

## The Oil Drum: Campfire

### Discussions about Energy and Our Future

#### Peak oil and the psychology of work

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*The following is a guest post from Vinay Kumar, who lives in the small coastal town in Southern India. Vinay has a Phd in Neuroscience from M.I.T. and a M.S. in Electrical Engineering from Northeastern University. He works as a systems engineer and volunteers on an organic farm that he helped to create. He also provides technical help to local community organizations in India that are fighting polluting industries. Vinay is a friend of one of Herman Daly's former graduate students which is how he came across TheOilDrum. The below essay on the implications for oil depletion on human labor is a great example of the cross disciplinary thinking that can emerge in the intersection of the internet and education .*



*Ploughing the field the traditional Way - Manthralaya, AP, India. Photo credit: [flickr/antkriz](#)*

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## Peak Oil and The Psychology of Work

This is a preliminary attempt to explore the relationship between the current predicament facing humanity arising out of an exploding population facing planetary resource limitations, in other words known as overshoot, and the psychology of work inherent in the human species. One reason to explore this connection is that the question of overshoot is normally framed in standard Darwinian terms. In the Darwinian framework overshoot begins with the availability of abundant resources that allows the population of a species to increase exponentially. This exploding population eventually depletes irreversibly the very resources that sustain the population and this leads to a large scale die-off and a precipitous fall in the species population sometimes leading to extinction. In this rise and fall, the behavior of the individuals of the species is often typical of any organism seeking to maximize its chances of survival and procreation.

However the human species, aided by a generalized intelligence, is perhaps unique in its ability to extensively craft its environment in order to garner a much larger portion of the ecological resource base to sustain itself. In the evolution of humans, there have been two signal revolutions that brought about a very large increase in humanity's ecological valence leading to profound changes in the human mode of existence and its environment. The first was the agricultural revolution that is now understood as having begun some 10000-12000 years ago. This allowed the hunter-gatherer humans to transition to a settled agrarian lifestyle eventually paving the way for the rise of urban civilizations. The second revolution was the industrial revolution that is a mere 200-300 years old but which allowed humans to rapidly dominate the planet as perhaps no other species had managed to before.

There can be no doubt that the availability of ecological resources played a defining role in these



transitions – in the case of the agricultural revolution the key resource was fertile top soil of river valley ecosystems. The nutrient laden silt deposited in the flood plains of riverine systems such as the Nile, the Euphrates and the Indus ensured the initial success and widespread replication of settled agriculture. Similarly it was the availability of concentrated forms of different resources chiefly energy but also ores of various metals that were the principal enablers of the industrial revolution.

While the role of ecological resources in these signal revolutions is fairly well understood, the role of human mental faculties in their myriad manifestations is either unclear or the subject of severe controversies. But there can also be little doubt that human mental faculties – through innate predisposition and learnt skills and behavioral responses – must have played a fundamental role in these changes as well. My interest lies in understanding how our mental faculties contributed to these fundamental transformations, with the hope that this understanding will enable us as individuals and collectives to be better prepared for the inevitable turmoil that results from the decline in the availability of concentrated energy resources. In particular in this essay I want to explore how the human mind views and deals with the concept of work – both as an idea in the mind and as a felt necessity of human existence.

In physics work is the same as energy. In fact energy is defined as the ability to do work and therefore they are measured in the exact same units. In the biological world, all organisms have to do work in order to change and exploit their environment for their benefit. But it is not uncommon in the animal kingdom to have sharply differentiated work burdens across different members of a species, e.g. the work differential between the worker ants vs the drones, or the lioness vs the lion.

However, what work means to the human mind is something quite different from both the physical concept, and the forms observed in other animal species. The intrinsic tendencies towards work in humans (like most other mental faculties) have always influenced and defined their cultural and political systems and thus contributed to the rise and fall of civilizations. It is not difficult to see that both the agricultural and industrial modes of human existence principally involve the organization and concentration of matter using energy to overcome the inevitable tendency towards disorganization and diffusion (in other words overcome the second law of thermodynamics). The main difference lies in the fact that in the agricultural mode human work is an integral part of the energy flow whereas in the industrial mode human energy is replaced to a large extent by energy obtained from burning fossil fuels.

It is normally acknowledged in peak-oil circles (at least amongst those who do see the decline in fossil fuels as leading to a decline in industrial civilization) that the aftermath of peak-oil would witness the come-back of human labour as a prominent source of energy for economic activities. And this may very well happen for the simple reason that individuals would have no other choice. But it is worth looking at the psychological context in which this might happen if for no other reason but that our sanity may depend on doing so. And history is a good place to begin doing that.

