

An evolutionary theory of resource distribution

Blair Fix [York University, Toronto, Canada]

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Abstract

This paper explores how the evolution of human sociality can help us understand how we distribute resources. Using ideas from sociobiology, I argue that resource distribution is marked by a tension between two levels of natural selection. At the group level, selfless behavior is advantageous. But at the individual level, selfish behavior is advantageous. I explore how this tension affects the distribution of resources.

The biologist Theodosius Dobzhansky famously wrote that “nothing in biology makes sense except in the light of evolution” (1973). I propose a corollary in economics: *nothing in economics makes sense except in the light of human social evolution*.

This paper explores how the evolution of human sociality can help us understand how we distribute resources. Although economists like to deny it, humans are social animals. And it is our evolved sociality, I argue, that explains how we divide the resource pie. This paper offers a sketch of what an evolutionary theory of resource distribution might look like, and what its basic principles should be.

In Part I, I discuss how the evolution of human sociality relates to resource distribution. I argue that resource distribution is marked by a tension between two levels of natural selection. At the group level, *selfless* behavior is advantageous. But at the individual level, *selfish* behavior is advantageous. Resource distribution, then, is driven by a tension between competition and cooperation. Groups compete for resources with each other (often violently), but suppress competition internally.

In Part II, I look at the building block of groups – the human relation. To cooperate, humans form bonds with each other. Often, these bonds are asymmetric, meaning one person has more power than the other. When this happens, the person with more power can use their influence to get a bigger share of the resource pie. The result, I argue, is that when groups use power relations to organize, the “power ethos” will prevail: *to each according to their social influence*.

In Part III, I look for evidence for the power ethos inside modern firms. I show that the income of US CEOs tends to increase with “hierarchical power” (control over subordinates within the firm). Case-study evidence suggests that the same is true for all employees within firms.

Given these results, I argue that it is time to treat income as a social phenomenon, and to ground the study of income distribution in an evolutionary framework.

Part I: Human sociality and resource distribution

Is it obvious to you that humans are evolved social animals? Is it also obvious that our sociality is central to how we distribute resources? If you think so, you’re probably not an economist.

Through years of schooling, mainstream economists are trained to ignore the obvious facts about human nature. The theories that economists learn make it impossible for them to understand human sociality. Economists are trained that humans are asocial “globules of desire”. This is Thorstein Veblen’s satirical term for “homo economicus”, the economic model of man. Here’s Veblen describing homo economicus:

“The hedonistic conception of man is that of a lightning calculator of pleasures and pains, who oscillates like a homogeneous globule of desire of happiness under the impulse of stimuli that shift him about the area, but leave him intact. He has neither antecedent nor consequent. He is an isolated, definitive human datum, in stable equilibrium except for the buffets of the impinging forces that displace him in one direction or another. Self-poised in elemental space, he spins symmetrically about his own spiritual axis until the parallelogram of forces bears down upon him, whereupon he follows the line of the resultant. When the force of the impact is spent, he comes to rest, a self-contained globule of desire as before” (Veblen, 1898).

As Veblen makes clear, economists’ model of human behavior is bizarre. Indeed, the assumptions are so far-fetched that one wonders how this “theory” ever gained acceptance. I have spent years trying to make sense of homo economicus as a scientific theory. I have concluded that this is a waste of time. Economists’ selfish model of humanity is best treated not as science, but as *ideology*.

Unlike scientific theories, ideologies are not about the search for “truth”. Instead, they are about rationalizing a certain worldview – usually the worldview of the powerful. Economists’ selfish model of humanity is a textbook example.

The discipline of economics emerged during the transition from feudalism to capitalism. During this period of social upheaval, business owners battled to wrench power from the landed aristocracy. To supplant the aristocracy, business owners needed to frame their power as legitimate (and the power of aristocrats as illegitimate). Their solution was devilishly clever. The new business class appealed to *autonomy* – the mirror opposite of the ideals of feudalism.

Feudalism was based on ideals of servitude and obligation. Serfs were obligated to perform free work for feudal lords. And these lords, in return, were obligated to protect serfs from outside attackers. This web of obligation was rationalized by religion – it was a natural order ordained by God.

To upend this order, business owners championed the ideals of autonomy and freedom. Business owners claimed to want nothing but to be left alone – to pursue profit unfettered by government or aristocratic power. From this world view, the autonomous model of man was born. It had nothing to do with how humans actually behaved. It was about rationalizing the goals of business owners. They wanted power, but they framed it as the pursuit of freedom and autonomy. “Power in the name of freedom” is how Jonathan Nitzan puts it (in conversation with me).

The ideals of autonomy, championed by business owners, became enshrined in the new discipline of economics.¹ Every individual was modeled as a selfish globule of desire – an aspiring capitalist.

Resource distribution explained?

The crowning achievement of the new discipline of economics was its explanation of resource distribution. In a competitive market, economists claimed that the distribution of resources was completely fair. Every autonomous individual got exactly what they produced. Workers got what they produced. And business owners got what their property produced.

First proposed in the 1890s, this “marginal productivity” theory of distribution has weathered the 20th century unchanged. But unlike other static theories (Newtonian physics, for instance), this stasis is not due to overwhelming empirical support. In fact, most critics agree that marginal productivity theory can’t be tested (Pullen, 2009). Its basic ingredients are unmeasurable. When economists claim to test the theory (and find empirical support), they actually resort to circular reasoning (Fix, 2018b). Marginal productivity theory does not persist because of its scientific merit. It persists because it is an ideology that justifies the prevailing social order.

Economists, of course, will never admit that their theory is an ideology. Even many non-economists cannot see marginal productivity theory for what it is. Why? Because we are steeped in our own culture, blind to the ideologies that surround us. This is a problem universal to all societies.

Ancient Hawaiians, for instance, had an ideology very similar to marginal productivity theory. But to Hawaiians, their beliefs were not an “ideology”. Their beliefs were the sacred truth. Here is how Peter Turchin describes Hawaiian beliefs:

“The Hawaiian chiefly elite were different from commoners ... because they were the vessels of mana—spiritual energy flowing from the gods that was necessary for the wellbeing of the overall society. The higher the rank of a chief, the more mana was concentrated in him, with the king as the central node in the “mana distribution network” (Peter Turchin, 2016).

To the modern observer, these ancient Hawaiian beliefs are easily recognizable for what they are – an ideology that justifies the social order. But before we (modern observers) become too smug, let’s turn the camera on ourselves. Our own ideology of marginal productivity is virtually the same as this Hawaiian superstition. Replace “mana” with “productivity”, “chiefly elite” with “business leaders”, and you get the following:

“Business leaders are different from workers because they own productive property, and this property is necessary for the wellbeing of the overall

¹ Were economists aware that they were serving the interests of business owners? Some definitely were. Others were probably not. My guess is that progenitors of ideologies are often unaware of what they are doing. Church clergy, for instance, were probably not aware that their faith justified the power of feudal lords. For the clergy, their faith was simply the way the world worked. And so it is with many economists. The world “is” how their theory imagines it. That their ideas justify the power of business owners is not on (most) economists’ radar.

society. The more property a business leader owns, the more productivity is concentrated in him” (paraphrasing Turchin’s description of Hawaiian mana).

Hopefully scientists of the future will look at marginal productivity theory the same way we look at the Hawaiian “mana”. Both are ideologies that justify the social order. And both hamper the scientific study of resource distribution.

Economics awaits a Darwinian revolution

Modern economics, I have come to believe, resembles pre-Darwinian biology. By this, I mean that economics is captivated by an ideology that is stopping scientific progress. Let’s look at the parallels.

Before Darwin, biologists believed that life on Earth was created by God. This seductive idea stunted scientific progress for centuries. Much of the evidence for evolution – the fossil record, the similar anatomy of different species – was staring scientists in the face long before Darwin proposed his theory of evolution. But because life was viewed as God’s eternal creation, this evidence was mostly ignored.

Darwin’s “dangerous idea”² – evolution by natural selection – gave meaning to this evidence. Life was not an eternal order, Darwin proposed. Instead, it was an evolving system, driven by differential reproduction. The plethora of evidence for evolution suddenly made sense.

In hindsight, Darwin’s idea seems obvious, almost trivial. But it was not at the time. Most scientists were simply unable to imagine alternatives to their ideology of an unchanging cosmos. The situation is much the same in economics today.

Like biologists before Darwin, economists are captivated by an ideology that envisions a static cosmos. According to economic ideology, humans are selfish utility maximizers. In a perfectly competitive market, it follows from “natural law” that each person receives exactly what they produce. This is the eternal order.

Except it’s not.

Sitting before economists is a wealth of evidence for our evolved (and evolving) sociality. No more than 400 generations ago, humans lived in small tribes of a few dozen people. The first states formed 200 generations ago. The first empires appeared 120 generations ago. Nation states appeared a mere 10 generations ago. Now we live in states with millions (sometimes billions) of people.

Like pre-Darwinian biologists who ignored the evidence for evolution, economists mostly ignore the evidence for the evolution of human culture. It simply does not fit with their static worldview. Economics awaits its Darwinian revolution.

What’s needed is a theory that gives meaning to the evidence for human cultural evolution, and applies this evidence to the study of resource distribution. Fortunately, evolutionary-minded economists don’t have to start from scratch. Sociobiologists have done most of the work already.

² *Darwin’s Dangerous Idea* is the title of a book by philosopher Daniel Dennett.

What puzzles sociobiologists is the capability of some animals (like humans) to behave both selfishly and cooperatively. This dual nature needs an evolutionary explanation. Sociobiologists think they have one. They call it *group selection* (or multilevel selection). I propose we use this theory of group selection to create an evolutionary theory of resource distribution.

The duality of human nature

Humans can behave both selfishly and altruistically – a duality that escapes almost no one (except mainstream economists). This duality fills our daily lives and our imaginations. It is what makes fictional characters believable. Characters that are too selfish feel like cartoon villains (sorry Mr. Burns). Characters that are too altruistic feel like superheros (sorry Superman).

This selfish/altruistic duality should be at the center of an evolutionary theory of income distribution. So what explains our tendency to be both selfish and selfless?

Economists have one idea. Altruism, they say, is just masked selfishness. When I help my wife, for instance, this just *appears* altruistic from the outside. On the *inside*, I am still acting selfishly. I help my wife, economists say, because it maximizes my utility. The logic here is that because altruism is pleasurable, there is really no such thing as a selfless act. Every good Samaritan is just a masked hedonist – a utility maximizer in disguise.

