

# Inequality and Limits

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## The minimum wage would be over \$18 had it risen along with productivity

*Real value of the federal minimum wage compared with its value had it grown at the rate of productivity and average hourly wages, 1968–2014*

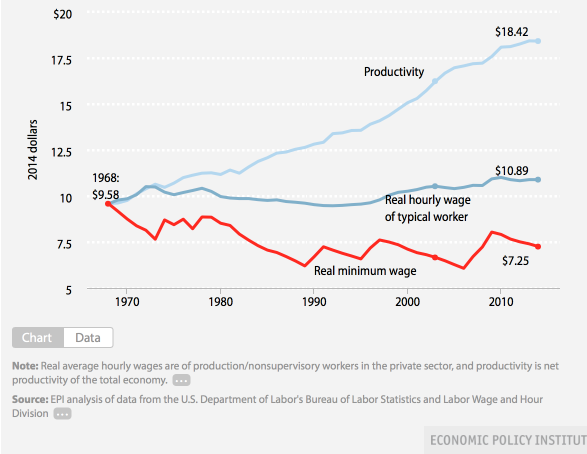


Figure 1: The Minimum Wage

## ABSTRACT

Many indicators demonstrate growing economic inequality. Figure 1 depicts increasing economic disparity between social classes. Despite increased productivity, waged workers are losing ground because owners of capital are accumulating the wealth generated by increased productivity (Figure 2). Since wealth accumulation is the goal of capitalism, this is not surprising; it is what capitalists are supposed to do. Some digitally mediated labor is not even waged any more, though it generates economic value. This labor includes casual labor managed in short-term contracts in systems such as Mechanical Turk, and the uncompensated labor of self-service and “affective” labor. Because technology supports a global labor force, traditional mechanisms of ensuring fairness, such as labor unions, are not always operative. This paper considers the problem of the distribution of wealth, and suggests sociotechnical mechanisms for a world with fewer traditional jobs.

## 1. INTRODUCTION

The Economic Policy Institute graph pictured above shows that increasingly, it is not worth it to work<sup>1</sup>. I discuss how in a future of limits, digitally mediated labor that is now done for free or at very low cost could be combined with a guaranteed basic income to support simple lifestyles. Abandoning the lavishness and waste in our current consumerist system is imperative. But what will the future be like? As Jay Chen notes in his paper, “the users in certain computing within limits scenarios do not exist yet.” I thus

looked back to my grandparents’ lives and forward to my daughter’s, to gain some traction for thinking about what limits might entail. My grandparents never quite gave up their early 20th century lifestyle, and I was thus able to observe it, and the viability of simpler ways of living. My daughter has scaled her expectations far below what mine were at her age.

My grandfather and grandmother owned a small farm on which they grew about half their own food. They lived in a tiny but nice house, with a radio, a treadle sewing machine, and a coal burning stove. Outbuildings housed chickens and an old Chevy. My grandparents drove to town twice a month for groceries, walked to church, and hosted an annual family reunion. Phone service was at the nearest neighbor’s, another small farm about a five minute walk away. I remember my grandparents in their retirement years, but my grandfather had been a small farmer and my grandmother an elementary school teacher until she got married and had a bunch of kids. She read a lot, and corresponded widely, even with people she hadn’t seen in decades. My grandparents’ lives were low-impact and humble, but immersed in friends, neighbors, family, and spirituality. What I consider luxuries such as raspberries picked the same day, and eggs so fresh they are still with the bloom, was just how they lived. The air was clean and clear out in the Ohio countryside, and day lilies grew in the ditch beside the road.

Fast forwarding to the near future, I can imagine a similar life for my daughter, with some twists. She wants to stay in a large urban area (she’s in Oakland currently), which means she will have a small living space like my grandparents did. She has an old used car that she loves, she writes fantasy fiction (her passion as opposed to my grandparents’ spiritual interests), and buys clothes at thrift stores. She has one of those “typical worker” jobs you see

<sup>1</sup> <http://www.epi.org/publication/charting-wage-stagnation/>

in the graph, as an EMT. She works full-time, and cannot live on her wages, which are supplemented by me.

My daughter likes the bustle and culture of Oakland, a city that is not wealthy, but houses artists and political activists, and has good, cheap restaurants. In many ways, the simplicity of her lifestyle is like that of my grandparents. The main difference is that she has better health care. My grandparents lost a two year old daughter to scarlet fever, a sorrow that weighed on my grandmother throughout her life.