It appears to me that throughout history humans have always distinguished between physical and mental work. It is a felt experience for most of us that we would rather be doing mental work as opposed to physical work. One could argue that most of us would rather do no work at all if our sustenance and comforts are somehow guaranteed. While that may be the case at the psychological level, at an empirical level it appears to me that a farmer would rather take up the job of a bank teller given the same remuneration, than continue with farming. Irrespective of why

this might be the case, this phenomenon implies that it ought to be easier to find humans willing to do work involving less physical labour compared to more. And yet, most human societies historically have privileged mental work over physical work. Almost universally work involving a greater component of mental work lead to greater surplus accumulation and a more comfortable life. To me this is a conundrum and has serious implications for the coming post-peak world.

A clear indication of this preference can be seen in the themes found in the world's folk literature. No matter which corner of the world one looks at, one is likely to find many folk tales that begin with a clever and intelligent weaver or woodcutter who uses his mental prowess to end up as the prince or the prime minister of his country. On the other hand the chances of finding a tale in which the king ends up living happily as a labouring peasant are almost nil. This relative popularity of mental work compared to physical work has been a tremendous force – a kind of *psychological energy* – that has fueled our transition from a hunter-gatherer to agrarian and then to industrial modes of existence.

A significant example of how the relative popularity of mental work compared to physical work has defined the very fabric of most societies is to look at India. In India the principal form of social stratification, namely the caste system, appears to be based on the crucial distinction between mental and physical work. For those who are unaware of the main elements of the caste system (or *varnashram* as it was referred to in Sanskrit), humans were divided into four *varnas* (categories) which was determined by their profession or the kind of work done by them. This division was hierarchical and defined (for as long as it was possible to move from one *varna* to another) a direction for human aspiration. Thus at the top were the *Brahmanas* (the Brahmins) whose work was predominantly intellectual in nature, as teachers, priests, philosophers, etc. In the next category were the *Kshatriyas* who had jobs in administration and governance. At a lower level were the *Vaishyas* who were involved in business and trade. At the lowest level were the *Shudras* who consisted of artisans, farmers and other professions all involving a significant amount of manual labour.

It should be of interest that each of these *varnas* were further divided into several sub-castes also organized in an internal hierarchy. The relative position of the sub-caste within the *varna* had much to do with the manual labour component of the work that its members did. So for instance, the priests involved in conducting the rituals in a temple had higher status than those who were tasked with keeping the temple premises in pristine condition.

Throughout the pre-industrial period various ecological and cultural limitations kept a lid on the natural human aspiration of moving away from physical labour and towards mental labour and this contributed to maintaining societal homeostasis. It is well understood that in India the ossification of the caste system into a rigid and oppressive form determined by birth, served to severely curb the aspirations of ordinary people for millennia, but that it also provided stability and continuity to the political economy of the country even in the face of various invasions and political upheaval. Across the world, the fall of empires and civilizations resulted mostly from political overreach (as in Rome) or straightforward ecological overshoot (as in Easter Island) or some combination of these reasons. The relative role of physical and mental labour might have had only a marginal influence on the decline phase of pre-industrial civilizations.

Yet the industrial civilization has seen the most drastic change in the composition of people doing and willing to do physical work vis-a-vis mental work. The proportion of America's population doing agriculture has declined from around 50% near the beginning of the 20th century to less than 5% towards its end, no doubt aided by the explosion of less manual labour intense

employment in the secondary and tertiary sectors of the economy. But in addition and most importantly, it has opened up newer aspirational possibilities to ordinary humans that one could not even dream of in the pre-industrial age.

A recent survey indicates that 40% of India's farmers are willing to quit farming since they find it unprofitable. However in my own experience the number is closer to 100% when real alternatives are available, and economics is only part of the reason. Aspirational changes brought about by education and mass-media are at least as crucial a component as the economic crisis afflicting agriculture. A subtle version of this same phenomenon is the shift, amongst those who continue to be in agriculture, from food crops to cash crops. Even when cash crops are plagued by highly uncertain and volatile price swings, cash crops are preferred since they involve less manual labour.

A deindustrialising society will therefore need to not only deal with the scarcity of material resources but also work against the prevailing cognitive current of privileging non-manual labour on a scale unprecedented in human history. The problematic part is that this is not merely a political arrangement, but a manifestation of the individual's preference and is central to the aspirations of millions of humans today. What this implies is that the breakdown of the industrial civilization will also witness an unprecedented cognitive breakdown as well.

A variety of questions can be asked on how this will play out and what adaptive mechanisms we have at our disposal at both the individual and the collective levels. I hope to explore these and other issues concerning the relationship between our material and cognitive predicaments in future essays, and I hope that it will help the TOD readership to address these questions with much greater intensity than what it has done so far.



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