has, however, become exceedingly thin, if non-existent, with respect to molecular technology. The current position with regard to genes and DNA sequences in effect marks a departure from the traditional doctrine that excluded discoveries from patentability. Genes are not new products; they exist in nature and therefore cannot be invented. Yet today, genes and gene sequences are patented as inventions, being regarded as ‘products’. Even if a use of the gene or sequence is speculative, if a use is plausible at the time the patent is filed the utility requirement is fulfilled. The EPC was amended to be brought into line with the terms of the European Directive on the legal protection of biotechnological inventions. This Directive states: An element isolated from the human body or otherwise produced by means of a technical process, including the sequence or partial sequence of a gene, may constitute a patentable invention, even if the structure of that element is identical to that of a natural element.3 Taking an apparently different track, in 2013 the US Supreme Court stated that the mere act of isolating a gene from its surrounding genetic material was not an act of invention. The court did accept synthetic cDNA as patentable, as this was created in the laboratory.4 Scientists have voiced concern that what is often patented has not so much been produced but rather discovered, and is human genetic information rather than an invention (see for a summary of some of these arguments Bergel, 2015). These developments in patent law have created a very real danger: researchers could be barred from accessing fundamental research, which in turn could hinder new knowledge and further innovation. Back in 1998, Heller and Eisenberg warned policy makers to be alert: more upstream rights could block downstream innovation. In this way, the private ownership of biomedical research could lead to fewer useful products for improving human health (Heller and Eisenberg, 1998). If genes and DNA sequences are patent protected, then the patent owner has the right to exclude all others from using that technology. This breach of the discovery/invention distinction is symptomatic of the expansion of patentable subject matter at a global level, extending property claims deep into biology and limiting the scope for accessible treatment and future research (David and Halbert, 2017). The danger of private ownership of fundamental research became apparent with the commencement of the Human Genome Project in the 1990s. The project turned into a struggle between publically funded scientists and private companies. Publically funded scientists worked hard to ensure that all their research would remain in the public domain and therefore published all their findings to prevent patent applications blocking access to research. Their attempts were not always successful. For example, one day before Mike Stratton was due to publish his paper on cancer genes in the journal Nature in 1995, the private company Myriad Genetics applied for a patent on BRCA1 and BRCA2, which were associated with breast cancer. The patents allowed it to charge for tests at a cost of $2,500 per patient. Licences for the use of its simpler tests for breast cancer by other labs cost several hundred dollars per patient, a cost that, given the nature of the American healthcare system, meant the test was not available for all female patients in the USA. By 2015, Myriad was worth over $3bn (Pollock, 2018, p. 64). The leading patent offices, those in the USA, Europe and Japan, have granted thousands of patents claiming human DNA. Patent thickets have already emerged, with many of the sequences claimed in patents overlapping. For example, a gene with 15 exons could have a separate patent on each exon; there could be a claim on the complete sequence, as well as a claim on the promoter sequence. One illustration of the complexity of these overlapping patents is the difficulties encountered by researchers from the PATH foundation when they were trying to develop a malaria vaccine: they had to negotiate research use for the 39 different patents involved (Thomas et al., 2002). Thomas also points to the dangers of broad patents grants: ‘Furthermore, because the majority of patents covering DNA sequences are what are termed per se claims, the applicant, in making the first claim, gains the right to all uses, including those that are as yet undiscovered’ and ‘[a]n excessively broad patent that contains claims to all conceivable diagnostic tests creates a monopoly, such that there is little incentive to develop improved tests’ (Thomas et al., 2002, pp. 1186–1187). Some commentators are not convinced that patent monopolies have hindered follow-up research. Clark states that there is a lack of evidence that intellectual property protection measures have had a significant negative impact on academic biomedical research: ‘In the face of no empirical evidence, the myth that patents inhibit biomedical research, publication and dissemination of knowledge is promulgated’ (Clark, 2011, pp. 79–80). Caulfield et al. (2006), while acknowledging that there have been good reasons for concern, like Clark concludes ‘the feared problems have not widely manifested’. However, Caulfield et al.'s research does point to one important exception: gene patents that cover a diagnostic test. Patent owners have asserted exclusivity or licence terms ‘widely viewed as inappropriate’ (Caulfield et al., 2006;, pp. 1892–1893). The assertion of ‘no empirical evidence’ is certainly too strong. Examples of problematic access to fundamental technology do bubble to the surface. One such example is the position regarding zinc-finger proteins (ZFPs), which can bind almost all DNA sequences. The ZFP patent portfolio has been dominated by one firm in particular: Sangamo. Researchers found that Sangamo was highly selective in its choice of collaborators. Academic scientists therefore often took the risk of using the technology without a licence, hoping that Sangamo would not sue academics. However, even this did not solve the problem. The patents did not disclose all the necessary information. Vital knowledge remained in the Sangamo database and design rule set. Without this proprietary information scientists could not practice the claimed invention: ‘More complete patent disclosure might also have obviated the need to generate various open science alternatives to the Sangamo platform’ (Chandrasekharan et al., 2009). These examples should not be dismissed as ‘anecdotes’; they are important. They indicate that access by academics to fundamental research can be hampered. Nor do we know how many innovative start-ups or small firms have been hindered by blocking patents, too expensive licences, restrictive licence terms or threats of being sued for patent infringement. An assessment of the situation cannot be made simply by looking at litigated cases: litigated cases are always the tip of the iceberg. The pharmaceutical industry Pharma companies stress that medicinal drugs take years of research and development. The venture is also far from risk free: the drug may be a failure either because clinical trials fail, so approval is not given, or because it is not a commercial success. Based on a study at the Tufts Center, it has been estimated that the time needed for the development of a new drug, from initial stages through to approval, takes on average 11.8 years and will cost in the range of $802 million to $1.8 billion (DiMasi et al., 2003; Barazza, 2014). It is these costs, the industry argues, that justify the high price of the drugs. In a critique of the methodology used by the Tufts Center to explain a cost of $802 million, and the lack of public access to the data used for the study, Light and Warburton argue that such estimates should be treated with scepticism; these are ‘mythical costs’ to try to justify the high prices of drugs (Light and Warburton, 2011). What is clear is that if the drug survives the patent process and the authorisation process, and turns out to be a blockbuster, huge profits can be reaped. For example, the Danish company Lundbeck grew rapidly in the 1990s primarily because of its anti-depression drug, Citalopram. Citalopram alone accounted for around 80 per cent of the company's sales by the end of the twentieth century, with large sales figures for Europe and the USA at that time bringing in kr. 720 million.5 Similarly, Losec, a medicine for stomach ulcers, was so successful that it is estimated to have brought in between $15–30 billion for AstraZeneca, making AstraZeneca one of the largest global pharmaceutical companies (Granstrand and Tietze, 2014). Many pharmaceutical companies have not been reticent to exert their monopoly position to ensure market dominance and satisfy their investors. However, with some exceptions, a patent expires after 20 years. When the patent expires, the market for the drug opens up to generic drug companies. These generic drug manufacturers have not had to sustain the costs in development of the original brand manufacturers. This means that they can sell generic medicines considerably cheaper: on average 25% lower than the price of the brand drugs at the time of generic entry and 40% lower two years after entry. The share of the market by generic companies after two years is estimated at 45% (European Commission, 2009: paragraph 1560). It is not surprising, given the huge profits that a blockbuster drug can make for a company, that pharma companies will look to manipulate the patent system to prolong their market dominance. The brand name drug companies have various strategies they can employ. They can wrap many patents around the original patent, resulting in patent clusters. Patents are filed for certain specific aspects of a single product, such as dosing, delivery systems and combinations. For example, depending on the medicine, the medicine may come with a proprietary inhaler or injector that is integrated into the product. Yet these combinations will be patented separately. Consequently, even after all the patents on the medicine expire, the remaining patents on the associated device, or parts of the device, can be sufficient to prevent generic entry (Beall et al., 2016). The ‘evergreening’ strategy is a form of blocking mainly used in the pharmaceutical industry. As the patent system allows improvements and additions to be patented, inventions that are really just slight modifications of the old drug are patented. These secondary patents, usually filed just before the patent on the original drug expires and competition can start, each gain 20 years protection. The weaker patents are an attempt to prolong the patent protection of the original, much stronger patent. Although from the technical perspective only minor improvements may be involved, from an economic perspective these can be significant as patents for incremental improvement processes can be filed almost continually. Building and maintaining a patent network of new medical applications, improvements and substitutions is an effective evergreening strategy, also cutting down possibilities for ‘invent around’ attempts (Granstrand and Tietze, 2014). As Dwivedi et al. (2010, p. 324) notes: ‘While most of these evergreening strategies conform to the letter of the law, very often they seem to undermine the spirit in which patent laws were created’. Even when generic products do enter the market, patients will not always opt for the cheaper drug. Why? What should not be underestimated is the scope and intensity of the marketing campaigns of the brand name companies. Their aim is to ensure that patients switch to the second generation product by convincing them that the newer version is worth the extra money. Strategies include convincing marketing authorisation and pricing and reimbursement bodies, as well as doctors, that the generic product is less safe, less effective or of inferior quality (European Commission, 2009). Another major strategy used by brand name companies is the so-called ‘pay-for-delay’ practice. This practice was one of the concerns that prompted the European Commission to launch its enquiry into the pharmaceutical industry in 2008. In a ‘pay-for-delay’ agreement, a generic manufacturer agrees to delay entry to the market in exchange for a value transfer. Instead of the claimant brand name company demanding damages from the generic company for infringement of its existing secondary patents, in reverse payment settlements the one accused of infringement is the one receiving payment. The generic company is basically paid simply to keep out of the patent owner's market, often also agreeing not to challenge the validity of the claimant's (secondary) patents. The parties can reach a settlement by in effect sharing part of the monopoly profit, the consequence being that prices are kept high (Choi et al., 2014). Following the sector enquiry, the European Commission issued a number of decisions against brand name companies and those generic companies that had entered into agreements with them. In 2013, Lundbeck and four generic firms were fined €145 million, a decision confirmed by the General Court of the European Union in 2016: the agreement was per se illegal being a violation of EU competition law. Other pharma companies fined included Johnson & Johnson, Novartis and Servier. The Final Report by the European Commission observed: ‘The additional costs caused by delays to generic entry can be very significant for the public health budgets and ultimately the consumer.’ (European Commission, 2009, p. 1558). These ‘pay-for-delay’ agreements have also been challenged in the USA. The Federal Trade Commission (FTC) was of the opinion that these agreements were infringements of competition law and that ‘[a]lthough both the brand name companies and generic firms are better off with such settlements, consumers lose the possibility of earlier generic entry’.6 In the lawsuit the FTC brought against Actavis for agreeing to delay bringing its version of Solvay's AndroGel to market, the US Supreme Court did not categorise the agreement as per se illegal. It mandated that a ‘rule of reason’ approach should be used, reviewing such settlements on a case by case basis.7 The FTC has remained committed to scrutinising pay-for-delay agreements. The monopoly position has made it possible for pharma companies to charge high prices for their medicines. At times this has caused public outrage, particularly when the price of a drug rose considerably from one day to another. For example, the price of tablets containing the drug Daraprim, when acquired by Turing Pharmaceuticals, rose from $13.50 a tablet to $750 a tablet overnight, bringing the cost of treatment per annum for some patients to thousands of dollars. Cycloserine increased in price from $500 for 30 pills to $10,800 for 30 pills after it was acquired by Rodelis Therapeutics (Pollack, 2015). The high price of some medications has caused concern in Europe too. Governments struggle in their negotiations with pharma companies. In the Netherlands, the government has expressed its dissatisfaction with the current situation in a report. One of the problems highlighted in this report is the patent monopoly: Another important cause of high prices is the extensive protection manufacturers obtain on their patents. This process was originally intended to stimulate innovation, but is currently used by the industry to maintain a monopoly – and thereby a high price - on new medications for as long as possible. This has a significant impact on society: The way the pharmaceutical market works has led to innovation and new medicines which are extremely valuable for patients. But those patients, and in fact all Dutch people who pay insurance premiums, find themselves at a disadvantage because pharmaceutical companies have a monopoly when it comes to new medicines. Therefore, we need to seek a healthy balance between rewarding innovation and the affordability of medicinal care. (Ministry of Public Health, Welfare and Sport, the Netherlands, 2016: pp. 4, 13) The price of medicines has become a matter of critical importance even for wealthier countries. The pharmaceutical industry and developing countries However, perhaps the largest group of patients excluded from the potential benefits of biomedical research are those in developing countries. Exclusion can originate in the very choice of which drugs pharma companies decide to develop. Their research tends to be market orientated. By the end of the twentieth century, only about one per cent of newly developed drugs were for tropical diseases, such as African sleeping sickness, dengue fever and leishmaniosis (Maurer et al., 2004). Companies aim to make a profit and satisfy shareholders. It is therefore not surprising that expensive R&D will be more geared up to the types of illnesses prevalent in developed countries, as these countries have more capital resources to pay the price for these drugs. As Stiglitz (2006: p. 1279) observed: ‘Poor people cannot afford drugs, and drug companies make investments that yield the highest returns’. Not only does the choice of which drug is developed significantly impact on developing countries: the imposition of stringent requirements for intellectual property protection under the TRIPS agreement is also a factor in access to treatment. This was made explicit in the World Bank report: Nothing is more controversial in TRIPS. It is conceivable that patent protection will increase incentives for R&D into treatments for diseases of particular concern to poor countries. However because purchasing power is so limited in the poorest countries, there is little reason to expect a significant boost in such R&D. Accordingly, many developing countries see little potential benefit from introducing patents. In contrast, potential costs could be significant. (World Bank, 2001, p. 137) The Doha Declaration on the TRIPS Agreement in 2001 did confirm the right of countries to use compulsory licences to gain access to medicines. By issuing a compulsory licence, the government gives permission to a third party to produce the patented product or process without the consent of the patent owner. The drug so produced is much cheaper than the brand name drug at the monopoly price. This right has already been exercised on various occasions, for example by the South African authorities in 2003 in order to create more general access to AIDS medicines. Does compulsory licensing therefore deal with any negative impact of TRIPS for developing countries, given that TRIPS hindered the use of cheaper, domestic generic versions of brand name patented drugs? Compulsory licensing is not without undesirable side effects. It has the potential to reduce incentives for pharma companies to innovate, and for tensions between the government authorising the compulsory licences and the governments of the patentees, which can have both political and economic implications (Flynn et al., 2009; Reichman, 2009). There have been indications that the USA is not entirely at ease when states order compulsory licensing of American pharmaceuticals (Nagan et al., 2017). Compulsory licensing may be an instrument to alleviate the strictures of the patent system to some extent, but it is not the entire solution.