My daughter is in school, hoping to become a physician assistant. She works as hard as my grandparents did, including the physical labor of being an EMT, and the rigors of taking classes in addition to full-time employment. She needs the guarantee of a basic income in case there are periods in her life when she chooses not to work (such as if she has children), and she needs a better place to live. She has scaled her expectations modestly. She comes naturally by such modesty and does not experience it as deprivation, though others might. Even with scaled expectations, she needs a guarantee of affordable health care. On her current salary, though it is well above minimum wage, she remains on my plan.

It is not worth it for my daughter to keep her current job as an EMT and work for \$11 an hour. Because she is lucky enough to have opportunities for education, she has the possibility to increase her income. But only a minority of Americans are college educated. What about those who end up in the “typical worker” track forever?

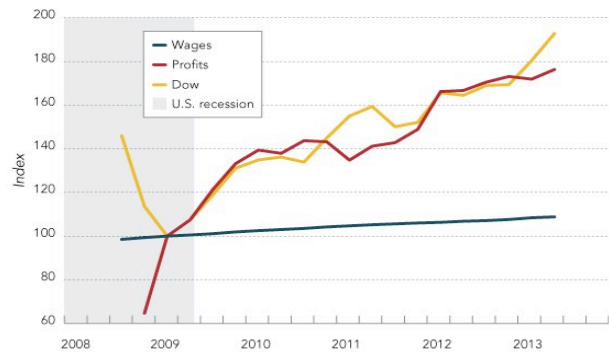
The answer I would give is twofold: low-consumption lifestyles must become the norm, and society must guarantee the essentials. This approach is consistent with various hard limits on physical resources (peak oil, peak phosphorous, and so on) which necessitate reduced consumption. In his Conference paper, Six Silberman notes the risk in “perpetuating the notion that economic growth is fundamentally desirable, and indeed the main social mechanism by which the human condition is improved.”

We should instead seek cultural shifts toward cooperation over competition, which Christopher Fry and Henry Lieberman write about, and we should relegate to the dustbin of history the status games that drive capitalism. We cannot continue to follow those who win through aggressive, socially destructive maneuvers that keep capitalism in cycles of near-failure (the last one in 2008). Status seeking stimulates consumption and the desire to accumulate wealth. Competition works when you want to drive everyone else out, and, increasingly, contemporary capitalism produces oligopolies (Suarez-Villa 2015). Systems that lack diversity are brittle, as discussed by Barath Raghavan and Rick Donovan in their papers.

## 2. DIGITALLY MEDIATED LABOR

Where will the money for essentials come from? Quite simply, there is already a lot of wealth in our system, and it needs to be distributed more equitably. Figure 2 indicates that wealth is accumulating in fewer and fewer hands. In a world of limits, we won’t need as much wealth as we do now, (because we must reduce negative externalities), and we should be able to generate enough through efficiencies of technology and organization.

## Stock, profit rally leaves workers behind.



Notes: “Wages” is the total average hourly earnings of private production and nonsupervisory employees. “Profits” is corporate profits after tax. “Dow” is the Dow Jones Industrial Average. Source: Federal Reserve Bank of St. Louis

Figure 1: Profits and Wages

Of concern in Figure 2 is the growing white space between the lines representing profits/Dow and the line representing wages. The wealth accumulating as profits can be redistributed, at least in part, to workers through B-corporations, employee-owned corporations, taxes, and other vehicles.

I have been studying the source of at least some of that wealth. Increasingly, digitally-mediated free and low-cost labor contributes to profit. There are several forms of such labor, which I gloss as “heteromation” (see Ekbja and Nardi 2012; 2014, Ekbja et al. 2015), a labor relation in which humans and machines collaborate (hence “heteromation” vs *automation*), but where the human occupies a marginal role computationally or organizationally. Crucially, heteromated labor involves the extraction of economic benefit for someone other than the laborer.