On first pass, this seems like a clever argument. But after further thought, it misses something important. It does not tell us *why* altruism is pleasurable. Economists take the emotion of pleasure for granted. They simply assume that we seek it. But this is like a biologist saying that animals eat because they are hungry. Of course they do! The more important question is – why do animals get hungry?

Biologists realize that hunger is just a *proximate* explanation for why animals eat. To find the *ultimate* cause of a behavior, we must explain why it has been selected by evolution. Hunger is a mechanism that prevents animals from voluntarily starving to death. Since you can't reproduce when you are dead, it is not hard to see how hunger would evolve.

So here is the question that economists don't ask – why do humans find both selfish and altruistic behavior pleasurable? The answer, presumably, is that both behaviors can lead to reproductive success.

Like hunger, the pleasure of acting selfishly is easy to understand. If acting selfishly increases your chance to reproduce, it will be selected over time. Unsurprisingly, selfishness is hardwired into most animals – a byproduct of individual competition and survival of the fittest. Think of the female spider that eats its mate. Or the spider offspring that eat their own mother. Nature, as Tennyson said, is red in tooth and claw.

But in some animals (like humans), this selfish instinct is accompanied by a social instinct – a tendency to cooperate in groups. How did this social instinct evolve? The evolutionary biologist E.O. Wilson (2012) thinks it came from *group selection*.

The idea behind "group selection" is that when organisms live in groups, the benefit of selfish behavior is sometimes trumped by the benefit of altruistic behavior. If groups compete with

each other, there can be strong selective pressure for sociality. Wilson thinks this is how humans became eusocial (ultra-social) animals. We competed with each other in groups.

The paradox here – explored further by Peter Turchin in his book *Ultrasociety* – is that the evolution of our altruistic tendencies may have been driven by our most violent impulses. Warfare, Turchin argues, is what drove group selection among humans.

Let's think about how this could happen. In warfare, altruism is extremely advantageous. Imagine that an altruistic group battles a selfish group. The altruistic group charges boldly as a cohesive whole. Faced with this onslaught, the selfish group collapses as individuals flee their posts. The altruistic group triumphs and exterminates the selfish group. (Yes, human history is that violent.) Altruistic genes get propagated. Selfish genes die out. That is group selection in action.

If altruistic groups beat selfish groups, we might naively think that humans should be purely altruistic. But we are not. The catch is that *within* groups, individuals can still benefit from being selfish. Here's how. Imagine that you belong to an altruistic group that charges boldly into battle. It's in your interest to shirk your duty and run from the fight. The group is no less likely to win, but you're far less likely to die. If your strategy works, then selfishness gets selected.

E.O. Wilson thinks this tension between group benefit and individual benefit is what explains the duality of human nature. Altruism benefits groups. Selfishness benefits individuals within groups. In motto form, E.O. Wilson and David Sloan Wilson state this tension as:

“Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary” (Wilson and Wilson, 2007).

I find this a persuasive explanation of our dual instincts as humans. I propose we use it to build an evolutionary theory of resource distribution.

A war of all against all?

In *Leviathan*, Thomas Hobbes argued that humanity's natural state was a “war of all against all”. The subtext to Hobbes's argument is that humans are asocial. Rather than cooperate, our natural state is to compete with all fellow humans.

To explain how humans distribute resources, economists have adopted Hobbes' vision. But instead of calling this a “war of all against all”, economists use the Orwellian term “perfect competition”. In a perfectly competitive economy, every individual battles every other individual (through the market) to maximize their consumption of resources. The result, economists propose, is that every individual gets what they produce.

Tidy as it appears, this theory leads to some paradoxes. First, if humans compete in a war of all against all (perfect competition), why do we have institutions? Why do firms, governments and nation-states exist? Second, why is our war of all against all limited to the market? Why don't we just *take* the resources we want from our competitors?

These paradoxes arise because economists treat humans as asocial. But we are not. We are social animals whose instinct is to organize in groups. Our natural state is not, as Hobbes

thought, a war of all against all. Instead, our natural state is a war of *group against group*. This is the central insight of group selection theory. Humans form groups that compete with each other, often violently.

The existence of groups, so paradoxical in economic theory, should be our default hypothesis in an evolutionary theory of resource distribution. In every human society, we expect to find groups that violently compete with one another – be they tribes, fiefdoms, or states. In other words, theft and plunder *between groups* is the default way that humans distribute resources. To remind us of our violent past, Peter Turchin (2016) quotes the sordid texts left by ancient kings. Here, for instance, is an ancient Assyrian ruler boasting of his conquest of neighbouring states:

“Then I went into the country of Comukha, which was disobedient and withheld the tribute and offerings due to Ashur my Lord: I conquered the whole country of Comukha. I plundered their movables, their wealth, and their valuables. Their cities I burnt with fire, I destroyed and ruined. . . . I crossed the Tigris and took the city of Sherisha their stronghold. Their fighting men, in the middle of the forests, like wild beasts, I smote. Their carcasses filled the Tigris, and the tops of the mountains ...

The ranks of their fighting men I levelled like grass. I bore away their gods; their movables, their wealth, and their valuables I carried off. Their cities I burnt with fire, I destroyed and overthrew, and converted into heaps and mounds. The heavy yoke of my empire I imposed on them” (quoted in Turchin, 2016).

This level of violence, Turchin thinks, is typical of archaic rulers. Other ancient texts, like the Old Testament, give similar accounts of violent conquests. With this in mind, we should treat violent conflict *between groups* as the default mode of human competition. It is how we distribute resources in the absence of other mechanisms.

Markets suppress competition

Our thesis is that *between* human groups there is a war of all against all. But *within* groups, things are different. To be stable, groups must foster cooperation among members. Put another way, stable groups must *suppress* competition.

Markets, I propose, are a cultural tool for suppressing competition within groups. When they function well, markets restrict competition to the rules of private property. Resources can't be taken by force. They must be bought and sold. In other words, markets suppress outright theft and plunder. (I say “outright”, because I still have Pierre-Joseph Proudhon's slogan “*Property is theft!*” ringing in my ear).

The main insight from group selection theory is that this suppression of competition must occur *within a group*. In other words, property rights do not just come from nowhere (although it appears that way in economic theory). Instead, property rights are culturally evolved. They developed within groups as a way to suppress competition.

It is nation-states, for instance, that enforce modern property rights regimes. And when these regimes break down (when states “fail”), competition doesn’t disappear. Instead, it takes a more severe form. Think civil war. Think roaming bands of mercenaries. Think warlords. Think terrorism. Think outright war. Markets maintain the stability of a group by suppressing violent competition within it. When markets fail, groups fail.

As an example of this process, think of Europe. Two centuries ago, European states were almost constantly at war with one another. This group conflict culminated in two world wars – the most violent events in human history. After World War II, European states finally managed to integrate into a larger group. The Eurozone market was born, and peace prevailed. Violent competition was suppressed, and war gave way to market competition.

Markets are, of course, one of many cultural tools for suppressing competition. But within modern states, they are probably the most important.

Firms suppress the market

Markets suppress violent competition within states. But this is just the first of a series of tools for limiting competition. Within states, there are subgroups we call “firms”. Their main role is to *suppress the market*.

This is, of course, not how economists treat firms. In fact, the existence of firms comes as a shock to economic theory. This is because economists assume that “perfect competition” (a market war of all against all) is the optimal way to organize society. To explain why firms exist, economists have to add auxiliary assumptions. The most popular auxiliary assumption was proposed by Ronald Coase (1937). He argued that firms minimize “transaction costs” – the cost of organizing using the market. But much like marginal productivity, transaction costs are unobservable (Nitzan and Bichler, 2009).

In contrast, an evolutionary theory does not need auxiliary assumptions to explain why firms exist. Our hypothesis is that humans are social animals who compete as groups. To be stable, these groups suppress internal competition. Firms, then, are subnational groups that compete within the confines of the market. And just as expected, firms *suppress* market competition internally.

How do firms suppress the market? They use *hierarchy*.

Inside firms, there is no bartering, no bidding, and no auctioning. Instead, firms have a *chain of command*. Superiors command subordinates, who command their own subordinates, and so on. Like property rights, this chain of command is a set of rules that limit competition. Employees, for instance, can compete for promotions within the corporate hierarchy. But once the position is filled, the competition is over. If the chain of command works well, subordinates will obey the newly promoted person. No such rule exists on the open market.

To each according to ...

Ever since Marx (1875), economists have put theories of distribution in ethos form. I'll join the bandwagon here. In our evolutionary theory, resource distribution is marked by a tension between two ethoses:

The red-claw ethos: "*To each according to his ability to take.*"³

The communist ethos: "*To each according to his needs*"

The red-claw ethos is the ethos of *selfish competition*. It is survival of the fittest – nature, red in tooth and claw. For most organisms, this is the ethos that dominates. Individuals compete for resources with little or no regard for others.

The communist ethos is Marx's famous slogan for the ideals of a communist society. In evolutionary language, it is the ethos of *altruism*. If humans were completely altruistic, we would divide the resource pie with perfect equity. We would give every person what they need. Obviously, we fall short of this ideal.

Among animals, the social insects like ants and bees probably come closest to the communist ethos. To find pure altruism, however, we need to look *inside* animals. The human body, for instance, is a marvel of cooperation. It is an amalgamation of trillions of cells that function together. If your body is healthy, each cell gets exactly the resources it needs. No more, no less. The cells of the body are a purely altruistic group.

In human societies, resource distribution lies between the extremes of both the red-claw and communist ethos. We form groups that compete with each other, and this competition leans towards the red-claw ethos. Groups take what they can from other groups. At the largest level of organization, theft and plunder (from other groups) rule the day.

But *within* groups, the red-claw ethos gets suppressed. Inside our group, we have an instinct to cooperate, and share resources equitably. We also have cultural tools that amplify this altruistic instinct. These tools suppress competition, and bring us closer to the communist ethos.

To understand resource distribution, we must understand this balance between the red-claw and communist ethos – selfishness and altruism. It's no small task. As cultural evolution makes clear, humans can live in many different types of societies. The task for an evolutionary theory is to understand how these differences came to be. We need to study how existing groups beat those that went extinct.