#### Only pharma innovation solves global pandemics that risk extinction

Jeffrey Sachs 14, Professor of Sustainable Development, Health Policy and Management @ Columbia University, Director of the Earth Institute @ Columbia University and Special adviser to the United Nations Secretary-General on the Millennium Development Goals) “Important lessons from Ebola outbreak,” Business World Online, August 17, 2014, http://tinyurl.com/kjgvyro

Ebola is the latest of many recent epidemics, also including AIDS, SARS, H1N1 flu, H7N9 flu, and others. AIDS is the deadliest of these killers, claiming nearly 36 million lives since 1981. Of course, even larger and more sudden epidemics are possible, such as the 1918 influenza during World War I, which claimed 50-100 million lives (far more than the war itself). And, though the 2003 SARS outbreak was contained, causing fewer than 1,000 deaths, the disease was on the verge of deeply disrupting several East Asian economies including China’s. There are four crucial facts to understand about Ebola and the other epidemics. First, most emerging infectious diseases are zoonoses, meaning that they start in animal populations, sometimes with a genetic mutation that enables the jump to humans. Ebola may have been transmitted from bats; HIV/AIDS emerged from chimpanzees; SARS most likely came from civets traded in animal markets in southern China; and influenza strains such as H1N1 and H7N9 arose from genetic re-combinations of viruses among wild and farm animals. New zoonotic diseases are inevitable as humanity pushes into new ecosystems (such as formerly remote forest regions); the food industry creates more conditions for genetic recombination; and climate change scrambles natural habitats and species interactions. Second, once a new infectious disease appears, its spread through airlines, ships, megacities, and trade in animal products is likely to be extremely rapid. These epidemic diseases are new markers of globalization, revealing through their chain of death how vulnerable the world has become from the pervasive movement of people and goods. Third, the poor are the first to suffer and the worst affected. The rural poor live closest to the infected animals that first transmit the disease. They often hunt and eat bushmeat, leaving them vulnerable to infection. Poor, often illiterate, individuals are generally unaware of how infectious diseases -- especially unfamiliar diseases -- are transmitted, making them much more likely to become infected and to infect others. Moreover, given poor nutrition and lack of access to basic health services, their weakened immune systems are easily overcome by infections that better nourished and treated individuals can survive. And “de-medicalized” conditions -- with few if any professional health workers to ensure an appropriate public-health response to an epidemic (such as isolation of infected individuals, tracing of contacts, surveillance, and so forth) -- make initial outbreaks more severe. Finally, the required medical responses, including diagnostic tools and effective medications and vaccines, inevitably lag behind the emerging diseases. In any event, such tools must be continually replenished. This requires cutting-edge biotechnology, immunology, and ultimately bioengineering to create large-scale industrial responses (such as millions of doses of vaccines or medicines in the case of large epidemics). The AIDS crisis, for example, called forth tens of billions of dollars for research and development -- and similarly substantial commitments by the pharmaceutical industry -- to produce lifesaving antiretroviral drugs at global scale. Yet each breakthrough inevitably leads to the pathogen’s mutation, rendering previous treatments less effective. There is no ultimate victory, only a constant arms race between humanity and disease-causing agents.

### 1AC - Solvency

#### Plan: The member nations of the World Trade Organization should reduce intellectual property protections for medicines .

**Feldman, 19** (Robin Feldman, Robin Feldman is professor of law and director of the Institute for Innovation Law at UC Hastings College of the Law in San Francisco and author of “Drugs, Money, and Secret Handshakes” (Cambridge University Press, March 2019). 2-11-2019, accessed on 8-13-2021, STAT, "Drug patent protection: it's time for a 'one-and-done' approach - STAT", <https://www.statnews.com/2019/02/11/drug-patent-protection-one-done/)WWPP>

-bans method such as evergreening, patent thickets, fake orphan patents, and pay for delay

Feldman 19 Robin Feldman 2-11-2019 "‘One-and-done’ for new drugs could cut patent thickets and boost generic competition" <https://www.statnews.com/2019/02/11/drug-patent-protection-one-done/> (Arthur J. Goldberg Distinguished Professor of Law, Albert Abramson ’54 Distinguished Professor of Law Chair, and Director of the Center for Innovation)//SidK + Elmer

I believe that one period of protection **should be enough**. We should make the legal changes necessary to prevent companies **from building patent walls** and piling up mountains of rights. This could be accomplished **by a “one-and-done” approach** for patent protection. Under it, a drug would receive just one period of exclusivity, and no more. The choice of which “one” could be left entirely in the hands of the pharmaceutical company, with the election made when the FDA approves the drug. Perhaps development of the drug went swiftly and smoothly, so the remaining life of one of the drug’s patents is of greatest value. Perhaps development languished, so designation as an orphan drug or some other benefit would bring greater reward. The choice would be up to the company itself, based on its own calculation of the maximum benefit. The result, however, is that a pharmaceutical company chooses whether its period of exclusivity would be a patent, an orphan drug designation, a period of data exclusivity (in which no generic is allowed to use the original drug’s safety and effectiveness data), or something else — but **not all of the above** and more. Consider Suboxone, a combination of buprenorphine and naloxone for treating opioid addiction. The drug’s maker has extended its protection cliff eight times, including obtaining an orphan drug designation, which is intended for drugs that serve only a small number of patients. The drug’s first period of exclusivity ended in 2005, but with the additions its protection now lasts until 2024. That makes almost two additional decades in which the public has borne the burden of monopoly pricing, and access to the medicine may have been constrained. Implementing a one-and-done approach in conjunction with FDA approval underscores the fact that these problems and solutions are designed for pharmaceuticals, not for all types of technologies. That way, one-and-done could be implemented through **legislative changes to the FDA’s drug approval system**, and would apply to patents granted going forward. One-and-done would apply to both patents and exclusivities. A more limited approach, a baby step if you will, would be to invigorate the existing patent obviousness doctrine as a way to cut back on patent tinkering. Obviousness, one of the five standards for patent eligibility, says that inventions that are obvious to an expert or the general public can’t be patented. Either by congressional clarification or judicial interpretation, many pile-on patents could be eliminated with a ruling that the core concept of the additional patent is nothing more than the original formulation. Anything else is merely an obvious adaptation of the core invention, modified with existing technology. As such, the patent would fail for being perfectly obvious. Even without congressional action, a more vigorous and robust application of the existing obviousness doctrine could significantly improve the problem of piled-up patents and patent walls. Pharmaceutical companies have become adept at maneuvering through the system of patent and non-patent rights to create mountains of rights that can be applied, one after another. This behavior lets drug companies keep competitors out of the market and beat them back when they get there. We shouldn’t be surprised at this. Pharmaceutical companies are profit-making entities, after all, that face pressure from their shareholders to produce ever-better results. If we want to change the system, we must change the incentives driving the system. And right now, the incentives for creating patent walls are just too great.

#### Decreasing patents doesn’t stifle innovation, but increases it through collaboration between companies – empirics

Laurie Garrett 5/21 [Laurie Garrett is a columnist at Foreign Policy, a former senior fellow for global health at the Council on Foreign Relations, and a Pulitzer Prize-winning science. MAY 7, 2021, "Stopping Drug Patents Has Stopped Pandemics Before," Foreign Policy, https://foreignpolicy.com/2021/05/07/stopping-drug-patents-pandemics-coronavirus-hiv-aids/]//anop

