

Panel: Amory Lovins In His Own Words

Natural Capitalism describes what capitalism could be like if it behaved as if natural capital were properly valued. Natural capital is the living world that provides resources and ecosystem services, which we can neither replace nor live without. Ecosystem services are extremely valuable, but they're not on anyone's balance sheet, and they get inadvertently liquidated in pursuit of resources whose market value is recognized. But rather than spending decades arguing about how much money ecosystem services are worth, I think it makes more sense to behave as if we were properly valuing them, through operational principles that are profitable even now when natural capital is valued at zero. Our book explores, through hundreds of examples, four such principles that strongly reinforce each other.

The first principle is to use resources with radically greater productivity; to get ten to a hundred times as much work out of them through better technologies that provide the same or better services with more brains but less money. This substitution can dramatically reduce the half-trillion-ton-a-year flow of resources, from depletion to pollution, that is at the root of the degradation of natural systems.

New methods and designs often enable you to 'tunnel through the cost barrier' and make very large resource savings. Resource productivity can often achieve not diminishing but expanding returns. That's a surprise, but it's now well demonstrated in a wide range of technical systems and economic sectors.

The logic of increasing resource productivity is familiar because it's the same logic that led the first Industrial Revolution to make people a hundred times more productive. Economics teaches that you should economize on your scarcest resource because that's what limits progress. In those days, some 230 years ago, the relative scarcity of people was limiting progress in exploiting seemingly boundless nature. Today we have the opposite pattern of scarcity: we have abundant people and scarce nature. So it now makes sense to substitute abundant people for scarce nature—not the reverse, as we still seem prone to doing.

The second principle is to redesign production on biological lines with closed loops, no waste, and no toxicity. It is to design out anything that shouldn't be there, anything that isn't benign and valuable, any unsaleable production. This will yield better products at lower cost. It will transform everything that we produce into either a natural nutrient that goes to compost or a 'technical nutrient' that goes back to remanufacturing.

When you redesign production on biological principles you rely for raw materials less on what is dug up and more on what is grown. We should also be mimicking nature's very effective and life-friendly way of making things. Janine Benyus's book *Biomimicry* gives some great examples. That tree we're seeing outside the window turns sunlight, air, soil and water into a sugar called cellulose, as strong as nylon but several-fold lighter, and then it embeds the cellulose into a natural composite called wood, which is stiffer and stronger than steel, aluminium alloy or concrete. Yet the tree doesn't require smelters, blast furnaces or cement kilns. It works at ambient temperature in an elegantly frugal and beautiful way.

The third principle is to change the business model by switching from selling goods to delivering a continuous flow of service and value. And this should be done in a relationship that rewards both the provider and the customer for resource-saving and loop-closing. It's one of those radically simple ideas that, once you see it, makes a great deal of sense. For example, Ray Anderson, Chairman of Interface Corporation, realized that people don't want to own the carpet in their office; they just want to walk on it and look at it. So he started to lease a floor-covering service. His company owns what's on your floor. They're responsible for keeping it always fresh by replacing one-square-metre carpet tiles in the worn spots, which are only one-fifth of the whole carpet area. Interface can thus provide a better service with lower cost, higher profit, and more employment. Now the firm has designed a new product called Solenium that uses 35% less material per square metre and lasts for twice as long. It is better in all respects for the customer, costs less to produce, has nothing toxic in it and can be completely remanufactured into an identical product. So when you combine that seven-fold reduction in material needs within the five-fold material-saving from the service leaser's replacing only the worn bits, you've got a 97% reduction in the flow of materials to maintain a superior floor-covering service at lower cost.

Such a business model as this is going to be very difficult to compete with. By switching to a service model and systematically wringing out waste even before the new product was released, Interface had doubled its revenue, trebled its profits and nearly doubled its employment. Its goal is to take nothing from the Earth and to put nothing harmful back into the environment. The new product cuts off the flow to the rubbish-tip by remanufacturing, and can even cut off the initial flow from the oil well by making the Solenium from a renewable carbohydrate. All that waste turns into profit. Interface does very well by doing good.

Other firms are excited and envious that Interface got there first. In one business after another we see the service-leasing model taking over. But remember, what's important here is not so much the form of the transaction—leasing a service instead of selling a product—but that the provider of the service and the customer for the service both get rewarded for doing more and better with less.

For example, if you lease a 'dissolving service' from Dow and they then repurify the solvent through more trips, their costs go down, their profits go up and they can also charge you less to get more market share. If they figure out a better way to degrease your parts in your factory, like not putting the grease on them in the first place, so that they need less or no solvent to yield clean parts, that's even better.

Similarly, if Carrier is leasing you a comfort service which makes its air-conditioners more efficient or more durable, they make more profit by providing better service at lower cost. If they then team up with other firms that can fix your building so that it needs little or no air-conditioning to provide better comfort, that's even better, because what you want is better comfort at lower cost. If they don't meet that need, their competitors will and they're out of the air-conditioning business. This way they're evolving toward continuously meeting your shifting value needs in the best way at the least cost. That's exactly where any business ought to

be—shifting saved resources from a reduced revenue to a reduced cost. James Womack calls this concept, the 'Solutions Economy'.

The fourth principle is reinvesting in restoring, sustaining and expanding the stock of natural capital, as any prudent capitalist would do. That's the easiest step because God does the production; we just need to get out of the way and allow life to flourish wherever it can. As more people choose fewer resources, this creates increasing business value.

Many ranchers in the American West are finding that new techniques of grazing management can yield a much richer and more diverse grass community and turn the range from desert back to real fertility. They graze more animals but in a different way that mimics the way that grass and grazers have historically coevolved.

This is why we are excited about Wes Jackson's work at the Land Institute. He is turning Great Plains agriculture back into something that looks very like a prairie. It's a perennial polyculture that needs no ploughing, feeding or spraying. You sit there and watch it grow and once in a while you harvest it, either mechanically or with ungulates, to taste. It's at least as productive as the very input-intensive hybrid cereals—and so it should be, because during 3.8 billion years of selection and experimentation whatever didn't work was recalled by the Manufacturer! The prairie is the most efficient way of durably using the sunlight available in that place. If there were a better way to do it, it would have been there already.

From an interview with Satish Kumar printed in Resurgence No. 198, dated January /February 2000. The full interview can be found at <http://www.resurgence.org/>. There is also a much longer interview with Lovins at <http://www.gn.apc.org/resources/wwwboard/messages/40.html> The book has its own website at <http://www.naturalcapitalism.org>

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