Resource distribution in an evolutionary context

Darwin's theory of evolution put humans in our place. Humans are not, as religion suggested, chosen beings set apart from the rest of creation. Instead, humans are a twig on the tree of life.

³ Yes, the pronoun "his" is awkward here. Substitute the word "its" if you like: "To each according to its ability to take". I've kept the word "his" to mirror Marx's language.

The rest of science took note of Darwin's discovery. But economists missed the memo. As practised today, economics is an isolated discipline – an island of anthropocentrism. Economists devise models and theories with no regard for how they fit with the rest of science.

Case in point is economists' theory of resource distribution. It proposes that in a competitive economy, each individual receives what they produce. How bizarre this theory looks when compared to the rest of science. Natural scientists understand that organisms do not *produce* resources. Organisms *capture* and *transform* resources. To say that an organism gets what it produces is nonsensical – meaningless even.

Our evolutionary theory attempts to bring economics back into the scientific fold. Our theory takes Darwin's memo, and applies it to economics. It puts humans into the grander scheme of life on Earth. What is this scheme? The physicist Ludwig Boltzmann once said that life is a "struggle for free energy". But this is not entirely true. Life is both a struggle and a *collaboration* for free energy. It's a tapestry of competition and cooperation.

Let's look at this tapestry as a whole. Life, we presume, began as a struggle between replicating molecules. But soon, some of these molecules banded together. Although the steps remain murky, groups of cooperating molecules somehow formed cells. These cells then competed with each other for resources, but cooperated internally.

After billions of years of single-celled life, another collaboration occurred. A bacterium merged with an archaeon (another single-celled organism), eventually forming the eukaryotic cell (Lane, 2015). In this symbiosis, the bacterium became the mitochondria – the energy workhorse of the cell. The archaeon became the cytoplasm and nucleus. This new collaborative cell competed with other cells, and suppressed competition internally.

Millions of years later, eukaryotic cells began to band together in groups, forming multicellular organisms. So advantageous was this symbiosis that it appears to have happened multiple times (Grosberg and Strathmann, 2007). These multicellular organisms then competed with each other and suppressed competition internally. (We have a name for the failure to suppress competition within multicellular organisms. It is called *cancer*.)

The trend towards collaboration did not stop there. Eventually social organisms evolved that organized in groups. These groups competed for resources, and suppressed competition internally. Some social animals, like ants and bees, are so collaborative that scientists call them "superorganisms" (Wilson and Sober, 1989; Seeley, 1989).

Humans have continued this evolutionary story. But instead of genetic evolution, most changes in human society occur through cultural evolution. In other words, it is our *ideas* that evolve, not our genes. In our ancestral state, humans were probably much like other primates. We organized in small troops of related individuals. We shared resources within this group, and battled other groups for food and territory. Gradually troops gave way to organizing in tribes. After many millennia, these tribes began to merge into larger chiefdoms. Chiefdoms eventually merged into states. And states merged into empires. At every stage, competition raged *between* groups and was suppressed *within* groups.

Humans are part of a grand pattern of life on earth – a struggle and collaboration for resources. Our evolutionary theory embraces this duality. It gives a framework for studying the richness, diversity, and contradictions of how humans distribute resources.

What our evolutionary theory does not do is give simple answers. It does not say exactly how resources are distributed at any point in time. In fact, the theory makes clear why such exact answers (like the ones economists give) are foolhardy.

Human society is part of a much larger tapestry of life on earth – a tapestry of struggle and collaboration. The whole point of an evolutionary theory is to admit that this tapestry *changes* with time. The way resources are distributed in an apex forest, for instance, is completely different than how they were distributed in primordial soup. And so too with humans. Resource distribution in industrial societies is nothing like it was among hunter gatherers. Only when economists start thinking about resource distribution in this grand context will economics be an evolutionary science.

Part II: Social relations and resource distribution

A *25% chance*. That's the likelihood that when I tell someone I am searching for a job, they will say:

Remember, Blair ... to land a job, it's not what you know that matters. It's who you know.

While I may be exaggerating this chance, it's an open secret that when it comes to landing a job, it matters who you know. Many people, it seems, like to remind me of this fact.

A *0% chance*. That's the likelihood that when I tell someone I research income distribution, they will say:

Remember, Blair ... when it comes to income, it's not what you know that matters. It's who you know.

Does this discrepancy strike you as weird? It should. It highlights a blind spot in how we think about the distribution of resources. We all know that our social network matters for landing a job. But once we've got the gig, we don't think about how our relationships determine our income.

But what if we did think about the social nature of income? What would the resulting theory of resource distribution look like? I have argued that this theory must wrestle with our dual nature as humans – our tendency to be both selfish and selfless. In Part 1, I explored this tension by looking at how groups compete with each other and suppress competition internally. Here, I look at the same tension from the opposite angle. I discuss how individuals cooperate to build groups, and how this cooperation gets used by individuals for selfish gain.

The neoclassical bartender

When we study resource distribution, neoclassical economics is always the elephant in the room. It is the lumbering theory that, despite many bullet wounds, refuses to die. I have

previously called the neoclassical theory of distribution an ideology (in Part I) and a thought virus (Fix, 2018b). Here, I will treat it as the punchline to a joke.

A janitor and a CEO walk into a neoclassical bar. Envious of the CEO's exorbitant income, the janitor hits the CEO. A brawl ensues. What does the neoclassical bartender say to stop the fight?

"Stop fighting. *You both get paid what you produce.*"

This punchline is not very funny, but it is the line delivered by neoclassical economist John Bates Clark. At the end of the 19th century, social ferment was in the air. In response to this ferment, Clark developed a theory of income distribution that essentially said to society: "Stop fighting. Everyone gets paid what they produce". Here is how Clark put his bartender punchline:

"It is the purpose of this work to show that the distribution of the income of society is controlled by a natural law, and that this law, if it worked without friction, would give to every agent of production the amount of wealth which that agent creates" (Clark, 1899).

In one of the great ironies of history, Clark's punchline managed to become a respectable scientific theory (at least among economists). The punchline goes by the name of "marginal productivity theory". It proposes that in a competitive market, every person receives exactly what they produce.

When he delivered his punchline, Clark's main interest was the income split between workers and capitalists. Clark wanted to show that capitalists got what their property produced, and hence deserved their income. Only later did neoclassical economists focus on income differences between workers. In the late 1950s and early 1960s, theorists like Jacob Mincer (1958) and Gary Becker (1962) proposed that workers' income was proportional to their "human capital". This human capital was a stock of skills that made workers more productive. Soon after it was proposed, however, human capital theory ran into trouble. Ironically, it was human capital pioneer Jacob Mincer who revealed the problem. In his initial work in 1958, Mincer defined human capital restrictively as an individual's years of formal schooling. But Mincer soon found that formal schooling explained very little about individual income. Here is Mincer admitting the problem:

"Simple correlations between earnings and years of schooling are quite weak. Moreover, in multiple regressions when variables correlated with schooling are added, the regression coefficient of schooling is very small" (Mincer, 1974).

In response to this empirical failure, many economists doubled down. Instead of abandoning their theory, they broadened their definition of human capital so that it could explain everything and anything about income.

Take, for example, Gregory Mankiw's bestselling economics textbook, *Principles of Microeconomics*. In it, Mankiw defines human capital as "the accumulation of investments in people". With vague definitions like this, human capital theory became immune to evidence. Sadly, neoclassical economists did not see this as a problem.

Neoclassical Robinson Crusoe

When it comes to explaining resource distribution, neoclassical theory is missing something obvious. To see what is missing, we will tell another joke.

A neoclassical version of Robinson Crusoe gets stranded on a desert island. How much does his standard of living decrease from before he was stranded?
None. Crusoe took his human capital with him!

Again, this punchline is not very funny. But it's a true representation of human capital theory, which assumes that people carry their income-earning potential around with them. All that matters for workers' income is their stock of human capital. The rest of society is irrelevant. In a competitive market, neoclassical theory says that we all get what we produce.⁴ If some people produce more than others, it is because they have more human capital, or own more physical capital. The social context, in other words, is irrelevant to one's income. Put Robinson Crusoe in London or strand him on an island ... it doesn't matter. His skills stay the same, so his income stays the same.

The message of neoclassical economics is that we are all self-sufficient Robinson Crusoes – islands unto ourselves. Economists have built a towering theoretical edifice on the idea that there is no such thing as society.

Evolutionary microfoundations

To build a more realistic theory of resource distribution, we need a new “microfoundation” for economics. This is the term economists use to describe their assumptions about human behavior. Most economists assume that humans are purely selfish. But this idea has outlived its usefulness.

A better approach, I believe, is to assume that humans are both selfish and selfless. And we should take a hint from biologists and ground this duality in an evolutionary framework. I argue that the principles of evolutionary biology should form the microfoundation of economics.

I have based my approach on a theory called group selection (sometimes called multilevel selection). According to this theory, the duality of human nature stems from an evolutionary conflict between two “levels” of natural selection. Selfishness stems from selection at the *individual* level. Altruism stems from selection at the *group* level. E.O. Wilson and David Sloan Wilson summarize this tension between individuals and groups in a succinct motto:

“Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary” (Wilson and Wilson, 2007).

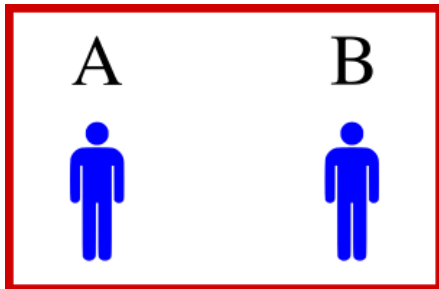
⁴ In the real world, very few people literally consume what they produce (subsistence farmers aside). Musicians don't exclusively consume their music. And bakers don't exclusively consume their bread. In the real world, we exchange many different commodities with one another. Not so in neoclassical theory. Clark's theory of marginal productivity only works in a world with one commodity. Think of it as the widget world. Everybody makes widgets. And everybody consumes widgets. In this world, everyone literally consumes what they produce, because they all produce the same thing.

I propose that we use this principle as the “microfoundation” of economics. Out with the old assumption that individuals are selfish utility maximizers. In with the evolutionary hypothesis that humans are both selfish and selfless – a duality shaped by the tension between individual versus group benefit.