U.S. President Joe Biden’s waiver of patent protections for U.S.-made COVID-19 drugs and vaccines is a historic milestone and a moral imperative. It is also an overdue acknowledgement of recent experiences. Contrary to prognostications from the pharmaceutical sector that side-stepping the Trade-Related Aspects of Intellectual Property Rights (TRIPS) component of the World Trade Organization (WTO) will mark the death knell of the drug industry, the world’s response to HIV/AIDS long ago demonstrated that patents stymie accessible treatment, cost lives, and offer little bona fide enhancement of innovation. There are challenges that lie ahead—but harm to pharmaceutical companies or future patients who will rely on their productivity do not count among them. Consider what happened in the years after 1996, when a consortium of pharmaceutical companies took the unprecedented step of sharing their HIV/AIDS treatment data and manufacturing, resulting in a collaboration that was the turning point for what had been a catastrophically grim pandemic. By working together, the companies demonstrated that any one anti-HIV/AIDS drug, taken as monotherapy, would fail, possibly even hasten the pace of the disease process. But when taken in combinations of three or four drugs, made by usually rival companies, the antiviral assault was so powerful that people bounced back from the edge of death like the Biblical Lazarus who was resurrected by Jesus. As millions of HIV positive people living in wealthy countries switched overnight from planning their funerals to building up retirement accounts, the miracle of combination antiviral therapy was denied to millions more living with AIDS in sub-Saharan Africa and other poorer regions. A battle unfolded, pitting a reluctant—even obstinate—pharmaceutical industry against AIDS activists, physicians, and political leaders from developing countries. In 2002, former U.S. President Bill Clinton intervened, using his bully pulpit in consultation with a team of academic experts convened by his philanthropic foundation to contrive a tech-transfer scheme that had Western pharmaceutical companies provide their patented drug formulas to Indian generic manufacturing companies, ultimately bringing down annual treatment costs from nearly $10,000 to less than $100. Far from bringing chaos to the pharmaceutical industry and stifling innovation, the Clinton Foundation’s maneuver around the strict enforcement of intellectual property laws ushered in a dramatic era of HIV drug invention that improved the antiviral power of treatment, lowered drug side effects, developed new drug forms that are now taken to prevent infection, increased options for pediatric care, and greatly improved the methods for which HIV positive individuals could take their life-sparing treatments. Despite the loss of guaranteed patent protection and pressure to transfer technology to, primarily, Indian pharmaceutical companies, wealthy nations’ drug companies have profited and continue to innovate on the HIV/AIDS front. You can support Foreign Policy by becoming a subscriber. SUBSCRIBE TODAY Of the multiple COVID-19 vaccines currently in use, the most promising—the mRNA and adenovirus vector products—all arose from government-funded research, mostly based in academic research centers. AstraZeneca’s vaccine, for example, grew out of the United Kingdom’s government-back research and development at Oxford University. The Moderna and Pfizer mRNA vaccines grew out of years of National Institutes of Health-funded research in the United States and with predecessor Ebola vaccines in the Democratic Republic of the Congo, Guinea, Sierra Leone, and Liberia. China’s vaccine built on years of military immunization work. And thanks to Operation Warp Speed, many companies involved in the vaccine chain of production have benefited with a total of $18 billion of U.S. government subsidies. The speed and scale of COVID-19 vaccine production in the United States is largely thanks to the country’s taxpayers. This week, Pfizer reported earning $3.5 billion in profits during the first quarter of this year from its COVID-19 vaccine. Moderna earned the first profits the fledgling company has ever seen—$1.73 billion—and projects nearly $20 billion in earnings this year. Despite setbacks, both the AstraZeneca and Johnson & Johnson adenovirus vector vaccines are making handy profits, projected to each garner multiple billions of dollars this year. Even Sinopharm from China and Gamaleya from Russia expect to reap ample profits in 2021, both in cash and diplomacy, as they sell vaccines directly to key governments. The Novavax company, which makes a not-yet-approved protein vaccine, expects massive earnings in late 2021. Despite the threat of patent-voiding, all of these companies—as well as a long list of would-be vaccine makers further back in the research and development pipeline—have continued to innovate, trying to find formulations that can battle variant strains of the virus; be stored at room temperature; and get administered via skin patches, orally, or in a nasal mist. The creativity at these companies continues—and there’s no reason to think it will stop anytime soon. It remains to be seen how many countries with big pharmaceutical industries will follow the Biden administration’s lead in liberalizing patent protections for COVID-19-related vaccines and drugs. The WTO operates by consensus from member states, so the United States can’t unilaterally alter the global landscape. But Ngozi Okonjo-Iweala, the new WTO director-general, is already raising the heat. A former Nigerian minister of finance, ex-World Bank official, and the first African and woman to hold the coveted World Trade Organization position, Okonjo-Iweala made it clear from her first day in office that a TRIPS-waiver for COVID-19-related products was her top priority. But even if one assumes the European Union, U.K. Prime Minister Boris Johnson, Japanese Prime Minister Yoshihide Suga, and Swiss President Guy Parmelin will adopt Biden’s example, waiving patent protections on their COVID-19 products, the next challenges will be far more difficult. Adar Poonawalla, CEO of India’s Serum Institute, the world’s largest vaccine manufacturer, has complained that his company’s production facilities are already overwhelmed filling orders for generic AstraZeneca and other COVID-19 vaccines—orders places by countries other than India. The Modi government, Poonawalla said, placed a paltry order for just 15 million doses of a generic version of AstraZeneca’s vaccine in January, supplemented by an April order for 110 million doses—a drop in the bucket for a nation of more than 1.3 billion people needing a two-dose vaccine. (Poonawalla’s statements riled Modi supporters, and Poonawalla fled the country this week, staying “indefinitely” in London.) READ MORE U.S. President Joe Biden leaves after he delivered remarks on COVID-19. Can Biden’s Vaccine Patent Waiver End the Pandemic? Health experts laud a big step forward—but try explaining that to Indian or Brazilian hospitals in a deadly race against time. REPORT | MICHAEL HIRSH The vaccines aren’t easy to make. Manufacturing errors in a Maryland Emergent BioSolutions factory caused an 86 percent plummet in Johnson & Johnson vaccine supplies in early April. Complex steps in the process of isolating, purifying, preserving, storing, and delivering COVID-19 immunizations are each error-prone and require long lists of specialized chemicals and machinery. The world is in the grips now of pipette tips shortages—used to suck out chemicals and viral samples from test tubes in key steps of vaccine making. Syringes are in short supply, prompting vaccinators to toss vaccine supplies for lack of means to administer them. The sterile containers used to hold vaccines are running out. From the earliest days of the 2020 pandemic, the sorts of protective gear and machinery vaccine researchers and makers require have been in short supply, exacerbated by trade tensions between the United States and China. Swabs used for COVID-19 testing and all aspects of equipment cleaning in sterile conditions are held up in a grotesque family dispute in Maine. There aren’t enough centrifuge tubes made worldwide to spin down cell samples. Moderna and Pfizer are constantly scrambling to find the ingredients used to make the microscopic fatty balls, called liposomes, that house the mRNA molecules and carry them safely into the bloodstream. Even the nucleic acids used to construct mRNA and a long list of special enzymes used to purify those samples are in horribly short supply, largely because their use overlaps with the manufacture of COVID-19 tests. Because such delicate chemicals and proteins must be handled at deep-freeze temperatures and transported swiftly for immediate use, the entire supply chain is vulnerable to the simplest of catastrophes: weather at an airport, a car crash that blocks truck traffic, power outages, or competition for cargo space. Although waiving TRIPS requirements on COVID-19 vaccines is a spectacular, historic gesture, would-be generic makers worldwide will soon discover their efforts are stymied not by patents but for want of Avanti Polar Lipids’ liposome ingredients, Flexsafe RM special bags to hold liquid vaccines in bulk, phosphate-buffered saline solution, Distearoylphosphatidylcholine for liposome-making, 5’ cap for mRNA made by TriLink BioTechnologies, RNA polymerases—the list goes on, and on, and on. As the number of would-be vaccine makers grows, so will demand for thousands of such items, putting pressure on companies that are, in many cases, mom-and-pop operations. Worse, pressure on supplies critical for COVID-19 vaccine making is already resulting in a production loss of vital medicines for other diseases. Oxygen, after all, is ubiquitous, unpatented, free to all—unless it is needed in pure form, in a pressurized tank, or for ventilation use by a critically ill COVID-19 patient in Pune, India. On June 24, the World Health Organization held a press conference in Geneva merely to plead for help obtaining 14,000 oxygen concentrators to generate 620,000 cubic meters of oxygen per day, just for India. Scaling up vaccine production to produce enough doses to fully immunize more than 7.8 billion people will require a level of international coordination and cooperation never previously seen. Knocking down patent barriers on the final vaccine formulations is a start, but that’s all that it is.

