

Right to Repair: A Historical Analysis of How the Movement Got Its Name and Its Implications Today

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

As technology from phones to smart home devices begin to take over more of our everyday lives, consumers bear the burden of dealing with broken equipment. Americans throw away 416,000 cell phones every day; 151.8 million phones trashed in a single year (Proctor, 2018, 1). Electronics are bound to break, and for this reason, a flourishing market surrounding the repair of electronic devices is integral for modern day society.

The right to repair movement has been a growing development in the political sphere for the past couple of years, becoming a repeated topic of interest in the media. The textbook definition of this phrase comes from the push by advocacy groups for legislation that would provide the means for consumers of electronic equipment to repair the devices they possess. With support allegedly sweeping across the globe, perhaps it is time to look at the history behind the phrase “right to repair” comparing the perspectives of when it initially began gaining traction to the present day.

While most people may have only heard of the right to repair movement recently, the phrase has been around for a long time. Its versatility in adapting to technological growth over a variety of industries has kept it alive. How has the phrase evolved and what does it mean today versus when it was first coined? What are the forces and factors that have shaped the development of the right to repair movement and what practices have manufacturers strayed away from leaving the President no choice but to step in? A proper investigation into these questions has yet to be completed.

The phrase carries a lot of meaning throughout history because of how it tends to accompany other major phenomena occurring in the tech space. The phrase re-emerges

whenever there is a drastic shift impacting society, hence why looking at the history of the phrase will indicate significant moments in today's growing era of information.

Manufacturers do not have the right to restrict individuals from repairing their devices but currently make it near impossible to do so. From planned obsolescence to artificial limitations like software locks, repairing one's device nowadays is harder than ever when it probably should not be: “Extending the life of a phone by just one year would result in a decrease in emissions equivalent to taking hundreds of thousands of cars off the road” (Gulserliler, 2022, 2). The “right” to repair is a pressing social concern, which if not addressed impacts consumer rights and has grave consequences on the environment. A lack of resolution hinders societal progress, disproportionately hurting marginalized groups.

The phrase “Right to repair” entails that a consumer should holistically have access to the documentation, tools, and parts needed to fix the electronics they use on a day to day basis. In this paper, I argue that the right to repair has become a social necessity that should not be infringed upon and protected by legislation. Starting as a fundamental concept practiced by even early Neanderthals, I conduct a review of existing research that dive into the history of the right to repair to understand how societal shifts have seemingly shaped the phrase. I aim to answer questions such as, what reasons have there been for the growing support for such a movement and how changes in the market of goods has made its adoption a necessity.

The Negative Impact of Unnecessary Technological Waste

It has gotten harder and harder for consumers to repair their personal devices. As expected, technology has improved but also gotten a lot smaller. Moore's Law states that the number of transistors on a microchip doubles every two years (Tardi, 2022, 1). While the smaller

form factor of devices has made board repairs more difficult, figure 1 shows even non-knowledge-intensive repairs like broken screens still lead to discarded devices because of increased difficulty to perform due to manufacturers.