Relations: the building block of groups

The building block of our evolutionary theory should be the human relation. By forming networks of relations, humans are able to form groups. These relations then determine how resources are distributed within groups.

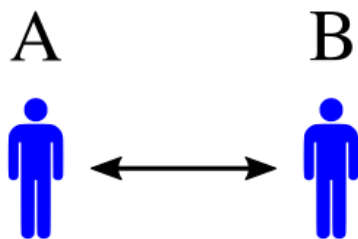
Figure 1 *A group of two people, Alice and Bob*



To develop our ideas, we will look at a group of two people (Figure 1). We’ll call them Alice (A) and Bob (B). We ask ourselves – what kind of relation do Alice and Bob have?

One possibility is that they have a *purely altruistic relation*. This means that Alice and Bob respect each other’s will. They do not do anything as a group unless they can both agree on it. We will represent this purely altruistic relation using a double-headed arrow. The two heads indicate that influence is symmetrical. Alice influences Bob as much as Bob influences Alice.

Figure 2 *A purely altruistic relation*



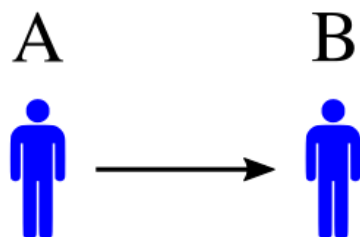
In the real-world, the closest we get to a purely altruistic relation is probably the bond between two people who are “in love”. While we should celebrate love, we should also realize that most human relations are not purely altruistic. Instead, pure altruism is an ideal. It is one end of the spectrum of human relations.

So what is the opposite end of the spectrum? It is tempting to say that the opposite of the purely altruistic relation would be the *purely selfish relation*. But the problem with this response is that a purely selfish relation is actually no relation at all. If two people pursue only their own selfish ends, we can hardly call this a relationship. It is just an aggregate of selfish individuals.

No, the opposite of a purely altruistic relation is not a purely selfish relation. It is a *pure power relation*. In such a relation, one person acts selfishly while the other person acts altruistically. But in power relations, “altruism” takes a special form. We call it *submission*. The altruistic person submits to the will of the dominant person.

We will represent a pure power relation using a single-headed arrow. The direction of the arrow indicates the direction of influence – the flow of power. In the relation below, Alice has power over Bob.

Figure 3 *A pure power relation*



In a pure power relation, power is absolute. If Alice says “jump off a cliff”, Bob jumps off a cliff. Like pure altruism, pure power is an ideal. In the real world, the closest thing to a pure power relation is probably the bond between a master and slave. A slave must obey their master, even to their own detriment.

Pure altruism and pure power, then, are idealized relations that define the spectrum of human bonds. We will use this spectrum to think about how groups distribute resources.

Dividing the pie

To explore how groups distribute resources, we’ll return to Alice and Bob. Imagine that Alice and Bob are a group that together exploits resources. One day, the two of them find an apple pie. How do they divide it up?

The answer depends on Alice and Bob’s relation.

Let’s first imagine that Alice and Bob treat each other as equals. They have a purely altruistic relation. In this case, the two of them will likely divide the pie equally. Why? Because every decision depends on consensus. If Alice wants to take more resources than Bob, she must convince Bob to give up his share. That’s a hard sell if Bob thinks himself equal to Alice.

The only convincing reason for Alice to take more resources than Bob is if she *needs* more. Suppose Alice is an endurance athlete and Bob is a couch potato. In this case, Alice needs more food, and Bob is likely to let her have it. So in purely altruistic relations, resource distribution will follow the communist ethos: *to each according to their need*.

Now let’s imagine that Alice and Bob have a pure power relation. Alice has absolute power over Bob. Now how do they divide the pie?

It is tempting to say that Alice and Bob would follow what I have called the red-claw ethos: *to each according to their ability to take* (see Part 1). But there is a problem here. The red-claw ethos is about individual competition – a war of all against all. It is how resources are

distributed in purely selfish relations. But this mutual competition is not how power relations work. Instead, in power relations only one person acts selfishly. The other person acts altruistically by submitting to the will of their dominant partner.

In our example, Bob submits to Alice's will. This submission is key to understanding how resources get distributed. When Bob submits to Alice, he gives her complete control over the resource pie. Alice could be a despot and hoard everything. Or she could be a benevolent dictator and give Bob his fair share. The choice is hers.

In pure power relations, then, resource distribution is determined by the whim of the dominant individual. Still, there is a regularity to how those with power distribute resources. Even the most selfless individuals inevitably use their influence for personal gain. *Power*, as they say, *corrupts*.

Here is how it happens. Suppose that Alice has absolute power over Bob. Suppose also that Alice is a fervent Marxist, and believes in the communist ethos. So she initially shares resources equally with Bob. But as time goes by, Alice's power goes to her head. She starts to feel that she is not like Bob. Because of her power, Alice starts to believe that she is special. She has innate abilities that Bob doesn't have – abilities that Bob could *never* have. And because she has these abilities, Alice thinks to herself, "I deserve more resources than Bob". And so she *takes* more resources – a little at first but more over time. Slowly Alice turns from a benevolent dictator to a gluttonous despot. It is a story as old as time.

The power ethos

The moral of our Alice and Bob story is that people inevitably use their power to enrich themselves. In power relations, then, resource distribution has its own ethos. We'll call it the power ethos:

The power ethos: *To each according to their social influence.*

When I have discussed the power ethos with mainstream economists, they've reacted with bewilderment. The problem, I have realized, is that economists reject the idea of a *social cause*. Instead, they insist that resource distribution must be tied to characteristics of individuals or their property. Philosophers have a name for this thinking. They call it methodological individualism. Geoffrey Brennan and Gordon Tullock summarize how the philosophy works in economics:

“[I]n modern economics... the ultimate unit of analysis is always the individual; more aggregative analysis must be regarded as only provisionally legitimate” (Brennan and Tullock, 1982).

Economists are bewildered by the power ethos because power is not a property of the individual. Instead, power is a social relation between people. And trying to understand social relations, it seems, produces error messages in the brains of economists. So to them, the power ethos is incoherent.

But while incoherent to mainstream economists, the power ethos makes perfect sense in our evolutionary theory. In fact, the essence of our theory is that there is a conflict between social

(group) goals and individual goals. Let's look at the power ethos through this evolutionary lens.

Power is a social relation shared by both groups and individuals. At the group level, power is a mode of organization – a way to coordinate human activity. At the individual level, power is a tool for selfish gain – something to be accumulated for personal enrichment.

This duality of power creates a tension between levels of natural selection. Concentrating power may be good for the group but not good for (some) individuals within the group. Likewise, when individuals use their power to enrich themselves, this is good for (some) individuals within the group, but not good for the group as a whole.

Power is a double-edged sword that cuts to the core of our dual nature as humans

How does centralized power benefit groups?

So why might centralized power benefit groups? Peter Turchin thinks it is because centralized power allows groups to get bigger (Turchin and Gavrilets, 2009). When power has a nested structure (a hierarchical chain of command), it limits the need for social interaction. In a hierarchy, you need to interact only with your direct superior and direct subordinates. This structure, Turchin argues, allows humans to sidestep biological limits in our ability to organize. Centralized power allows group size to grow without increasing the need for social interaction. If Turchin is correct, it still begs a question. Why are bigger groups better? Turchin's answer is that big groups have a military advantage over small groups. "Providence", the saying goes, "is always on the side of the big battalions". Turchin (2016) argues that over the last 10,000 years, large hierarchical groups tended to defeat small egalitarian groups. With each defeat, concentrated power spread as an organizing principle.

Centralized power as convergent evolution?

Humans' use of centralized power as a coordination tool is not unique in nature. In fact, it may be an example of convergent evolution. Think of the evolution of multicellular animals. As they have gotten bigger, animals have all evolved centralized control as an organizing principle inside their bodies.

The human body, for instance, is not an aggregate of autonomous cells. Instead, it is a network of cooperating cells that are controlled by the central nervous system. The cells of the brain, in effect, have power over other cells. When brain cells say "jump", muscle cells say "how high".

There is, however, a fundamental difference between cells in the body and individual humans in groups. Body cells do not use their power for selfish gain. We never catch brain cells using their control of the nervous system to take resources from muscle cells. (If we do, it signals that something has gone very wrong in the body). We don't see this because body cells are altruistic. So even though the body is centrally controlled, the communist ethos prevails. Each cell gets exactly the resources it needs.

In contrast to the cells in our body, individual humans are not purely altruistic. We may be social animals, but we still have a strong selfish streak. (On the ladder of sociality, humans rank far below the cells in our own bodies). So when human groups centralize power,

individuals predictably use their power for personal gain. Instead of the communist ethos, then, we get the power ethos. Each person gets what their social influence allows them to take.

This is why power is a double-edged sword.

The double-edged sword

Concentrated power is no panacea for groups. If it were, we would all be living in totalitarian regimes. Yes, power is a tool for coordination. But it is also a tool for despotism. And this despotism can easily undermine the coordinating benefits of power.

Here's an example. Imagine two large armies meet to do battle. Both armies are the same size and have the same weapons. And both armies are organized using concentrated power. On the surface, these armies appear equally matched. But below the surface, there is a gaping difference. One army is commanded by a gluttonous despot who keeps his subordinates in rags. We will call this the "slave army". The other army is commanded by a benevolent dictator who shares resources equally with his soldiers. We will call this the "professional army".

Which army wins the battle?

I would wager on the professional army. The problem for the slave army is that the leader's despotism undermines his chain of command. Think about it. Would you put your life on the line for a commander who kept you in rags? I wouldn't. But I might put my life on the line for a commander who shared resources with me.

The professional army probably has better morale than the slave army, and thus a stronger chain of command. The professional army fights as a unit, keeping the group advantage of centralized power. In contrast, the slave army has a tenuous chain of command. At the first sign of misfortune, the slaves will abandon their despotic leader to whom their allegiance is thin. As the battle rages, the slave army collapses and gets slaughtered.

This is a hypothetical example. But there is real-world evidence that inequality undermines groups' ability to compete. The evidence comes, not surprisingly, from sports – the modern surrogate for violent conflict. In his book *Ultrasociety*, Peter Turchin notes that sports teams with more equal pay tend to win more games. Here is Turchin describing work by Frederick Wiseman and Sangit Chatterjee:

“Frederick Wiseman and Sangit Chatterjee sorted the Major League Baseball teams into four payroll classes, ranging from those with the biggest disparities to those with the smallest. Between 1992 and 2001, teams in the most equal class won an average of eight more games per season than those in the most unequal class. The corrosive effect of inequality on cooperation is not limited to baseball. The same effect was observed when researchers analyzed the performance records of soccer teams in Italy and Japan” (Peter Turchin, 2016).