### Underview

#### [1] 1AR theory –

#### A. AFF gets it because otherwise the neg can engage in infinite abuse, making debate impossible.

#### B. Drop the debater – the short 1AR irreparably skewed from abuse on substance and time investment on theory.

#### C. No RVIs – the 6-minute 2nr can collapse to a short shell and get away with infinite 1nc abuse via sheer brute force and time spent on theory.

#### [2] AFF RVIs —

#### A. Skew – there’s no 2AC to develop carded offense and the 1AR has to over-cover since the 6 minute 2NR is devastating which encourages them to under-develop T in the NC and over-develop in the NR – need the RVI to develop good, in-depth T offense

#### B. Reciprocity – T is a unique avenue to the ballot that the aff can’t access – makes T structurally unfair without the RVI

### Method

**[1] Policy analysis is key to critical skills and real world policy change**

John **Hird 17**. Dean of the College of Social and Behavioral Sciences and Professor of Political Science and Public Policy, University of Massachusetts Amherst. “How Effective is Policy Analysis,” in D. Weimer & L. S. Friedman (eds.) Does Policy Analysis Matter? Exploring Its Effectiveness in Theory and Practice. University of California Press. 44-76.

Classical policy analysis, however absent from actual policy making, remains an important vehicle for teaching policy analysts the connections between their analysis and the policymaking world in which their recommendations would live. **Even if** it implies more power than analysts will ever have, classical **policy analysis** teaches that politics, law, implementation, social structures, organizational behavior, and other factors are **critical to policy outcomes** and must play key roles in **thinking through** possible ways to address policy problems. **Bringing policy ideas to fruition**, bridging the worlds of research and policy making, is a **critical skill** for analysts to develop. In addition, policy schools are instilling in prospective policy analysts the structure and habits of mind to engage successfully in the policy enterprise. 28 Teaching **disciplined thinking** for public service is important. Policy analysts not only have a **problem-oriented**, **interdisciplinary** approach to policy and the **ability to synthesize** and **bring policy relevance** to problems that social scientists are not trained for, but they understand the "rational lunacy of policy-making systems" (Weiss 2009). In the absence of written classical policy analyses, policy analysts become their human embodiment. Their training will provide a mental picture of how a classical policy analysis should be performed. They can derive elements of policy analysis from writing position papers, briefing policy makers, and controlling meetings. They **anticipate counterarguments** and frame their analyses recognizing alternative options. In short, the **mental map** of a policy analysis allows good policy analysts not only to be effective in their jobs but also to **advance** into the **public debate** the appropriate elements of a policy analysis. Further, the **problem orientation** of policy analysis **focuses** at least some **attention** on **social problems**, not just political expediency. The role of policy analysts is not merely to translate research for policy makers, but to use creative means to turn available knowledge about the implications of various policy options into actionable policy recommendations appropriate for their clients. This is a subtle skill requiring attention to both political realities and the best available research. Finally, prospective policy analysts are instructed repeatedly about the importance of their relationship to the client(s), yet far less attention is paid to the other part of the policy analyst's relationship: to the community of knowledge producers. Policy analysts play **critical roles as intermediaries** between "custodians of the knowable" and policy makers. Their training should include the ability to **understand** and **interpret** the academic literature on a topic at a **far deeper level** than most journalists have the time or, often, the analytic skill set to uncover. Identifying and **connect**ing **pertinent knowledge** and **analysis** with policy makers should be a core principle of a public policy education. Policy analysts may offer the central means to provide policy makers with the key elements of classical policy analysis, though not in the way, through written reports, it was originally conceived. Creating a profession for committed, accomplished, and well-trained individuals to participate in the world of public policy may be among the most important contributions of policy analysis education.

**[2] A particularist approach is key- overarching theories ignore material injustice.**

**Pappas 16.** (Gregory Fernando Pappas [Texas A&M University] “The Pragmatists’ Approach to Injustice”, The Pluralist Volume 11, Number 1, Spring 2016, BE

The pragmatists’ approach should be distinguished from nonideal theories whose starting point seems to be the injustices of society at large that have a history and persist through time, where the task of political philosophy is to detect and diagnose the presence of these historical injustices in particular situations of injustice. For example, critical theory today has inherited an approach to social philosophy characteristic of the European tradition that goes back to Rousseau, Marx, Weber, Freud, Marcuse, and others. Accord- ing to Roberto Frega, this tradition takes society to be “intrinsically sick” with a malaise that requires adopting a critical historical stance in order to understand how the systematic sickness affects present social situations. In other words, this approach assumes that¶ a philosophical critique of specific social situations can be accomplished only under the assumption of a broader and full blown critique of soci- ety in its entirety: as a critique of capitalism, of modernity, of western civilization, of rationality itself. The idea of social pathology becomes intelligible only against the background of a philosophy of history or of an anthropology of decline, according to which the distortions of actual social life are but the inevitable consequence of longstanding historical processes. (“Between Pragmatism and Critical Theory” 63)¶ However, this particular approach to injustice is not limited to critical theory. It is present in those Latin American and African American political philosophies that have used and transformed the critical intellectual tools of ¶ critical theory to deal with the problems of injustice in the Americas. For instance, Charles W. Mills claims that the starting point and alternative to the abstractions of ideal theory that masked injustices is to diagnose and rectify a history of an illness—the legacy of white supremacy in our actual society.11 The critical task of revealing this illness is achieved by adopting a historical perspective where the injustices of today are part of a larger historical narrative about the development of modern societies that goes back to how Europeans have progressively dehumanized or subordinated others. Similary, radical feminists as well as Third World scholars, as reaction to the hege- monic Eurocentric paradigms that disguise injustices under the assumption of a universal or objective point of view, have stressed how our knowledge is always situated. This may seem congenial with pragmatism except the locus of the knower and of injustices is often described as power structures located in “global hierarchies” and a “world-system” and not situations.12¶ Pragmatism only questions that we live in History or a “World-System” (as a totality or abstract context) but not that we are in history (lowercase): in a present situation continuous with others where the past weighs heavily in our memories, bodies, habits, structures, and communities. It also does not deny the importance of power structures and seeing the connections be- tween injustices through time, but there is a difference between (a) inquiring into present situations of injustice in order to detect, diagnose, and cure an injustice (a social pathology) across history, and (b) inquiring into the his- tory of a systematic injustice in order to facilitate inquiry into the present unique, context-bound injustice. To capture the legacy of the past on present injustices, we must study history but also seek present evidence of the weight of the past on the present injustice.¶ If injustice is an illness, then the pragmatists’ approach takes as its main focus diagnosing and treating the particular present illness, that is, the particular situation-bound injustice and not a global “social pathology” or some single transhistorical source of injustice. The diagnosis of a particular injustice is not always dependent on adopting a broader critical standpoint of society in its entirety, but even when it is, we must be careful to not forget that such standpoints are useful only for understanding the present evil. The concepts and categories “white supremacy” and “colonialism” can be great tools that can be of planetary significance. One could even argue that they pick out much larger areas of people’s lives and injustices than the categories of class and gender, but in spite of their reach and explanatory theoretical value, they are nothing more than tools to make reference to and ameliorate particular injustices experienced (suffered) in the midst of a particular and unique re- lationship in a situation. No doubt many, but not all, problems of injustice are a consequence of being a member of a group in history, but even in these cases, we cannot a priori assume that injustices are homogeneously equal for all members of that group. Why is this important? The possible pluralism and therefore complexity of a problem of injustice does not always stop at the level of being a member of a historical group or even a member of many groups, as insisted on by intersectional analysis. There may be unique cir- cumstances to particular countries, towns, neighborhoods, institutions, and ultimately situations that we must be open to in a context-sensitive inquiry. If an empirical inquiry is committed to capturing and ameliorating all of the harms in situations of injustice in their raw pretheoretical complexity, then this requires that we try to begin with and return to the concrete, particular, and unique experiences of injustice.¶ Pragmatism agrees with Sally Haslanger’s concern about Charles Mills’s view. She writes: “The goal is not just a theory that is historical (v. ahistori- cal), but is sensitive to historical particularity, i.e., that resists grand causal narratives purporting to give an account of how domination has come about and is perpetuated everywhere and at all times” (1). For “the forces that cause and sustain domination vary tremendously context by context, and there isn’t necessarily a single causal explanation; a theoretical framework that is useful as a basis for political intervention must be highly sensitive to the details of the particular social context” (1).13¶ Although each situation is unique, there are commonalities among the cases that permit inquiry about common causes. We can “formulate tentative general principles from investigation of similar individual cases, and then . . . check the generalizations by applying them to still further cases” (Dewey, Lectures in China 53). But Dewey insists that the focus should be on the indi- vidual case, and was critical of how so many sociopolitical theories are prone to starting and remaining at the level of “sweeping generalizations.” He states that they “fail to focus on the concrete problems which arise in experience, allowing such problems to be buried under their sweeping generalizations” (Lectures in China 53).¶ The lesson pragmatism provides for nonideal theory today is that it must be careful to not reify any injustice as some single historical force for which particular injustice problems are its manifestation or evidence for its exis- tence. Pragmatism welcomes the wisdom and resources of nonideal theories that are historically grounded on actual injustices, but it issues a warning about how they should be understood and implemented. It is, for example, sympathetic to the critical resources found in critical race theory, but with an important qualification. It understands Derrick Bell’s valuable criticism as context-specific to patterns in the practice of American law. Through his inquiry into particular cases and civil rights policies at a particular time and place, Bell learned and proposed certain general principles such as the one of “interest convergence,” that is, “whites will promote racial advantages for blacks only when they also promote white self-interest.”14 But, for pragma- tism, these principles are nothing more than historically grounded tools to use in present problematic situations that call for our analysis, such as deliberation in establishing public policies or making sense of some concrete injustice. The principles are falsifiable and open to revision as we face situation-specific injustices. In testing their adequacy, we need to consider their function in making us see aspects of injustices we would not otherwise appreciate.15