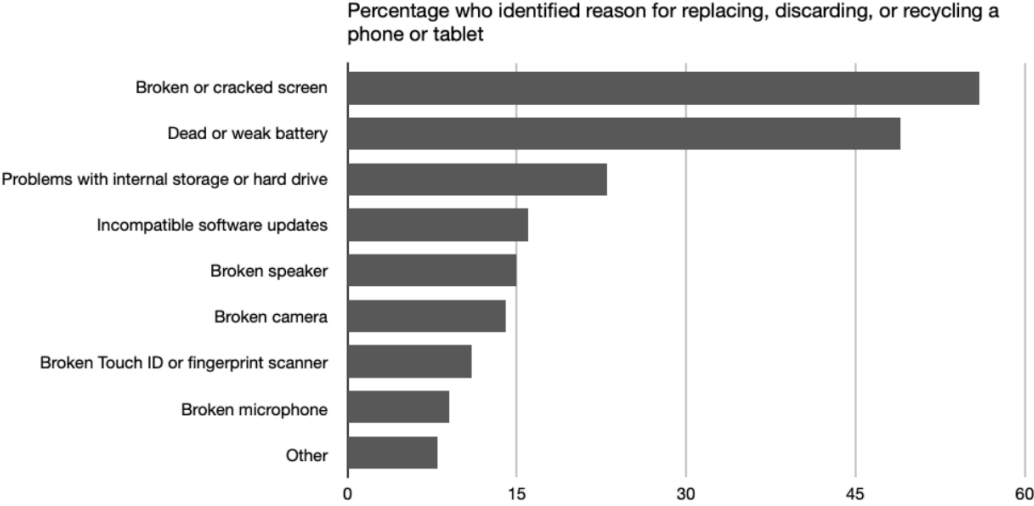


Figure 1. Reasons for replacing old technology, Perzanowski 2022. The leading reasons for people discarding devices are a broken screen or battery that cannot hold its charge any longer.

Getting the screen replaced on a current generation iPhone costs nearly one-third of its original selling price (Kantra, 2022), at which point a user begins debating if it is even worth repairing or just upgrading. The screen is the part of a phone a user interacts with the most, therefore it is also the most prone to break. As shown in figure 1, easily repairable problems like a damaged screen might make an entire phone useless. However, repair experts at iFixit (A leading publisher of wiki-like online repair guides) have found that screens are expensive and hard to find on the parts aftermarket (Fisher, 2022). Even if a replacement part is sourced, one’s woes are not fully resolved. After a complex game of operation involving glue, different sized screws, and numerous tightly wrapped ribbon cables, one finally finds themselves finished with the repair. Yet even with this success, there are issues; an iPhone screen is software locked to the

motherboard it comes shipped with and therefore certain features will not work unless it is reprogrammed by Apple itself (Fisher, 2022). These types of software restrictions are becoming prevalent in tech in an effort to keep more repairs in house for large companies like Apple.

Right to repair pertains closely to the idea of consumer rights, taking market power away from companies and putting it back in the hands of the people. However, there is more to be discovered underneath all the internet hype. Activists push for how much bigger this movement is than just repairing cracked screens. One of these ideas is the environmental impact of our actions as a whole.

Electronic waste is a growing issue in the United States where reportedly less than a quarter of e-waste is recycled, the rest usually ends up getting incinerated or piled up in a landfill (Singh, 2019, 1). Electronics are filled with chemicals and toxins that are difficult to recycle and can pollute the soil, water, and even the air. This causes a risk to public health. In addition, electronics are made with precious metals that are wasted when a fixable device is trashed early. Since salvaged metals usually sell for very cheap, companies opt not to recycle and mine additional resources for new products depleting Earth of its natural resources at a faster rate.

Right to repair has a rippling effect on a variety of communities, and as a result, underprivileged communities end up suffering either directly or indirectly from the lack of resources available for consumers to repair purchased devices. “...burden tends to fall on communities of color and lower-income communities” (FTC, 2021, 4) This report regarding anticompetitive practices related to repair markets details one of the many ways marginalized communities tend to face the majority of the burden of not having the right to repair. The primary argument is the obvious upfront expense of new devices. Lower income communities rely on having the products they purchase last as long as possible because of the inability to

purchase replacements every year. If they cannot fix old products, they may be forced to shell out money that is not available to purchase new ones, cutting from budgeting allocated to other areas. The Global Electronic Maintenance & Repair Market is projected to reach USD 59.89 billion by 2027 from USD 34.52 billion in 2021 (Wood, 2022, 1). The repair market is on track to become an increasingly important part of our economy; however, according to the FTC, many small repair businesses will close if legislation is not enacted.

With all these social issues only recently coming to fruition, the question arises whether the proposed legislation meets the requirements of the 21st century. How has the meaning and ambition behind the phrase “right to repair” shifted throughout time and what has it become? Is the initial focus on consumer rights still the primary basis for its re-emergence and where the movement stands. I will consider what weight the phrase carries today and what unknowns the future holds.

Repair used to be an integral part of society with interchangeability being a driving force for the American economy since the 18th century. If identical components could not be produced it would lead to slowed production and increased costs. Hence a range of consumer goods “sewing machines, harvesters, typewriters, and bicycles – adopted the so-called American system of mechanized production and interchangeable parts” (Perzanowski, 2022)

In the 1920s, consumer goods and even cars like the Ford Model T were designed to be interchangeable, “ Every Ford included a toolkit and a straightforward repair manual that walked owners through basic fixes” (Perzanowski 2022, 55). The company understood the value in easily replaced parts and embraced durability and repairability.

