

The Oil Drum: Campfire

Discussions about Energy and Our Future

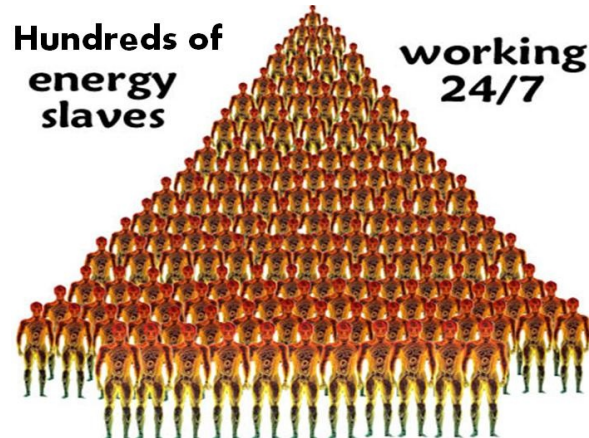
On Independence, Energy Subsidy, and Freedom

Posted by [Nate Hagens](#) on July 5, 2009 - 11:01am in [The Oil Drum: Campfire](#)

Topic: [Sociology/Psychology](#)

Tags: [cortisol](#), [debt](#), [energy](#), [energy subsidy](#), [original](#) [[list all tags](#)]

How much of our freedom is related to 'cheap energy'? Last I checked, the average American uses over 60 barrel of oil equivalents of the 3 primary fossil fuels (oil, coal and natural gas) per year. Depending on ones assumptions (and occupation), this is in the neighborhood of hundred(s) of years of manual human toil supplanted by cheap ancient sunlight. (At \$20 per hour, a human laborer makes over \$40,000 per year so even an energy subsidy of 100X p/a equates to \$4 million in dollar terms.) Do our social freedoms emanate from the nature of our socio-political system, or the reverse - is our socio-political system a byproduct of the resources we acquired and used after finding this land? What is freedom, anyways? And what will freedom look like in the future? On this the birthday of the United States of America, let's discuss energy and freedom around the Campfire.



I love America. I state this as a plain fact - my friends, family, experiences, connection with nature, and memories are all 90%+ associated with this country. But I also consider myself as a citizen of the planet, circa 2009. Having traveled a great deal, I am all too aware of the advantages our country has vis-a-vis the ROW, that many of us often take for granted. Among many differences I notice when comparing American attitudes/behavior to those of people from other countries when I travel, one predominates: that of entitlement. While scanning a crowd at a train station or airport or restaurant or public event abroad, one can oftentimes notice just by attitude alone who hails from USA. With increasing occasion, perhaps due to my firming awareness of energy as lifes fundamental currency, I credit our enormous liquid fuel subsidy (we have 4.4% of worlds population but used 25% of the worlds oil flows) as a core pillar for our freedoms. Our daily volition, free will and perhaps even confidence likely has direct ties to our natural resources; both our geographic endowment, and what we receive in exchange via increasing amounts of debt. A [recent proposal by Congress](#) to release the SPR because \$70 oil is causing economic hardship bears witness to just how dependent on energy our 'independence' has become. At \$70 a barrel, oil costs much less (retail) than gatorade, milk, lemonade, beer, and bottled water. And we import 70% of what we use. Oh the horror when oil passes Gatorade in cost...

Like everything, I think freedom (to act, think, express, etc.) is related to the 'feelings' it engenders in our brains, which are essentially different neurochemical recipes. We have some idea of what situations generate these 'cocktails'. One seminal experiment on 'control/freedom' was by Lundberg and Frankenhaeuser (1980) "*Pituitary-adrenal and sympthetic-adrenal*

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correlates of distress and effort" (Journal of Psychosomatic Research volume 24, pages 125-130). To paraphrase, the researchers had subjects hit colored buttons that matched colored lights that would flash with increasing speed during the experiment and flashing about as fast as the subjects could follow near the end. Similar tests were undertaken where subjects would match these colored buttons to the flashing lights - the only difference being *they had control* of the dial that would increase the speed of the flashing lights. In this second experiment (controlled individually not by the experimenter), the speed of the flashing lights was as fast or faster than the first experiment.

Before and after blood tests and interviews of the subjects were taken for both experiments. The typical response after the first test was 'that was one of the hardest things I've ever done', and indeed the ratio of cortisol (a stress hormone) to norepinephrine in the blood was high. In the test where subjects had individual control, a typical response was 'that was fun! I enjoyed the challenge!' etc. Blood tests showed the inverse as well - cortisol was much less pronounced. There are similar and follow up tests in the physiological literature**, but the inference is that in IDENTICAL tasks, the difference in our brains response (with pleasurable or stressful sensations) depended on our ability to exert individual control over our circumstances.

Furthermore, from "[Biological Basis of the Stress Response](#)"

Recent work shows that differing perceptions of stress result in different patterns of neuroendocrine activation. An easily handled challenge elicits norepinephrine and testosterone rises with success. With increasing anxiety, active coping shifts to a more passive mode. Epinephrine, prolactin, renin, and fatty acids increase. As the distress grows, cortisol augments.

While not 100% explanatory, these and similar findings lend support to the notion that our cheap energy, via subsidizing our basic needs (and even those not so basic), suppresses stress hormones and allows us to feel control/freedom in more situations than we would without such subsidy. To me, this angle is potentially helpful for envisioning post peak institutions and behaviors. As long as people feel they have control of their circumstances and are not overly stressed, I think they (we) could endure a great deal more hardships than if we feel control is out of our hands. Irrespective of declines in resources/capita, assuming basic needs are met, we might be able to 'trick' our wiring into responses that are less stressful as long as we feel ownership in what's happening. (However, we'll likely need to address the habituation/addiction/behavioural ratchet effect angle at the same time....) In my experience, the number of digits in ones bank account allows for the 'perception' of freedom (options), but past a certain point it is just the opposite.

Freedom is related to control. And it could be argued that how much individual 'control' we have overall is a function of resources per capita. It would stand to reason that as resources per capita decline there will be fewer individual freedoms.

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(some) campfire questions:

What is freedom?
Without cheap energy (cheap being anything under \$500 a barrel), how much freedom will we have?
How much are we entitled to?
How could less energy per capita equate to more freedom?

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