If inequality undermines sports teams' performance, we expect it to do the same among warring groups. The lesson is that when groups concentrate power, they must walk a fine line. They must reap the coordinative benefits of power while avoiding the perils of despotism.

Pathways to power

While power is a double-edged sword for groups, it is a panacea for the individuals who accumulate it (until their group collapses because of their despotism). Amassing power is a proven way to increase reproductive success (Betzig, 1986). So it is no wonder that humans have an urge to seek power. If a behavior leads to reproductive success, organisms will develop an urge to do it.

But what exactly do we mean when we say that an individual "accumulates power"? Ultimately, my goal here is to develop a quantitative theory of resource distribution. To do this, we need to measure the accumulation of power. With this measurement in mind, I am going to discuss three "pathways to power"⁵. These are ways that individuals can increase their social influence within a group.

Pathway to Power 1: Make your subordinates more submissive

One way to increase your power is to make your existing subordinates more submissive. By doing so, you make your power more absolute. An obvious way to do this is to coerce your subordinates. If I hold a gun to your head, you will immediately become more submissive. As totalitarian regimes have discovered, coercion is a good way to make people more obedient. But while potent, coercion is an expensive way to increase your power. The more you coerce someone, the more they will dream of killing you. This is the fear of every despot – that their subordinates will turn on them. So while coercion can exact obedience, it requires constant vigilance. Ignore your coerced subordinates for a moment and you may find a dagger in your back.

A less expensive way to make your subordinates more submissive is to turn to the power of *ideas*. Convince your subordinates that you have the legitimate right to command them and you immediately increase your power. What kind of ideas work? Convincing your subordinates that you speak for God seems to do the trick. Convincing your subordinates that you are a God is even better. Regardless of the content of your ideology, what matters is its *virulence*. To work, your ideology must infect the minds of your subordinates. It must convince them that your power is legitimate.

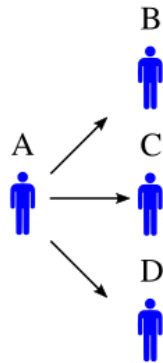
Whether you use coercion or ideology (or both), making your subordinates more submissive can increase your power. That being said, this approach is not an effective way to *accumulate* power. Why? Because having absolute power over a few subordinates hardly makes you Napoleon. To achieve great power, you need to become the master of many. You need to accumulate subordinates.

⁵ I'm borrowing the term "pathways to power" from Brian Hayden (1995), who used it as the title of a paper about the origin of inequality. Douglas Price and Gary Feinman (2010) later used the phrase as the title of their book on the same topic.

Pathway to Power 2: Accumulate direct subordinates

With Napoleon as your inspiration, you set out to accumulate subordinates. How do you do it? One way is to accumulate *direct* subordinates. A direct subordinate is someone who is directly under your control. They listen to you and no one else. Figure 4 shows an example of this pathway to power. Here, our budding despot Alice has accumulated 3 subordinates – Bob (B), Charlotte (C) and David (D). In idealized form Bob, Charlotte and David obey Alice and ignore each other.

Figure 4 *Accumulating direct subordinates*



While simple, there are obvious limits to this pathway to power. Even the most charismatic person will find it hard to maintain direct power relations with hundreds of people. Yet to be powerful like Napoleon, you need *hundreds of thousands* of subordinates.

Pathway to Power 3: Accumulate indirect subordinates

If you are not satisfied with the number of subordinates you can control directly, the next step is to encourage your subordinates to find their own subordinates. By doing so, you accumulate *indirect* subordinates. Figure 5 shows an example. Here Alice controls Bob, who controls Charlotte, who controls David.

Figure 5 *Accumulating indirect subordinates*



We assume here that power is “transitive”. So if Bob controls Charlotte and Alice controls Bob, then Alice also controls Charlotte. When power is transitive, it forms a chain of command. By virtue of this chain of command, Alice has 3 subordinates (1 direct and 2 indirect).

The advantage of accumulating indirect subordinates is that you don’t need to manage relations with many people. In our example, Alice directly commands only one person – Bob. To wield power, she gives orders to Bob, who then passes these orders down the chain of command. This is far easier than giving orders to hundreds of people.

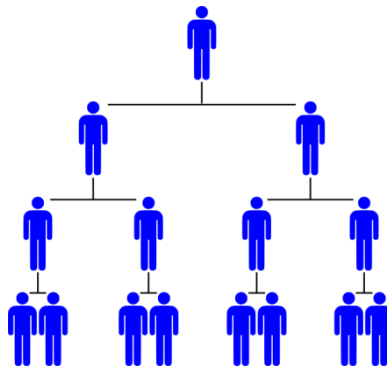
The disadvantage of having indirect subordinates, however, is that power is not perfectly transitive. Power gets diluted as it is passed down the chain of command. So when Alice says “jump”, there is no guarantee that David will get the message. The intermediaries in the chain of command (Bob and Charlotte) have their own agendas which may be different from Alice’s. So having indirect subordinates still requires work. You have to maintain the chain of command so that power flows smoothly.

The road to hierarchy

If you are a budding Napoleon, you have likely realized that the best way to accumulate power is to use all three pathways: make your subordinates extremely submissive, accumulate direct subordinates, and encourage your subordinates to accumulate subordinates. When you pursue all three pathways to power, what do you get? In a word, *hierarchy*.

A hierarchy is a network in which every relation is a power relation. To maintain the hierarchy, you must make sure your subordinates are submissive (pathway 1). Next, you encourage all of your subordinates to command *multiple* subordinates of their own. This combines pathways 2 and 3, and leads to the quintessential feature of a hierarchy – the branching chain of command.

Figure 6 *The branching chain of command in a hierarchy*



It is by commanding a growing hierarchy that you can accumulate power that rivals Napoleon’s. Think about the structure of hierarchy. As each new layer of hierarchy is added, the number of subordinates you command grows *exponentially*.

Suppose you start out as a bit player who controls 4 subordinates. But as a budding Napoleon, you soon attract more people to your cause. You convince each of your subordinates to get 4 subordinates of their own. Now you have 20 subordinates (4 direct + 16 indirect). Repeat this process again and you have 84 subordinates (4 + 16 + 64). Repeat again and you have 340 subordinates (4 + 16 + 64 + 256). It doesn’t take long (about 10 levels of hierarchy) before you have *millions* of subordinates.

Now you have power that rivals Napoleon’s. And our evolutionary theory predicts that you will use it to your advantage. You will use your immense power to take an exceptional share of the resource pie.

It's not what you know that matters

I began Part II by noting that when I discuss my research with friends, they don't comment that one's income is about "who you know". This, I argued, is a sign that most people don't think about the social nature of income. Most of us prefer to believe that our income is about our *skill*, not our place in society.

But with a bit of evolutionary reasoning, it becomes clear that our relations must be what drives the distribution of income inside groups. Moreover, when groups organize using power relations, we have a clear prediction for how income should be distributed. I have called this prediction the power ethos: *to each according to their social influence*.

Hierarchies, I have argued, are the quintessential tool for concentrating power. In them, the power ethos should dominate. In other words, in a hierarchy it's not what you know that shapes your income. It's who you *control*.

Part III: Evidence for the Power Ethos

Having proposed that the power ethos should prevail within hierarchies, I now put this idea to the test. I look for evidence of the power ethos inside modern firms.

Measuring power

To test for the power ethos, we need to quantify power. It is at this point that my colleagues protest. "How can you quantify power?" they ask. "It has so many different forms!" My colleagues are correct to point out this problem. The multifaceted nature of power has long been a thorn in social scientists' side. Many social scientists have argued that concentrated power leads to inequality.⁶ But because power is difficult to quantify, this idea has rarely been tested.

As a consequence, a promising theory of resource distribution has languished. There are compelling reasons to think that income (within hierarchies) grows with power (see Part 2). But without quantitative evidence, why should anyone believe this theory?

They shouldn't.

And there is the crux of the problem. Yes, power has many forms. And yes, this makes it difficult to measure. But unless we quantify power, we cannot test the power ethos. The solution is to bite the bullet and try to quantify power. We admit that power is complex. But we forge ahead anyway.

⁶ Many people have proposed that income stems from power. Gerhard Lenski wrote a book about it (*Power and Privilege*). It's a major part of Jonathan Nitzan and Shimshon Bichler's research in *Capital as Power*. It is also a popular idea among institutional economists like Thorstein Veblen (1923), John Rogers Commons (1924), Christopher Brown (2005), and Marc Tool and Warren Samuels (1989). And it has been proposed by sociologists like Max Weber (1978) and Erik Olin Wright (1979).

The two dimensions of power

To measure power, I propose that we break it down into two dimensions. We will distinguish between the *number* of people one influences and the *strength* of this influence. The purpose of doing so is to distinguish between qualitative and quantitative aspects of power.

The *strength* of one's influence over others is a qualitative aspect of power. It is determined by the obedience of one's followers, which is difficult to quantify. This obedience, I think, is what most people mean when they speak of different "forms" of power. Having thousands of Twitter followers, for instance, is not the same as having thousands of slaves. Slaves are far more obedient than Twitter followers. So these two forms of social influence are qualitatively different.

In contrast, the *number* of people one influences is easy to quantify. We just count people! The problem, though, is that comparing the number of people one influences isn't useful unless the "forms" of power are equivalent. So we have a dilemma.

Here is where our two dimensions of power are useful. While we may not be able to (easily) quantify the obedience of followers, we can probably agree on a rough ranking. We can agree that social media followers are less obedient than employees in a corporate hierarchy. And these employees, in turn, are less obedient than cult members.

Once we rank obedience, I argue that we can reduce power to a single dimension. As long as we stay within the same "zone of obedience", we can measure power in terms of the number of followers. With this in mind, let's look at Figure 7.