**[4] Health is a key starting point for social movements for equality.**

João **NUNES** Postdoctoral Fellow Politics & Int’l Studies @ Warwick **’14** *Security, Emancipation, and the Politics of Health* p. 123

Yet another level to be considered in the connection between health, security and emancipation is the possibility of health being ‘a bridge for emancipation’, that is, the starting point or the trigger for broader political struggles. Indeed, when one looks at the work of health social movements, it is striking that they seldom restrict themselves to a particular issue, but rather seek to draw linkages with other health issues and with broader socioeconomic and political concerns. There is, for example, spillover between health movements, with lessons being passed on and with the achievements of one movement being used as a leverage by others. At the same time, health movements are often sites where broader questions about citizenship, freedom and rights are discussed - as is attested, for example, by the case of abortion rights movements, or by transsexual and intersex movements. By raising some of the most contentious questions relating to the body and to the power of state authorities to manage and control it, and by placing individual and group interests in a sometimes uneasy dialogue, health issues bring to the fore the most complex questions in political theory and practice. As Patrick Hayden (2012) has argued, struggles for health care are best understood by going beyond the problem of the inadequate distribution of resources and by taking into account questions of misrepresentation and misrecognition, that is, the denial of respect for equal dignity. In Hayden’s (2012: 588) view, the demand for health as a human right should not be predicated upon an abstract view of human nature, but rather:

contextualised both in the shared vulnerability of the embodied human condition - everyone can become injured, ill, or infected - and in the specific struggles for recognition of the plural ways of acting and being treated that enable individuals and groups to attain fully human status.

It is thus not surprising that health social movements are always about more than a specific health issue: they are fundamentally about justice in a more general sense of the term. The struggles and contestations undertaken under the umbrella of health movements are symptoms of broader struggles that relate to gender, ethnicity and class. The work of these movements sits at the intersection of various relations and structures of inequality, vulnerability and harm; as a result, it can be the springboard for broader political transformations.

#### [5] Psychoanalysis is non-falsifiable

**McConachie 7** (Brian, Chair of Theatre Arts at the University of Pittsburgh, December 2007, “Falsifiable Theories for Theatre and Performance Studies”, Volume 59, Number 4 of Theatre Journal, AZG)