However in the 1950’s, things began to take a turn. Harley J. Earl, the head of design for GM, announced “the average length of car ownership has dropped from five years in 1934 down

to just two....When it is one year, we will have a perfect score”(Gershon, 2017, 1). Instead of designing long lasting products, the greed of companies shifted to getting customers to purchase goods more often. Companies will always prioritize profits and we need to protect the rights of purchasers while focusing on the greater good to society as a whole.

There are debates regarding the environmental effects of the legislation and its possible tradeoffs. “On the other hand, in the region where RTR hurts producer profits, it benefits the environment for products with a low use-phase impact, but this result is reversed for products with a high use-phase impact” (Gulserliler, 2022, 21). The market analysis shows that clear environmental benefits cannot be reached in every scenario. There may be instances where company profits suffer and environmental impact is not mitigated. “We therefore caution against a blanket legislation for all products, as is the current model legislation in the U.S. (The Repair Association 2020), and instead recommend a case-by-case analysis” (Gulserliler, 2022, 29). This researcher argues there may be a larger detrimental effect to the adoption of such legislation than any benefits that would arise. He argues that each type of device has a very different lifecycle, from usage to its eventual recycling. This conflicting information reveals there is a lack of knowledge surrounding what the environmental benefits and effects on the second hand market will be as a result of the right to repair.

In the United States, research and development are subsidized by the government. The government has such a big role in research because without adequate support certain types of research would suffer (Bernanke, 2011). Companies might lack economic incentives to innovate and with lack of demand spend less money on research. This is not desirable as the U.S. needs research to boost economic growth and also keep pace with technological advances in other

countries. It's difficult to predict how demand for new technology will change and how companies will react.

Overall, there is a disconnect between the views of the opposing sides of the legislation and how consumers and manufacturers hope to find middle ground. My STS review aims to provide a sufficient look into the history of the right to repair. This entails an extensive look into the specific events as well as consumer mindsets that fueled the popularity of the phrase. From being a principle widely practiced by manufacturers to something almost abolished in the industry today, only a historical analysis of the phrase will allow for a complete insight into why corporations have jumped ship forcing the government to recently intervene.

Therefore using the STS methodology, The history of ideas, I will consider how the phrase has matured over time, how its introduction has impacted specific social challenges, and how it may have finally nudged its way into Executive Order 14036.

Evaluating the Right to Repair Using a Historical Analysis Framework

The contemporary understanding of the history of ideas, also known as intellectual history, was a concept introduced by American philosopher Arthur Oncken Lovejoy in the mid 1900s. Lovejoy is the founder of the *Journal of the History of Ideas* which is a quarterly peer-reviewed academic journal covering intellectual history. Since 1940, the publication has included the histories of philosophy, literature and the arts, natural and social sciences, religion, and political thought.

Lovejoy's approach to the study of the history of ideas is laid out in his book *The Great Chain of Being* published in 1936. Lovejoy presents the stable self-contained "unit-idea" as the basic building block for historical analysis. After unit ideas are identified, they are combined into

new patterns that provide context to the idea over a period of time. The identification of unit ideas deals with their emergence, significant influence, and development into new concepts.

The history of ideas is an appropriate model because the purpose of this paper is to investigate the development of an idea overtime and therefore the best method of approach is to build a timeline. Using this framework, it becomes easy to highlight differences and notice a progression in a concept over some time. I dive into the history of the phrase “right to repair” to build a historical narrative covering how it started and what it represents in the 21st century. Holistically it allows me to view all important actors and sentiments while taking into consideration the logical reasoning behind decisions made by both manufacturers and consumers.

Publications like *The Right to Repair: Reclaiming the Things We Own* (2022) become too generalized, building a context around the word repair by going back to the earliest days of humans as a species. “Some 300,000 years ago, both early Homo sapiens and Homo neanderthalensis began crafting composite tools, like spears, by hafting stone points onto wooden handles” (Perzanowski, 2022). The idea of repair has coexisted with society for as far back as we can remember. If tools were made to be repairable they lasted longer and were cheaper, meaning they would be less resource intensive to produce and maintain and caused less downtime (time taken to go back to work with tools). While this source provides crucial insight into the importance of repair, it fails to detail its current social importance which I discuss.