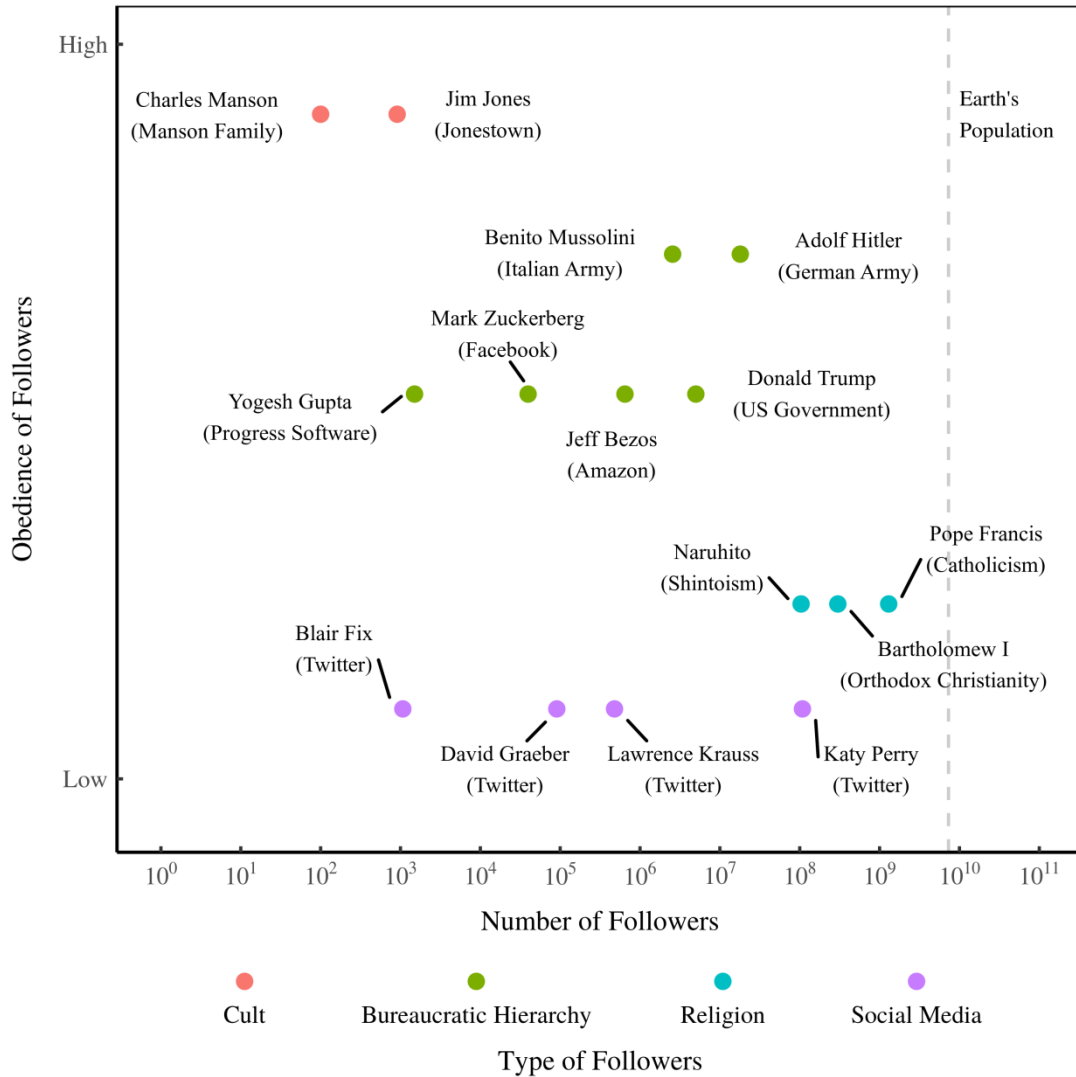
In Figure 7, I have chosen a handful of individuals and split their power into two dimensions. The x-axis shows the number of followers of each individual. (Note the log scale. Each tick mark indicates a factor of 10). On the y-axis, I rank these forms of power by the obedience of followers. *Full disclosure*: this obedience ranking is based on my intuition about different forms of social influence. It has no empirical basis.

Let's first go through this obedience ranking. Then we will discuss why it is relevant for measuring power. We will start at the low end of obedience with social media followers. When you follow someone on Facebook or Twitter, you are not pledging allegiance to them. You probably just think this person is interesting. So your level of obedience to the person you follow is low (or non-existent).

Religious followers are a little bit more obedient. The average religious person listens to their religious leader, but chooses which doctrines they will obey. For instance, many people who profess to be Catholics ignore most of the Pope's decrees.

Still more obedient are members of bureaucratic hierarchies. These people are obedient because their job depends on it. In totalitarian regimes, even more is on the line. For this reason, I've ranked dictators (like Mussolini and Hitler) higher on the obedience scale. At the upper end of obedience are cult followers, who can be so devoted to their leaders that they are effectively slaves. The members of Jim Jones' cult are the most extreme example. Jones convinced hundreds of his followers to kill themselves in a mass suicide (Conroy, 2018). It's hard to think of a higher form of obedience.

Figure 7 *The Two Dimensions of Power*. The y-axis ranks different forms of power in terms of the obedience of followers. The x-axis shows the number of followers of the given individual. For religious leaders, this is the number of people of the given faith. For CEOs, it is the size of the firm they command. For government leaders, it is the size of the government (or the military). For cult leaders, it is the cult size.



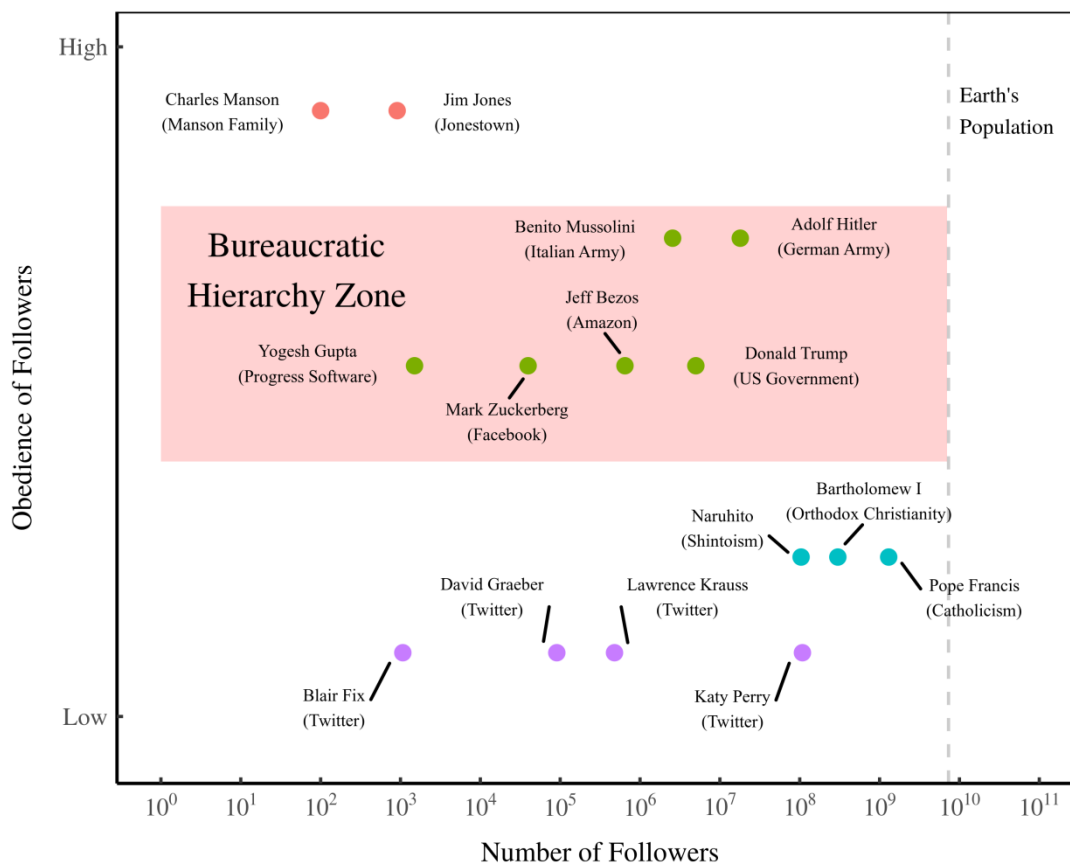
Zones of obedience

The point of ranking obedience is to remind us that power has different forms. We shouldn't compare Twitter followers with cult followers. But we can compare power within the same "zone of obedience". Within this zone, we assume that everyone's followers have the same obedience. We then reduce power to a single dimension: the number of followers.

On Twitter, Katy Perry is about 100,000 times more powerful than me. She has 100 million followers, I have about 1000. And within corporate hierarchies, Jeff Bezos is about 400 times more powerful than Yogesh Gupta. Bezos commands about 650,000 Amazon employees. Yogesh Gupta commands a small tech firm with 1500 employees.

In this paper, I am going to stay inside the bureaucratic hierarchy zone of obedience, visualized in Figure 8. Inside the bureaucratic hierarchy zone, obedience is institutionalized. This means that obedience does not depend on personal characteristics. Instead, it depends on institutional position. Amazon employees don't obey Jeff Bezos because he's Jeff Bezos. They obey him because he's the CEO of Amazon. If I replaced Bezos as Amazon CEO, Amazon employees would then obey me.

Figure 8 *The Bureaucratic Hierarchy Zone of Obedience*



The other important aspect of bureaucratic hierarchy is that obedience is mostly *indirect*. Amazon employees don't directly obey Jeff Bezos. Instead, Bezo passes commands down the chain of command. Each Amazon employee then obeys their direct superior, who relays Bezos' commands. Contrast this with power on Twitter, which is *direct*. Katy Perry has 100 million Twitter followers who listen to her directly (albeit flippantly).

The bureaucratic hierarchy zone is where the institutions of capitalism live. Bureaucratic hierarchy is how firms and governments are organized. More broadly, I would guess that it is how *all* large institutions in human history are organized. But here, I will focus on modern firms.

When we are inside the bureaucratic hierarchy zone, we will ignore variation in the obedience of followers. We will pretend that Mark Zuckerberg's employees are as obedient as Jeff Bezos' employees. By doing so, we can reduce power to a single dimension. Power is proportional to the *number of subordinates one controls*.