Can the master theorists in our critical theory consensus make the same claim? All scientific assertions are potentially falsifiable through the use of the scientific method, but what experiments or logics would the master theorists accept as a basis for the falsifiability of their ideas? Looking at the theorists featured in Critical Theory and Performance, one might say that they represent a range of approaches that admit of greater or lesser degrees of falsifiability. At one end of the continuum, the theories of Bourdieu, Habermas, Gramsci, and Williams generally work within the falsifiability protocols of social science, which (though open to dispute) have been fairly well established for fifty years. When Raymond Williams's version of Gramsci's hegemony theory was gaining a curious audience among historians, its potential falsifiability was widely discussed.46 While social scientists, including historians, cannot apply falsifiability to their work with the same rigor as scientists who work with nonhuman subjects, their standards concerning evidence, economy, and consistency are high.47 Somewhere in the middle of the continuum of falsifiability, perhaps, are the **psychoanalytic theories** of Freud, their synthesis with semiotics in Lacan, and the many theorists who build their own ideas on some version of a psychoanalytic base. Their advocates often claim scientific validity for these theories. Most psychologists, however, have **rejected psychoanalysis** and its spin-offs **as unfalsifiable.** In her Psychoanalysis and Cognitive Science, for example, Wilma Bucci concludes that Freud's meta-psychology has not "been subject to the empirical evaluation and theory development that is necessary for a scientific field." Specifically, the type of systematic inference that is applied in cognitive science and in all modern science requires explicit definitions that limit the meaning of the concepts, correspondence rules mapping hypothetical constructs and intervening variables onto observable events, and means of assessing reliability of observation. Each of the indicators that analysts rely on to make inferences about the conscious and unconscious states of other persons (as [End Page 571] about one's own conscious states) must itself be independently validated as having the implications that are assumed.48 In defense, Freudians and Lacanians often claim that their theories are consonant with good science because their concepts have been scientifically validated in therapeutic sessions.49 But clinical success, however it is measured, is not the same as empirical verification. Just because "the talking cure" has been effective in some cases does not mean that Freud's or Lacan's explanation for why it worked is valid. Humans have had many explanations for fire over the centuries, but understanding why and how combustion really works must rely on recent physics and chemistry. At the other end of the continuum are theorists such as Baudrillard, Derrida, Féral, and other poststructuralists, whose radical skepticism challenges the ability of science or any other discourse to provide a valid standard of falsifiability. The relativism of poststructuralism, including its challenges to empirical verification, defies any protocols that might stabilize knowledge based on the slippery signifiers provided by language. Despite what they take to be the inherent contradictions of textual assertions, poststructuralists from Lyotard to Derrida rely chiefly on logic and argumentation rather than scientific or historical evidence. Within the assumptions of poststructuralism, Derrida's gnomic remark, "There is nothing beyond the text," is simply unfalsifiable. The critic who wishes to rely on what Derrida might have meant in that statement, however, will have to ignore a great deal of good science in linguistics and evolutionary psychology to be able to assess the probable truth of Derrida's assertion.50 Brian Vickers challenges the weak scientific credentials of several of the master theorists that many humanist academics have embraced. As he points out with acerbity: Freud's work is notoriously speculative, a vast theoretical edifice elaborated with a mere pretense of corroboration, citing "clinical observations" which turn out to be false, with contrary evidence suppressed, data manipulated, building up over a forty-year period a self-obscuring, self-protective mythology. The system of Derrida, although disavowing systematicity, is based on several unproven theses about the nature of language which are supported by a vast expanding web of idiosyncratic terminology. . . . **Lacan's system**, even more vastly elaborated . . . **is a series of devices** for **evading accountability**. . . . Foucault places himself above criticism.51 Whether all of Vickers's charges are valid may be less important than his general point: he presents suggestive evidence that these master theorists tried to place their ideas beyond the protocols of falsifiability. [End Page 572] Are theatre and performance scholars aware of the substantial range of differences in the falsifiability of the ideas of the master theorists when they deploy one or another of their approaches to investigate problems in our discipline? There is little evidence for such discrimination. Like the general population of the United States, most humanistic scholars are genially uninformed about good science and its procedures.52 Once aware, however, what will they (and we) do about it? With regard to theatre and performance studies, the critic and historian interested in discussing how audiences perceive and process performance has a choice to make—a choice among kinds of theories that is already pressing and will become increasingly common in the future. This scholar should know that the history of Western thought since Copernicus suggests how this conflict between kinds of theories will likely be resolved; in the long run, among people who rely on reason instead of superstition, the theories of good science have trumped unscientific philosophy every time—and, I would add, this is as it should be, not because good science is always right, but because conclusions based on its provisional theories narrow the likelihood of egregious error and prevent humanistic scholarship from being foolishly wrong. As we know from the scandal concerning the Sokel hoax in Social Text, the same cannot be said for advocates of the ideas of our present master theorists.53 This returns me to the question that began my essay: how can scholars in our field ensure that their legacy will provide a firm basis for future work in our discipline? Reinelt and Roach use the word "consolidated" twice in their page-and-a-half-long preface to suggest that ideas gained from applying present theoretical methods can continue to illuminate future investigations. This assumes, however, that all **knowledge** based on the ideas of master theorists **is cumulative**, even progressive. While we probably know more about theatre and performance than we did twenty years ago, we have no agreed-upon standards as to what counts as valid knowledge, partly because our poststructuralist habits of skepticism have led us to distrust language as a mode of truth-telling. What Eugene Goodheart has said about the criticism of literature in English departments could easily be assessed against critics in theatre and performance studies: "Quarrels among critics have rarely, if ever, been adjudicated. Interpretations and evaluations abound and are often different from or in conflict with one another. The reputations of writers, determined by criticism, fluctuate, sometimes as wildly as the stock market in crisis."54 In such circumstances, consolidating what we know and using it as a foundation for the construction of future knowledge is very difficult. [End Page 573] Performance analysis is a case in point. As Reinelt points out in her introduction to the performance analysis section of Critical Theory and Performance: "Perhaps what we do most in theatre and performance studies is analyze performances."55 Common sense tells us that some ideas about how performances affect audiences must be better than others, but typically the antagonists in battles about such matters draw on different theories to dress their arguments and, when conflict occurs, pack their separate theoretical bags for the trek to the next article or book. A few years ago, Philip Auslander and Peggy Phelan disagreed over the issue of human presence and mediatization in performance—a conflict about whether and how actual performing bodies mattered to spectators, as opposed to watching images of performers on film or television. Apart from which scholar may have marshaled the better arguments, Auslander (representing a mostly materialist point of view) and Phelan (who drew on psychoanalysis and phenomenology) agreed on no body of relevant evidence that could serve to adjudicate their conflict.56 This important dispute remains unresolved and, more significantly, cannot be resolved within the usual protocols of our discipline. Tellingly, Reinelt and Roach discuss the conflict over "liveness" between Auslander and Phelan, but add more wrinkles to the discussion rather than attempting to iron out their differences by including a poststructuralist take on the problem by Herbert Blau in their anthology. Important scholarly battles with little hope of a resolution are a recipe not for the consolidation of knowledge, but for its fragmentation into sects of believers in this or that corner of theory. Good science, on the other hand, encourages the resolution of such differences and may lead to the accumulation of knowledge. Paradigm shifts in science often reinterpret traditional evidence, but that does not mean that the old experiments have no value. Einstein's General Theory of Relativity led to modifications in Galileo's conclusions about gravity, but Einstein needed the ideas of Galileo, Newton, and others to enable him to construct his theory. On the basis of mounting evidence, irresolvable problems, and emerging theories, many cognitive scientists during the 1980s concluded that the computer was no longer an adequate metaphor to explain the operations of the brain. Computing still retains theoretical credibility as a description of some mental processes, but most cognitive scientists now understand the brain as a "connectionist" and/or "embodied" system. In the process of crafting a new paradigm, scientists continued to use much of the earlier experimental evidence. Apart from large paradigm shifts, scientific knowledge at the level of intermediate theories may change, but many of its **empirical findings will remain constant.