Heteromated labor includes paid labor, but also, uncompensated affective labor. *Low-cost casual labor* is managed in digitally mediated short-term contracts in services such as Mechanical Turk and Uber where workers receive no benefits or protections, and earn little. Mechanical Turk workers earn, on average, well below minimum wage. Uber workers earn more, but they take on potentially expensive risk as they use their own vehicles which they must finance and/or insure. Forms of *uncompensated affective labor* include cognitive, creative, communicative, and emotional labor. Such labor is stimulated by affective rewards, such as social connection and attention. Participants are usually unaware of the extracted economic value their participation provides. The products of the labor may be directly appropriated as in software modifications for video games, or a graphic design produced for a contest (see Schmidt 2013). Or they may derive from personal data amassed through participation in computing, as in social media. Personal data are packaged and sold to advertisers, used to direct ads on a site, or deployed to guide the design of new products (van Dijk 2009). User engagement is itself a commodity; for example, user content such as comments on news stories increase clicks and time-on-site, valuable commodities that allow site owners to charge more for ad placement.

Cognitive laborers include gamers who produce software modifications that gaming companies incorporate into their products, people who write essays for political sites such as DailyKos, and anyone who contributes to commercial blogs and forums. The Google Image Labeler Game challenges participants to label a corpus of billions of images, providing free cognitive

labor to Google. Creative labor comes in forms such as writing fan fiction and participating in online design contests. Communicative labor in social media produces commodified personal data. Emotional labor is required for social robots which do not function without human mediation (Ekbia et al. 2015), and at sites such as PatientsLikeMe where patients provide testimonials and empathetic connection to others (Tempini 2015). Self-service labor includes use of devices and software that replace former paid workers, such as ATMs, fast-food kiosks, and phone menus.

These rough categories of digitally-mediated labor suggest the many and varied points in networks at which economic value is extracted. We do not have ways to calculate the value of the uncompensated labor, but we know, for example, that commodifying personal data is a lucrative business, and the basis of the wealth and power companies like Facebook and Google are accumulating.

### 3. ANDRÉ GORZ'S *PATHS TO PARADISE*

At the moment, heteromated labor contributes to the white space in Figure 2, increasing inequality. But as Gorz said, "Technology can only create new material conditions. Those created by [computing] will encourage or jeopardize our development according to the social and political project underpinning their implementation" (1985). There is nothing inherently wrong with digitally mediated labor—in fact, it often engages our interests, attention, skills, and social capacities. Indeed, much heteromated labor is performed voluntarily, with enthusiasm, such as participation in social media and games. Even those who labor at the repetitive tasks of Mechanical Turk report motivations beyond money (Jiang et al. 2015). A better heteromated labor relation requires the right "social and political project" rather than changes in the activity of the work itself.

Heteromation has some nice advantages. Work is typically done at home, allowing people to organize their schedules, and perform their tasks in the comfort of their own space. I thus suggest that heteromated labor could, in the future, be paired with a basic guaranteed income to support a low-consumption lifestyle in which employment at home, with its convenience for stay-at-home parents, caregivers, the disabled, the chronically ill, and the very old, not to mention anyone who likes to work in their pajamas, could lessen dependence on the vagaries and inefficiencies of the current welfare system, as well as reducing the carbon footprint by minimizing commuting and consuming.

In his book *Paths to Paradise*, philosopher André Gorz argues that robots and automation can take care of a lot of the work people do, and we should let the robots do it. At the same time, we must abandon the race for status and accumulation, and recognize that, from a societal perspective, if labor is not valuable to society, we do not need to waste the resources and human effort to do it just so someone can get a paycheck. Joseph Tainter's theory of civilizational collapse posits that civilizations fail when inessential activities overwhelm the system (1990). We can all think of unproductive activities that seem to contribute little or no value but are encased in our institutions (certainly universities are full of them). These activities are initially instigated to solve some problem, as Tainter explained, but they are often poorly designed, way too expensive for their value, and sometimes buttress corrupt practices that destabilize systems. In his Conference paper, Lorenz Hilty notes that we should "do away with all the proprietary noise that adds unnecessary complexity to an already complex world."

Christopher Fry and Henry Lieberman suggest we will all be "making" things soon and won't need jobs. I might not go that far, but it is true that a return to a sort of enlightened feudalism in which the worker spends some days working for her own subsistence and some days working for others, is not a bad plan. Although it might sound odd to invoke feudalism, feudalism is, in its purest form, just a system in which workers produce their own subsistence and give some labor to others, as against capitalism in which workers no longer directly produce their subsistence but purchase it with wages. With better social and technical systems for permaculture, food production in rural, urban, and suburban locales could be managed nicely. Between permaculture and making, we might return to producing more of our own subsistence. The part we do not want return to is the exploitative appropriation of the labor of impoverished workers. Instead, labor beyond immediate needs would go toward operating societal infrastructures and services such as transportation, water systems, and the like. Gorz estimated that we would probably each need to work about five months a year for a viable civilization. I'm not sure about the numbers, but I agree with the logic, and Gorz's idea suggests an interesting problem to model.