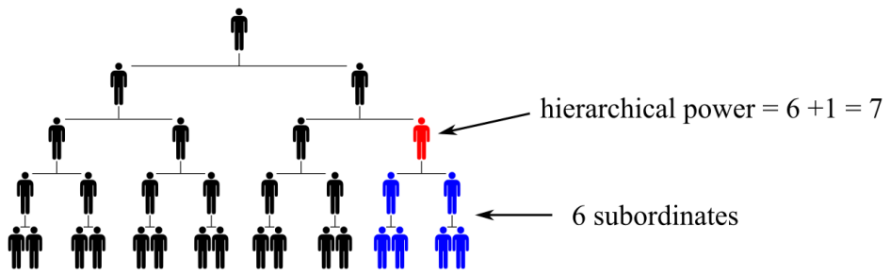
Hierarchical power

Within a hierarchy, I define an individual’s “hierarchical power” as the number of subordinates plus one:

hierarchical power = number of subordinates + 1

I add 1 to the number of subordinates to signal that each person has control of themselves. To count the number of subordinates, we add both direct and indirect subordinates. Figure 9 shows an example. Here, the red person has 6 subordinates, so their hierarchical power is $6 + 1 = 7$.

Figure 9 *Measuring Hierarchical Power*



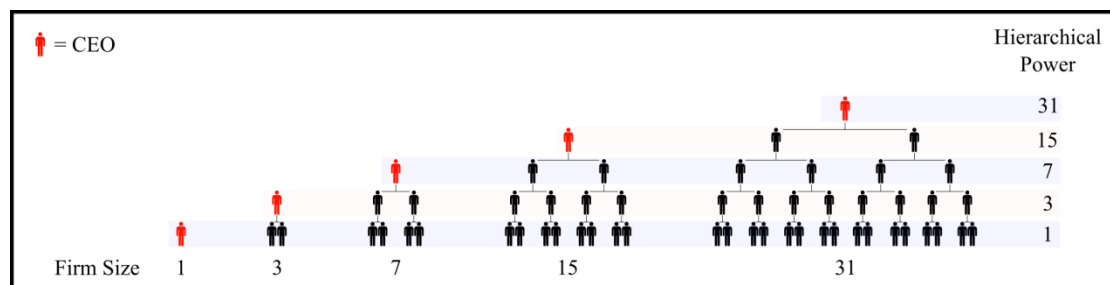
With our measure of hierarchical power in hand, we will test for the power ethos inside firms. We will see if individual income grows with hierarchical power.

The power ethos among US CEOs

We will look first for the power ethos among US CEOs. I study CEOs because it is easy to estimate their hierarchical power.

Because CEOs command the corporate hierarchy, their hierarchical power is equal to the size of their firm. Here is an example. If a firm has 100 employees, 99 of them are subordinate to the CEO. So the CEO has a hierarchical power of $99 + 1 = 100$. Figure 10 shows this equivalence between firm size and the hierarchical power of the CEO.

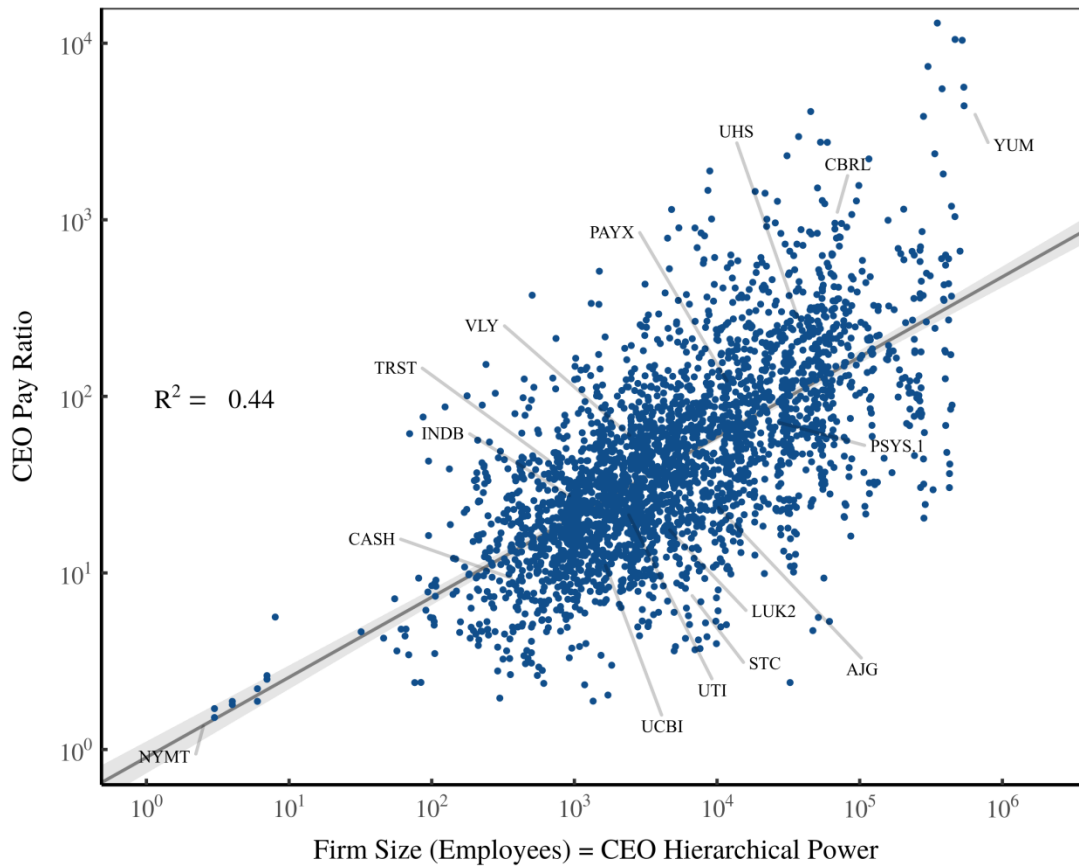
Figure 10 *The Hierarchical Power of CEOs*



We will use this equivalence to see if the relative income of CEOs grows with hierarchical power. To measure relative income, we will divide CEO pay by the income of the average worker. We will call this the “CEO pay ratio”.

Figure 11 shows how the CEO pay ratio grows with hierarchical power among US CEOs. Among these CEOs, it seems that the power ethos prevails. Relative income grows with hierarchical power.

Figure 11 *Evidence for the power ethos among US CEOs.* Data is for roughly 3000 US CEOs covering the years 2006 to 2014. I have shown stock market tickers for a few of the firms. For sources and methods, see Fix (2019).

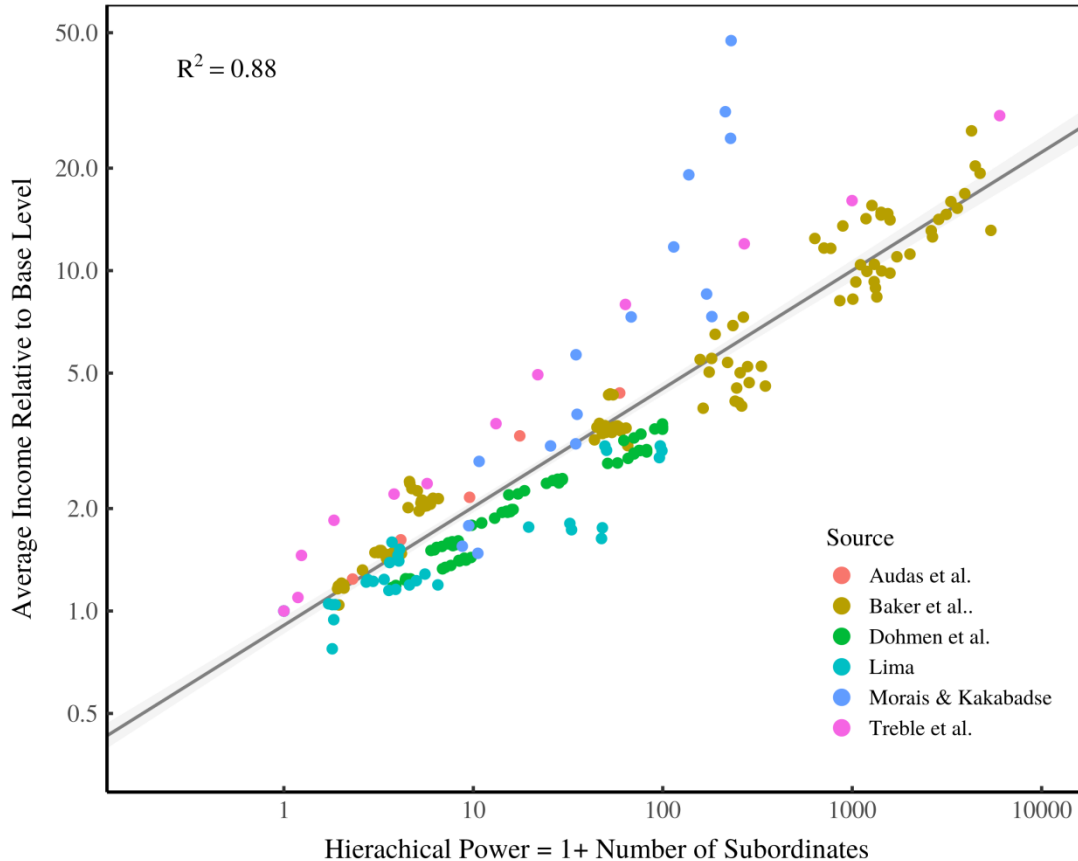


The power ethos within firms

Next, I will look at the income of *all* employees within firms. To do this, we need to relax our standards for data. The problem is that few social scientists have studied the structure of firm hierarchies. I have scoured the literature for years and found only a handful of quantitative studies. And these studies use differing methods to classify employees in the firm hierarchy.

Despite inconsistencies in the empirical work, I will forge ahead and analyze the trends within these case-study firms. Figure 12 shows the results. In these firms, it seems that the power ethos prevails. Average income within hierarchical ranks is strongly proportional to hierarchical power.

Figure 12 Evidence for the power ethos within firms The vertical axis shows average income relative to the bottom hierarchical rank of each firm. The horizontal axis shows average hierarchical power for individuals in each rank of the firm. Points indicate a hierarchical rank in a firm in a given year. For sources and methods, see Fix (2018a).



Hidden skill?

When I show the above evidence to mainstream economists, I get a common response. “This isn’t evidence against human capital theory,” they claim. Instead, they argue that individuals with more hierarchical power are actually more *skilled*. And it’s this (unmeasured) skill that explains the returns to hierarchical power. The lesson is clear. Human capital theory is still correct. I am just not measuring the right things.