** Thus, George Lakoff can both assert many new ideas about language and categorization in Women, Fire, and Dangerous Things and reassure his (and Johnson's) readers in Philosophy in the Flesh that "much of what we have learned about the brain and the mind is now stable knowledge."57 Nor does the slippery slope of language drive scientists into the melancholy limbo of "undecidability" and postmodern relativism. Whether light is best described as a "particle" or a "wave" remains an ambiguity in modern physics that cannot be resolved through language alone. Experimentation and probability theory can get [End Page 574] scientists around the imprecision of language in describing light, however, by providing an acceptable, provisional answer to this apparent conundrum. In psychology and neuroscience today, the term "emotion" has several definitions, depending on whose science you read. Definitions of this term (of obvious concern to theatre and performance scholars interested in spectatorship) will likely be narrowed in a few years, however, as different notions of "emotion" compete empirically and theoretically for more robust explanatory value.58 In similar ways, scientific definitions of "atom" and "cell" achieved provisional validity in the past. Eventually scientists may be able to state reliable "facts" about our emotional lives, according to the definition of a scientific fact provided by Stephen Jay Gould: a statement "confirmed to such a degree that it would be perverse to withhold provisional consent."59 When confronted by confusing information, scientists are initially no better than performance critics at naming significant attributes of the natural world. Experimentation, theorizing, and falsification, however, encourage the **honing of** provisionally acceptable **terms and descriptions.** Some philosophers now hold that there are no fundamental differences between humanistic hermeneutics and hermeneutic reasoning in the sciences.60 Relying on similar procedures, both humanists and scientists can aim at plausible, provisional, and falsifiable statements of truth There are many such theories and facts in cognitive science for theatre and performance studies, if only we would remove the blinkers of unfalsifiable theories and decide to recognize them. Few scientists have chosen to address our concerns about spectatorship directly, but many of their insights are easily transferable to analyses about what happens to audiences in performance situations. As noted, Jacob and Jeannerod provide provisionally reliable insight into spectator vision and simulation. Gerald Edelman can tell us how audiences use their connectionist brains to remember what they hear from actors for later use in a performance and in responding to subsequent productions.61 In his Gesture and Thought, David McNeill can help us to explore how spectators understand the integration of gesturing and speaking by actors.62 Mark [End Page 575] Johnson and others who approach ethics from a naturalistic point of view can provide insight into how audiences probably process the ethical and political challenges they encounter in performances.63 There is a world of falsifiable theories in cognitive science relevant to all of the areas of our discipline. It is past time for us to check them out Not all good theories are falsifiable according to the protocols of natural or social science, however. As we saw, Saltz bases his infiction-outfiction theory on the philosophical speculations of Wittgenstein, and neither he nor Wittgenstein performed repeatable experiments and measured the outcomes to generate their insights. Because Saltz's infiction-outfiction theory arrived at much the same conclusion as a theory that has been provisionally falsified, it can be used to extend the ideas of conceptual blending. In my work with cognitive science and spectatorship, I have found other theories deriving primarily from phenomenology and materialism that are consistent with the science I am using.64 While I concluded that the subject-object dichotomy that semiotics and phenomenology rests upon is inconsistent with Lakoff and Johnson's embodied realism, this does not mean that all of the content of these two broad theories is necessarily at odds with good science. From a scientific point of view more in accord with the traditions of analytic philosophy, in fact, semiotics and phenomenology have some insights to offer.65 In short, falsifiability does not necessarily close the door on all of the master theorists in critical theory, but it does relegate many of them to secondary status. Unless their theories admit to protocols of falsifiability in the natural or social sciences or work with material that is beyond empirical verification, the theories of our present masters can best serve to amplify and extend what we can already know through scientifically valid approaches. Can falsifiable theories advance progressive politics? First, let us be clear about the implications of this question. Before worrying about the political possibilities of any theory, we need to ask if it can deliver statements of truth that will withstand the examination of scholars in many fields of investigation. To put right-thinking politics before an epistemology of provisional truth backs us into an ethical minefield that has more in common with the thinking of Stalin and Mao than Brecht and Boal. Second, the fear of social constructivists that "naturalizing" the human condition will only degrade our human potential to reinvent ourselves through social means seems to be misplaced. Few cognitive scientists support the idea that nature and nurture can be divided at all; genetic endowment and social learning must function together in the brains of all individuals in highly intertwined ways if they are to survive.66 Significantly, once genetics, culture, and cognition are examined as mutually reinforcing dynamics, proto-progressive questions about the roles of empathy, compassion, and cooperation in our past and present behavior begin to surface. Far from nature hardwiring us as [End Page 576] competitive social Darwinists, it may be that humans have a predisposition to act altruistically towards one another. In A Darwinian Left, Peter Singer imagines what a progressive movement based in Darwinian science (which includes all of the cognitive sciences) might propose and practice.67 There is nothing inherently contradictory that I can see about scholars in theatre and performance studies advocating for progressive change and consolidating and advancing our knowledge through falsifiable experiments and theories In the short term, **testing hypotheses** about spectators **and accumulating** provisional, **empirical truths** about them **can lead to** some consolidation of **knowledge**. In this regard, it ought to be possible to set up experiments that can provide empirical information about the similarities and differences between the experiences of spectators when they watch "live" and "mediatized" performances. Such experiments would necessarily rest on common definitions of key terms and rely on provisional neuroscientific, linguistic, and psychological theories about spectator attention, simulation, memory, emotion, conceptual blending, and meaning-making. Experimental procedures might range from postperformance interviews to brain scanning. I can imagine a hypothesis that might propose that more oscillation between blended and unblended actor/characters occurs in "live" than in "mediatized" performances. Conclusions based on these and similar results could resolve some of the ongoing disputes in our discipline and lead to significant consolidation. (Such conclusions might have political implications as well; Phelan's Unmarked, subtitled The Politics of Performance, which began the controversy, assumed that "live" performances could effect political change.) Even before we can conduct such experiments, however, it makes more sense to base our provisional ideas about spectatorship, when possible, on relevant theories that are **falsifiable**, rather than on unfalsifiable psychoanalytic and poststructuralist beliefs. In the long term, though, consolidation may be the wrong metaphor for falsifiable truths in theatre and performance studies. One obligation that a scientific orientation carries with it is to recognize that provisional conclusions will have to be scrapped if better science comes along and displaces the theories that have provided the initial basis of knowledge. Unlike scholars who draw on Lacan, Foucault, and most of our other master theorists, there are no foundational texts to which an investigator in performance and cognitive studies can return for first principles and primary definitions. Cognitive neuroscience, especially, has made rapid strides in recent years and continues to expand how and what we can know about the mind and brain. This pressure will make scholarly consistency and consolidation less important for the critic-historian in theatre and performance studies than a cutting-edge knowledge and a readiness to rethink recent approaches and conclusions.