The first step in my analysis is to identify periods when the right to repair was a topic of concern in the media. This allows me to draw inferences as to why there was a jump in support for the legislation and what external factors resulted in people becoming more interested in the idea. Using articles and publications I find from around these specified periods, I can build what

Lovejoy details, a “unit-idea”. These unit ideas contain purposes like cultural significance and the various opposing views of the public. As I build more and more unit-ideas I am able to obtain results as to how these ideas changed over time and the impact each has had on the phrase individually but also how one may have influenced the creation of another.

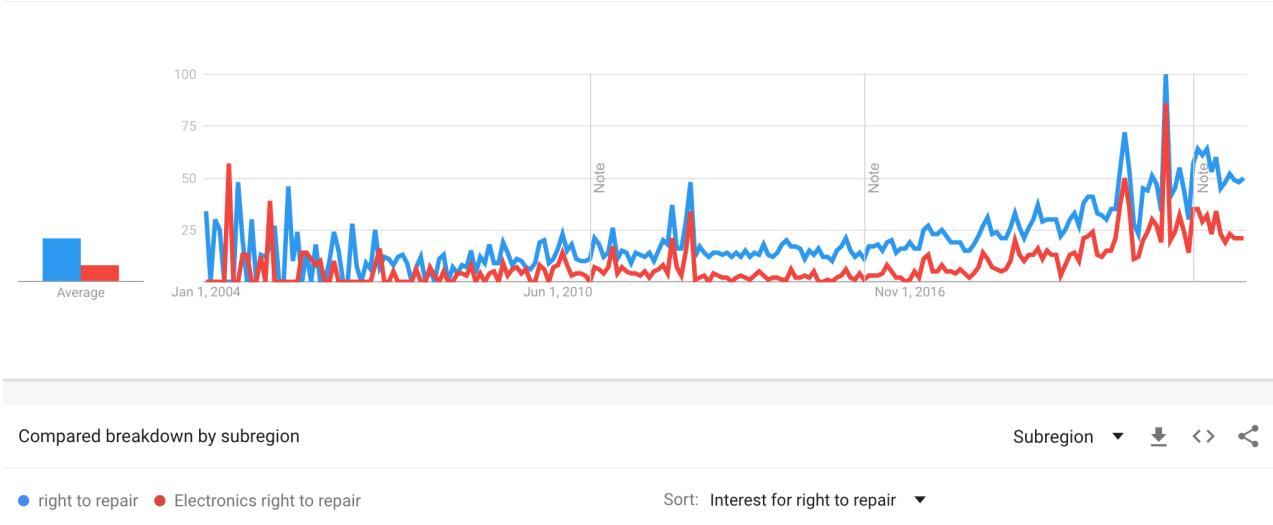


Figure 2. Comparison of the interest over time for the phrases “right to repair” and “Electronics right to repair”. (Source: [Google Trends](#))

To obtain the frequency of the phrase “right to repair” I used a tool developed by Google which allows me to view how often a phrase was searched on the internet. Higher spikes lead me to believe something significant occurred around that time driving a higher interest in the topic which may be worth investigating. In the figure above we see interest gradually increase over time but 3 main spikes in the rough time periods of 2004, 2012, and 2021. I am able to see what significant movements in tech occurred in these years and why the right to repair may have been so popular.

Taking a look into these periods it becomes possible to build a narrative behind the wavering popularity of the phrase. In 2004, the first bill advocating Motor Vehicle Owners' Right to Repair was rejected. This bill “Require[d] a manufacturer of a motor vehicle sold or

introduced into commerce in the United States to disclose to the vehicle owner, a repair facility, and the Federal Trade Commission (FTC) the information necessary to diagnose, service, or repair the vehicle.” (H.R.2735, 2003). The Alliance of Automobile Manufacturers (AAM) and the Association of International Automobile Manufacturers (AIAM) repeatedly tried to convince the legislature but failed to gain much support till 2012. 2012 was the year the Massachusetts legislature enacted the Right to Repair bill. The law passed before a binding ballot initiative that also passed with 86% voter support. This law required automakers to share vital vehicle information and data with consumers and small auto repair shops for maintenance and repair purposes. The third spike in 2021 resulted when President Biden signed an executive order (EO 14036) to promote additional competition in the U.S. economy, “One such directive encourages the Federal Trade Commission (FTC) to enact additional regulations that prohibit manufacturer policies barring the repair of equipment and devices by individuals and independent repair shops” (Seddon, 2022).