Mainstream economists Daron Acemoglu and David Autor (2011) have a name for this type of thinking. They call it the “unobserved heterogeneity issue”. Economists tend to assume that all pay differences stem from skill, even when these skills are unobserved. Acemoglu and Autor argue that this assumption is “not a bad place to start”. I disagree.

Acemoglu and Autor are effectively saying that economists should barricade their theory from falsifying evidence. So if you find that measurable skills don’t explain income, don’t worry. Human capital theory is still correct. You just have not yet measured the “right” skills. And if you find a variable that explains income better than skill, don’t worry. This variable is actually a proxy for some hidden skill.

This thinking is why human capital theory survives. And it is why the evidence above does not convince mainstream economists to abandon their theory. It is impossible to disprove that an unmeasured skill causes the returns to hierarchical power. The best we can do is show that *measured* skill does not explain these returns. In Fix (2018b), I show that common measures of skill (like education and firm experience) cannot explain the returns to hierarchical rank.

Still, the spectre of hidden skill haunts us. Is there a way to show that the hidden skills hypothesis is unreasonable? I think there is. To do it, we have to introduce *time*. Time is important because there is a mismatch between how we learn skills and how we acquire hierarchical power. We learn skills *gradually*. But we acquire hierarchical power in *lumps*.

This mismatch boils down to differences between the two traits. Skills are an *individual* trait. To learn a new skill, you must forge new pathways in your brain. This takes time. Like all animals, our ability to learn has physiological limits. But accumulating hierarchical power has no such limits. That is because hierarchical power is a *social* trait. When you gain more hierarchical power, it's your social position that changes (not you). And this change can happen literally overnight. You can leave work as a middle manager and return the next day as the CEO. All it takes is a promotion, and you immediately gain more hierarchical power.

So skills grow gradually, while hierarchical power grows in lumps. Here is why this difference is important. Suppose we find that during a promotion, income changes with hierarchical power. This would be a problem for the hidden skills hypothesis. Why? Because skills don't change when you get promoted. The timing is too short. So in this scenario, it's unreasonable to insist that hierarchical power is a proxy for skill.

With this in mind, let's look at how income and hierarchical power change during promotions. I will use data provided by George Baker, Michael Gibbs and Bengt Holmstrom (1993). This dataset tracks, over two decades, the pay and rank of employees within an anonymous American firm. I will call it the "BGH firm", after the study authors.

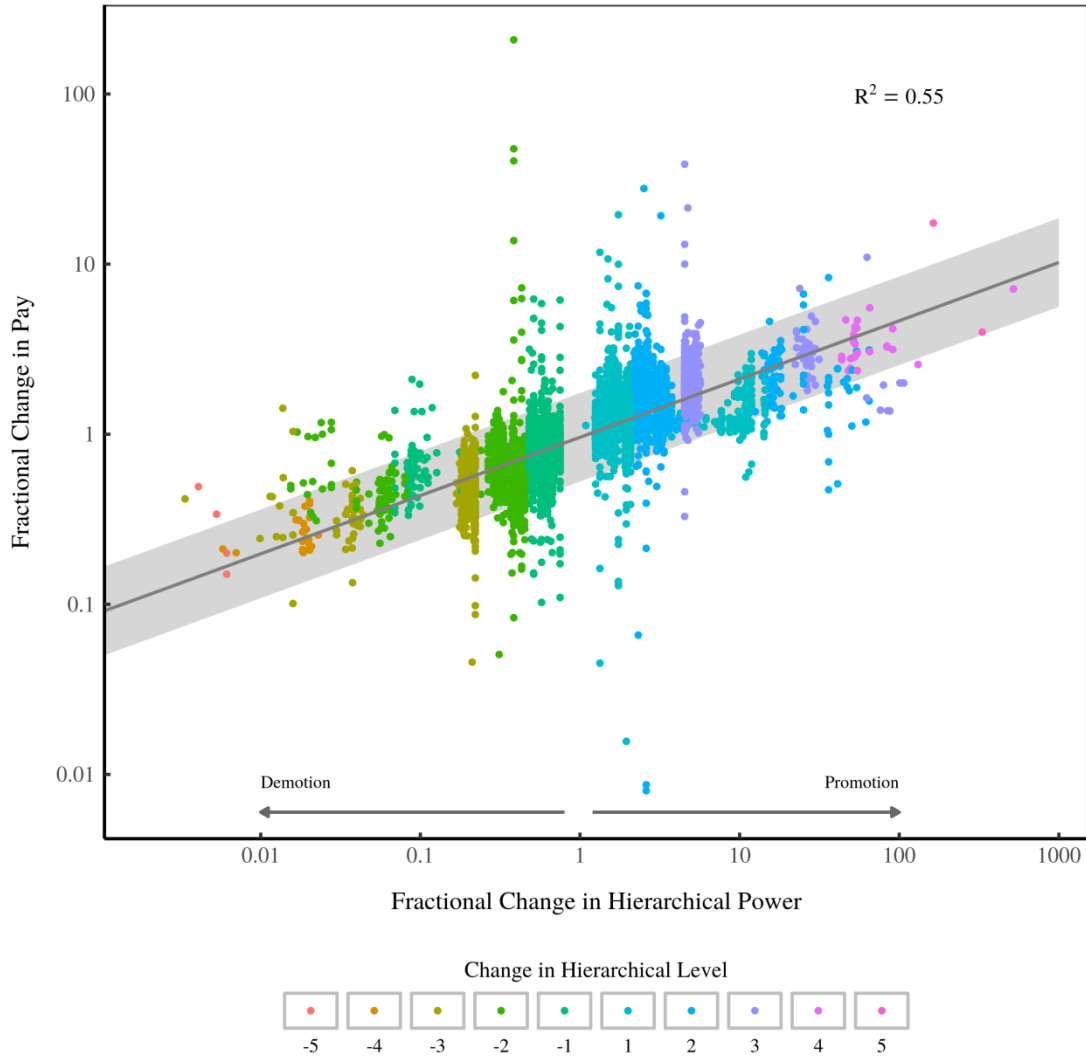
Figure 13 shows promotion data from the BGH firm. For each promotion (or demotion), I plot changes in pay against changes in hierarchical power. You can see, in this figure, data for about 16,000 promotions and demotions.

The trend is clear. The more hierarchical power someone gains during a promotion, the more their income increases. For demotions, the reverse is true. The more hierarchical power someone loses, the more their pay decreases.

It is hard to square these results with the hidden skills hypothesis. During a promotion, income and hierarchical power change suddenly. But skills do not change like this. Moreover, skills rarely *decline* over time (until old age). Yet in the BGH data, we have many observations of a sudden loss of income after a demotion. Did these people suddenly become less skilled? Doubtful.

A more likely explanation is that income in this firm is attached to rank. As individuals move up or down the corporate hierarchy, their income changes accordingly. Behind this movement of individuals, there is a connection between rank and hierarchical power. The result is that changes in income correlate strongly with changes in hierarchical power.

Figure 13 Power ethos during promotions or demotions in the BGH firm. Each point represents an individual promotion/demotion. Color indicates the individual's change in hierarchical rank within the firm. The y-axis shows fractional changes in individual pay. The x-axis shows fractional changes in hierarchical power. For methods, see Fix (2018a).



A universal ethos?

I have shown you evidence that the power ethos prevails in a sample of modern firms. But how general is this relation? Does income always grow with hierarchical power inside hierarchies? I predict that it does.

Whenever we find institutional hierarchy, I predict we will find the power ethos. It doesn't matter if we are studying a feudal fiefdom, an archaic kingdom, a totalitarian regime, a democratic state, or a modern corporation. If there is hierarchy, I predict that access to resources will grow with hierarchical power.

Having made a bold prediction, I will admit that we know very little about resource distribution within hierarchies. And that's odd. It's as though we (social scientists) have ignored the thing that most dominates our lives. Think about where social scientists work. We spend our lives in

universities, which are large hierarchical institutions. And yet when we study income, we ignore this hierarchy. This is not an accident. It's happened because researchers have been driven by a bad theory – a theory that thinks income stems from characteristics of the individual.

It is time to put this approach behind us. Income is a *social* phenomenon. To understand it, we need to understand social relations. And there is no better place to start than to study the power relations that dominate our working lives.

Conclusions

My goal in this paper has been to sketch a new theory of resource distribution that takes seriously our evolved nature. I have argued that the principles of group selection should form the “microfoundation” on which to build this theory.

The key idea is that resource distribution is marked by a tension between two levels of natural selection. At the group level, selfless behavior is advantageous. But at the individual level, selfish behavior is advantageous. The result is that groups compete with one another for resources, but suppress competition internally.

Because so much depends on the environment (both social and natural) in which humans live, this theory offers few general predictions. But when we find hierarchy, I have argued that the “power ethos” should prevail: to each according to their social influence. The evidence reviewed here suggests that the power ethos prevails in modern firms.

While these results are promising, I will end with a note of caution. When developing a new theory, the impulse is to use it to explain everything. Many Marxists, for instance, marvel at the explanatory scope of their framework. So do neoclassical economists, who think that utility maximization can explain everything about human behavior. What these theorists forget is that a theory's explanatory scope can be a liability. A theory may appear to explain everything not because it is true, but because it cannot be tested. The physicist Wolfgang Pauli had a fitting name for this type of theory – *not even wrong*.

Being “not even wrong” is perhaps the worst thing that can be said of a theory. And evolutionary theories are not immune to this fate. Stephen J. Gould and Richard Lewontin (1979) famously chastised fellow biologists for telling “just-so stories” – simple narratives (about the evolution of a trait) that are difficult to test.

So having proposed an evolutionary theory of resource distribution, I will be the first to urge that we shouldn't use it to explain everything. To do so is to fall into the same trap as mainstream economists. We must use the proposed framework to make specific predictions. To test the theory, we need new types of evidence. For a century, the study of resource distribution has focused on traits of individuals. But if resource distribution is a social phenomenon, as our evolutionary theory proposes, then we need to study the structure of groups. That means doing the unglamorous work of gathering new data.

It is time for a revolution in economics. It is time to study resource distribution as a social phenomenon, and to ground this study in an evolutionary framework.

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Author contact: blairfix@gmail.com

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