Applying modern technology to subsistence means that we need not live in hovels or perform back breaking labor as serfs did, but might enjoy independence from constantly working for someone else in the inflexible 40 hour a week format that causes so many problems. We might enjoy the pleasures of producing for family and friends. It would be worth it to work if we worked less, had more flexibility, and did not have to worry about taking a job to obtain basic healthcare.

Heteromated labor at scale could evolve into an incarnation of the "electronic cottage" proposed by Alvin Toffler in 1980. The labor would change; for example, emphasis on harvesting personal data to sell to advertisers would shift to activities such as citizen science that enrich our culture, or services modeled on the mechanics of Lyft or Uber that could deliver food, medicine, and other essentials to homebound elderly or disabled people. Self-driving vehicles might play a similar role; as Gorz advised, let robots do the work when they can. I expect "autonomous" vehicles will actually be heteromated most of the time, even if the human worker is guiding the vehicle remotely, so I'm guessing there will be some jobs in this sector.

Such reconfigurations of labor must involve a shift in the meaning of employment and the desirability of a guaranteed basic income. The notion that corporations are primarily accountable to their shareholders dates only to the early 20th century, and is not set in stone. Public benefit corporations and employee-owned corporations are viable alternatives to today's avaricious free market capitalism. The continuing drift toward inequality (documented by many, including, recently, Thomas Piketty, 2014) should be squelched. It immiserates far too many, and contributes to environmentally unsustainable practices. Inequality is unsuitable for a future of limits.

### 4. CONCLUSION

An interesting computational problem lies in figuring out how to reconfigure the economy so that inequality, and along with it, pollution, waste, species extinction, and resource depletion, are reduced. Decision models, simulations, and so on, can suggest what an economy based on limits would look like. Gorz points to the problem revealed in Figure 1: "The increasing output achieved with falling labor costs can only be distributed if it gives rise to the creation and distribution of means of payment corresponding

to its own volume and not to the value of labor expended” (1985). How would a new means of payment work? Without widespread labor unions, other organizations, such as worker cooperatives like Turkopticon (Irani and Silberman 2013), must address this question. Capitalism has excelled at production; now it’s time to turn to the problems of distribution. What would be really disruptive is not another new gadget, but a way to eliminate homelessness, food deserts, children who don’t receive healthcare, and the anomie that leads to abuse of legal and illegal drugs, high rates of suicide, and so on.

Digital technology has an important role to play in transitioning to a future of limits. In addition to the heteromated labor discussed in this paper, computational systems supporting timebanking, barter, petty capitalism, and freecycling can be made more robust, useful, and ubiquitous. A move toward increasing services (vs manufactured goods), as Christian Remy and Elaine Huang discuss in their paper, might be managed through computing in various ways. My daughter won’t be working in an electronic cottage because her employment still happens in “meatspace,” but she can certainly take advantage of the services and (recycled, reused, repurposed) goods made available in networks.

One of my Danish colleagues remarked that, in his opinion, his country needs “less society and more community.” I think there is an interesting space between traditional socialism and the free market to explore in a future of limits. As in my grandparents’ day, and within the limits of their personal circumstances, family, neighbors, and friends filled at least some gaps governments attempt to fill now, or gaps which go unfilled. If a critical mass is working at home in their electronic cottages, the need for mobility will be greatly diminished. Stabilizing populations is a critical step toward community because you can’t sustain community if you are always on the move. Bill Tomlinson’s immigration assistant might help people who need to move locate a place they can stay. Digital technology has the capacity to support localized communities and economies by allowing people to find what they seek through neighbors and local citizens. Sunny Gui’s paper talks about the social movement called Transition Town that builds community bonds with the explicit agenda of bypassing reliance on government. Networks also allow us to interact with geographically distributed others without having to go to where they are—for information, support, commentary, and so on, as at sites like PatientsLikeMe. Reducing reliance on expensive (Taintarian) mechanisms of big government, and reducing the power of oligopolies as people perform some of their own

subsistence, seems an opportunity in a future of limits. There might indeed be a path to paradise somewhere in all of this.

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