#### [6] Disability drives and hardwired libidinal biases are nonsense

Sapolsky 19 Robert Sapolsky, American neuroendocrinologist and author, currently a professor of biology, and professor of neurology and neurological sciences and, by courtesy, neurosurgery, at Stanford University, “This Is Your Brain on Nationalism,” Foreign Affairs. March/April 2019.

--Tendency towards in group bias exists but is value neutral – outsider status is not fixed

--Researchers used fMRIs to analyze brains – found people put in teams based on uniform were sorted more saliently than based on race or that people felt more kinship towards those on arbitrary teams

--Arbitrary markers are more salient than phenotypical onnes

--Proves that drives are malleable and were constructed, and can also be deconstructed

TURBANS TO HIPSTER BEARDS

For all this pessimism, there is a crucial difference between humans and those warring chimps. The human tendency toward in-group bias runs deep, but it is relatively value-neutral. Although human biology makes the rapid, implicit formation of us-them dichotomies virtually inevitable, who counts as an outsider is not fixed. In fact, it can change in an instant.

For one, humans belong to multiple, overlapping in-groups at once, each with its own catalog of outsiders—those of a different religion, ethnicity, or race; those who root for a different sports team; those who work for a rival company; or simply those have a different preference for, say, Coke or Pepsi. Crucially, the salience of these various group identities changes all the time. Walk down a dark street at night, see one of “them” approaching, and your amygdala screams its head off. But sit next to that person in a sports stadium, chanting in unison in support of the same team, and your amygdala stays asleep. Similarly, researchers at the University of California, Santa Barbara, have shown that subjects tend to quickly and automatically categorize pictures of people by race. Yet if the researchers showed their subjects photos of both black and white people wearing two different colored uniforms, the subjects automatically began to categorize the people by their uniforms instead, paying far less attention to race. Much of humans’ tendency toward in-group out-group thinking, in other words, is not permanently tied to specific human attributes, such as race. Instead, this cognitive architecture evolved to detect any potential cues about social coalitions and alliances—to increase one’s chance of survival by telling friend from foe. The specific features that humans focus on to make this determination vary depending on the social context and can be easily manipulated.

Even when group boundaries remain fixed, the traits people implicitly associate with “them” can change—think, for instance, about how U.S. perceptions of different immigrant groups have shifted over time. Whether a dividing line is even drawn at all varies from place to place. I grew up in a neighborhood in New York with deep ethnic tensions, only to discover later that Middle America barely distinguishes between my old neighborhood’s “us” and “them.” In fact, some actors spend their entire careers alternating between portraying characters of one group and then the other.

This fluidity and situational dependence is uniquely human. In other species, in-group/out-group distinctions reflect degrees of biological relatedness, or what evolutionary biologists call “kin selection.” Rodents distinguish between a sibling, a cousin, and a stranger by smell—fixed, genetically determined pheromonal signatures—and adapt their cooperation accordingly. Those murderous groups of chimps are largely made up of brothers or cousins who grew up together and predominantly harm outsiders.

Humans are plenty capable of kinselective violence themselves, yet human group mentality is often utterly independent of such instinctual familial bonds. Most modern human societies rely instead on cultural kin selection, a process allowing people to feel closely related to what are, in a biological sense, total strangers. Often, this requires a highly active process of inculcation, with its attendant rituals and vocabularies. Consider military drills producing “bands of brothers,” unrelated college freshmen becoming sorority “sisters,” or the bygone value of welcoming immigrants into “the American family.” This malleable, rather than genetically fixed, path of identity formation also drives people to adopt arbitrary markers that enable them to spot their cultural kin in an ocean of strangers—hence the importance various communities attach to flags, dress, or facial hair. The hipster beard, the turban, and the “Make America Great Again” hat all fulfill this role by sending strong signals of tribal belonging.

Moreover, these cultural communities are arbitrary when compared to the relatively fixed logic of biological kin selection. Few things show this arbitrariness better than the experience of immigrant families, where the randomness of a visa lottery can radically reshuffle a child’s education, career opportunities, and cultural predilections. Had my grandparents and father missed the train out of Moscow that they instead barely made, maybe I’d be a chain-smoking Russian academic rather than a Birkenstockwearing American one, moved to tears by the heroism during the Battle of Stalingrad rather than that at Pearl Harbor. Scaled up from the level of individual family histories, our bigpicture group identities—the national identities and cultural principles that structure our lives—are just as arbitrary and subject to the vagaries of history.