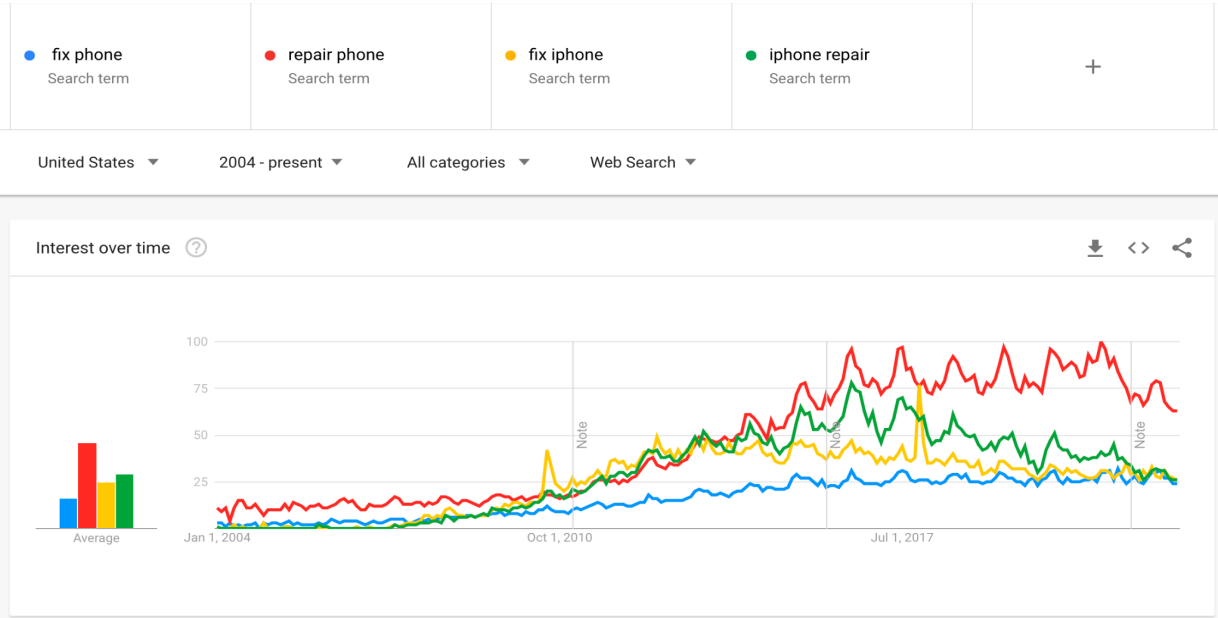


Figure 3. Comparison of the interest over time for the phrases “fix phone”, “repair phone”, “fix iphone”, and “iphone repair” (Source: [Google Trends](https://www.google.com/trends/))

As a result of monetary benefits and increased awareness of ongoing social issues, more people want to repair their devices instead of purchasing new ones more than ever before. Using Google trends once again to obtain the frequency of the phrase “repair phone” and other related phrases, we see in figure 3 that search results are quite high and show an upward trend in recent years. People are trying to find repair shops near them indicating a high demand for third party repair. This research is vital in a time where people are actively searching for ways to reuse old devices and keep them out of landfills but are also concerned with the legality of doing so. Searches related to laws and warranties show that people want to make sure they are able to fix the devices they own if it is safe, cheap, and legal to do so.

Over the years a variety of social issues have arisen in response to the increase in attention around the right to repair. Most electronic recycling is done in third-world countries, even up to 40% of US e-waste gets exported to be recycled (Singh, 2019, 2). Turiel describes the medical conditions present in the members of a community surrounding an e-waste recycling facility in China. People exhibited “...high incidence of headaches, vertigo, nausea” as well as “cancer, diabetes, hypertension, cardiovascular disease, and fertility problems” (Turiel, 2021, 8). Metal pollutants coming from the burning of e-waste make their way into wildlife, which if consumed, can also be detrimental to human health.

