

Creative Destruction

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1 Introduction and Old Thoughts on Creative Destruction

1.1 Marx and Schumpeter

This first section will introduce creative destruction. The idea has its roots in economics, and as such, this section will present creative destruction in its economic form. In effect, this section lacks philosophical rigor.

Creative destruction is an economic idea that refers to how new products, firms and innovations destroy old products, firms and innovations. Neoclassical economic theory, the most popular economic theory, is built on top of the idea of equilibrium. Most simply, an economy has supply of things and demands of the same things. Supply and demand interact with each other, creating tension between economic processes. The economy remains in flux until supply and demand reach a happy equilibrium. At a happy equilibrium, supply and demand remain more or less constant until something disrupts the system.

The supply and demand theory has had strong explanatory power over the years, but it doesn't explain one crucial observation: economies grow. In a neoclassical economic framework, an economy reaches equilibrium and stabilizes. Once an economy stabilizes, the only for it to grow is via exogenous inputs, for example, imperialism, increased supply of raw materials.

However, we observe that economies grow faster than the net exogenous inputs. What could explain this? Better worded: what explains endogenous growth in an economy? After a close reading of Marx, Schumpeter came to the idea that innovation and entrepreneurship are the drivers of endogenous growth. Innovation and entrepreneurship introduce new value to the economy that did not previously exist, contributing to an overall increase in social wealth. However, Schumpeter also observed that new technologies

(that is, the result of innovation) and new firms often displace old technologies and old technologies. The new technologies and new firms are better - specifically they have a lower marginal cost or are more desirable widgets - and the old technologies lose economic value and the old firms lose profits.

This the idea of creative destruction. The old displaces new; there is not room for both of them. Marx and Schumpeter had interesting concern: what if there is too much destruction by new technology such that society destroys itself. The capitalist system is a cycle of creation and destruction, and it seems possible, on a theoretical level, that the destruction may overwhelm the construction, spelling disaster for society. While on a social level this is hard to imagine, it is somewhat easier to fathom on technological level.

This paper will explore the idea of creative destruction and its philosophical implications on technology. To whet the appetite, a few questions that will be addressed are:

- New technology technically does not “destroy” old technology; rather, it makes the old technology lose economic value.
- But, what effect does new technology have on old technology? Does it make it obsolete? Does the “idea” of the old technology change? Does the “meaning” of technology, which is contextual and socially constructed, changed due to a change in society or due to a change in technology? That question implies that technosphere, as one might call it, is distinct from society, which social constructs persuasively argue is not necessarily the case.
- Is technology still cumulative? Or in what nuanced sense is it cumulative?
- How does this idea fit into evolution?
- What role does this play in selection?
- Any effect on combination? gut says no, but not sure

1.2 Caballero and Jaffe

In our readings for philosophy of technology, Caballero and Jaffe introduced us to concept of creative destruction. Their aim is to formalize the idea of creative destruction and knowledge spillovers and complete empirical investigations:

Our aim in this paper is to create a framework for incorporating the microeconomics of creative destruction and knowledge spillovers into a model of growth, and to do so in such a way that we can begin to measure them and untangle the forces that determine their intensity and impact on growth (90)

Caballero and Jaffe view the economy in a schumpeterian way: “Schumpeter recognized that innovation was the engine of growth, and that innovation is endogenously generated by competing profit-seeking firms” (90). More formally, they say the economy consists of “a continuum of monopolistically competitive good indexed by their quality $q \in (-\infty, N_t]$ ”. In the economy, a firm that operates with constant marginal cost, i.e. a firm that does not innovating, will see their profits decline. If new good are more substitutable for old goods, then the firm will see their profits decline more quickly.

Beyond innovation, they are intersted in knowledge spillovers, believing that increases in public knowledge contribute to economy wide returns. They distinguish between knowledge and technological obsolescence and creative destruction:

“Old knowledge eventually is made obsolete by the emergence of newer, superior knowledge. We call this phenomenon ‘knowledge’ or ‘technological’ obsolescence, and distinguish it from the obsolescence in value represented by creative destruction. That is, new ideas have two distinct effects on the current stock of ideas. They make the products represented by those ideas less valuable (creative destruction or value obsolescence), and they make the knowledge represented by those ideas less relevant in the production of new knowledge (knowledge or technological obsolescence). The strength of knowledge spillovers, and hence the growth of the economy, will depend on the parameters of the processes of knowledge diffusion and knowledge obsolescence.” (92)

Creative destruction is specifically the effect of new innovation on the economic “value” of products.

From a philosophy perspective, it seems overly limiting to only consider creative desturction as the impact that new creations have on the economic value of old technology. As a contrived example, consider Intel who sells CPUs. If Intel creates

They analyze creative destruction empirically by using the U.S. patents database and data on market value of industries (91). Their model is complicated, but I believe their process is straightforward enough: they correlation between patents issued from a particular sector and the market value of that sector {AL-0: get page number on this}.

“That is, in an average sector at an average year a firm that does not invent sees its value relative to that of the industry erode by about 4%.” (91)

2 New Thoughts on Creative Destruction

This section will discuss my thoughts on creative destruction.