Other communities such as small business owners are also deeply rooted in the fight for the right to repair. “Many Black-owned small businesses are in the repair and maintenance industries, and difficulties facing small businesses can disproportionately affect small businesses owned by people of color” (FTC, 2021). Small repair businesses are usually underprivileged and not having access to the necessary tools to perform repairs puts them further under financial

strain. This legislation would likely protect the livelihood of tens of thousands of independent technicians.

Even 80 plus years later, Lovejoy's journal is updated and provides an effective means for my analysis of the history of the right to repair.

Analyzing if the Right to Repair has Changed Over Time and the Rationale Behind it

Right to repair has shifted from a practical requirement to a social necessity due to forgotten impartial practices by manufacturers and a change in consumer mentality.

There was a time in society where even manufacturers recognized the advantageous nature of being able to repair consumer goods. With parts becoming standardized, producers realized they could cut down on costs by using unskilled labor and produce numerous spares with the sole purpose of being used to fix the goods that would eventually fail. This was at a time where consumers exhibited more power in the market. People had options and companies recognized that the more reliable option would win public approval and also make them the most money.

This is contrary to today where a lot of consumer goods markets have become somewhat monopolized and consumers have lost much of their power, forcing the government to step in and pass legislation promoting the right to repair.

The company attributed to the popularization of the phrase planned obsolescence in the 1950s is General Motors. Car companies released hot new colors and noticeably changed the cars' appearance every year or two so old models would quickly fall out of fashion. Companies realized it was in their benefit to produce goods that failed as that would promote higher consumption and therefore higher profits. It became incentivized to have a product fail or be

unrepairable so a new one would be purchased. Besides physical inferiority, aggressive marketing tactics lead to psychological obsolescence. This is a phenomenon where a product is no longer seen as fashionable because the latest has more desirable features. We see this in effect every year with the new iPhone where everyone is entranced with what the latest has to offer when in most cases the new device is not much different than last years'. Most individuals would not benefit from purchasing a new phone but by limiting the phones which can install the newest operating systems (planned obsolescence) and using targeted advertising (psychological obsolescence), companies convince the general public to purchase these devices to raise profits, leaving old devices to be discarded and contribute to the growing amount of technological waste. Focusing on manipulative advertising instead of building innovative and dependable products does a good job at showing the extent of which manufacturer's fundamental philosophies have changed since the 1920s.

Marginalized communities are disproportionately affected by the right to repair but only in hindsight are we able to come to this realization. These communities were not the original concern when the support for the use of the phrase "right to repair" first started growing. As discussed, the phrase was brought up in the early 2000's in reference to the repairable nature of vehicles. In an era where everything was becoming digitalized and computerized, it became impossible for independent repair shops to work on the cars of the American population and therefore all repairs had to be sent back to car manufacturers.

The advocacy groups in this time pushed for consumer rights, putting the market power back into the hands of the people. This can be concluded from the fact that the bill stated its goal was to end the "unfair monopoly" car manufacturers had over repairs. Independent repair shops were left without the tools or documentation required to fix problems exhibited in consumers'

cars. Consumers are the ones that benefit most from such legislation as the breaking of monopolies leads to more choices in the market. No longer will people be limited to getting repairs from dealerships where they may fall victim to price gouging. People will be able to go to independent repair shops which are also in competition with one another. Besides prices, this proposal would lead to an overall increase in convenience. Dealerships are much more sparse than small repair shops and hence may be further out of the way for many people. This can lead to delays in repairs and timelines being pushed out due to the large volume of repairs a dealership may face. People need their vehicle on a daily basis, if they do not have access to one it may cause a hindrance to their routines like getting to work.

With the increased political agenda on the RTR, President Biden signed Executive Order 14036 in 2021 to limit manufacturers preventing consumers from repairing their devices. Companies are not right when claiming consumers are absurd with what they are asking for, the right to repair used to be a critical component of the economy. While it used to exist for its mutualistic benefits for both producers and consumers, it must now be enforced to protect the consumer. The executive order states the following: “to promote additional competition in the U.S. economy“, making it quite clear that the mission for the right to repair has not strayed from its original motives and remains largely the same. The goal to increase competition means to break monopolistic tendencies, something even the first motor vehicles repair bill sought to achieve. The executive order focuses on helping consumers in the market find means to repair all sorts of consumer goods, not just vehicles. Society has become more aware of the surrounding issues which has helped propel the movement. The environment and underprivileged repair business owners will benefit from such legislation but consumers have remained the priority.

Following the Executive Order, the European Union has proposed plans for a universal charging standard, forcing all phone manufacturers to use the same charging port. Companies have shown time and time again, to value profits over consumer preferences. For example, Apple's decision to remove wall chargers from new iPhone sales was met with huge controversy. Apple claimed to hope to reduce e-waste but chose a lightning connector on the iPhone instead of USB-C which is used on Macs and iPads. Even a consumer completely engrossed in the Apple ecosystem cannot use a single charger for all their devices. Increased advocacy and highlighting of such issues has led the EU to set regulations for a standardized charging port by 2024. This would eliminate the waste from different wires used to charge a plethora of different devices. The regulation is set to start in 2024 and would keep countless cables out of landfills and out of the reach of wildlife. While not necessarily beneficial to the fight of repairability, this paper has so far shown that repairability began with the standardization of small parts such as screws in different machinery to make the overall life of consumers easier. Environmental benefits aside, there is a huge convenience in only having to carry around one cable for everything that needs to be charged. We see the advantages of standardized and repairable parts in all industries but companies are incentivized to lock consumers into their personalized ecosystems to steer them away from competition.

While it is clear the goal of the advocates of the right to repair has remained fairly similar, it is surprising that this movement took so long to receive mass approval; which begs the question, why now? A shift to a more Democratic legislature could have definitely played a role but I also believe a psychological shift to promoting something positive instead of removing something negative has had a significant effect. The movement is now treated as giving the people the right to do something instead of taking from large corporations. Consumers should

have the power in their hands to do as they please with their property. While previously the movement focused on bringing down an evil entity, it is now reworded in a sense to promote freedom of choice.

However, continuing on the subject of psychological obsolescence, we are often nowadays manipulated to believe corporate propaganda surrounding recycling initiatives and future plans to improve the environment. While companies may claim to be making strides in recycling efforts for both end of life products and new ones, with some even offering free recycling for old devices, it is still beneficial for that device to not need to be recycled at all in the first place. As we now know, the toxins released from these devices can cause detrimental health changes in animals and people, massively impacting ecosystems across the globe. On top of that, not all of a device can be recycled in the first place, leaving the net benefit from recycling a device compared to sending it to a landfill marginally slim. Therefore, if devices were to last longer there would not be a need to recycle them as there would be the potential for reusability. This realization alongside the massive shortage in chips in recent years has helped people give their “old” electronics a second chance at life.

Conclusion

In this paper, I assert that the history of ideas STS research methodology is an effective means for taking into consideration how a concept in society adapts to ongoing social issues. The framework is a helpful tool in analyzing what forces have influenced the political movement “right to repair” and resulted in it becoming a social necessity in today’s climate. Using this method I demonstrate that the right to repair is a necessity that must be protected from poaching manufacturers through legislation.

The executive order put in place last year has the potential to impact a lot of people. We are told by the media how a bill like this would make it cheaper for us to fix our cracked devices. However, only by looking at the origins of this movement, peeling back layer by layer, do we truly get to see what the proposed legislation hopes to achieve and the domino effect it could exhibit on a variety of communities.

This research paper has the possibility of showcasing the improvements a certain concept might bring to a variety of fields. From economic to environmental, a gathering of research would help bring light to this topic and inform individuals, specifically future engineers, about the global impact of the technologies they develop. I was also able to draw wider conclusions to highlight how one way to pursue sustainability is by emphasizing quality and building long-lasting products.

Of course, as a historical insight looking forward, a lot written in this paper is subject to change, especially with companies like Apple lately opening up to the idea. The ethics of this executive order and how companies will choose to handle repair is also an interesting topic that can be investigated further. With Apple's recent release of repair documentation and tools, an official iPhone repair done at home is only dollars cheaper than taking your device to the store. This begs the question if it even is worth attempting this risky repair and therefore if one's repair options have even really changed, making Apple's efforts once again deceitful and just a marketing ploy. However, the paper still provides a baseline for insight into the right to repair and establishes future paths for research through the basis of Lovejoy's history of ideas.

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