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[Prev](#) | [Table of Contents](#) | [Next](#)

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## ESSAYS ON SCIENCE AND SOCIETY

### The Challenge of Faust

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Hans Christoph Binswanger is professor emeritus in economics at the University of St. Gallen, Switzerland. His research has concentrated on monetary theory, and environmental and resource economics, for which he has received several prizes. He has authored numerous books including *Money and Magic: A Critique of the Modern Economy in Light of Goethe's Faust*, translated by J. E. Harrison (University of Chicago Press, 1994).

In Part II of his greatest play, *Faust* (1832),\* Goethe confronts the promises and pitfalls of the Industrial Revolution and the economic growth that it generated. As finance minister at the Court of Weimar he was well placed to comment on these developments, and his insights remain astonishingly relevant today.

Goethe's protagonist is representative of modern man who, through science, seeks to subjugate nature and to build up a new economic realm of freedom and prosperity. Faust's exultation at the "lovely moment" (*verweile doch, du bist so schön*) that this would bring expresses the delight of modern man at the sheer cornucopia of these new riches. But not all is rosy in this economic garden, for Goethe warns that these riches may be built upon an unsustainable illusion. After all, Mephistopheles, who is "the spirit, that evermore denies," is Faust's business partner! As we ponder whether the new riches that we have amassed are real or illusory, it is worth taking a closer look at how Goethe dramatizes this issue.



Faust declares his aims as he looks out upon the sea and its ceaseless ebb and flow.

Onward it sweeps by courses numberless,  
Barren itself, to squander barrenness;  
Now swelling, growing, rolling on, it drowns  
In desolation leagues of wasted downs;  
There riots, wave on wave, with wanton force,  
Then ebbs—and nothing's been achieved, of course.  
I might despair, to see the aimless way  
Such lawless elements exert their sway.  
Yet no despair shall my resolve benumb;  
Here I might struggle, here might overcome!

Subsequently Goethe shows how, through a combination of economic activity and technological progress, the subjugation of nature and of natural forces—symbolized by ebb and flow—is effected. The section of coastline that Faust had observed is enclosed by a dyke and transformed into a garden "like an Eden." This subjugation seems miraculous, like an alchemical process: What had hitherto been economically worthless has been transmuted into something economically valuable.

Faust is a vigorous entrepreneur who drives his workers to their utmost. Yet Goethe realizes that entrepreneurial vision and human labor are not

[Figure](#)

enough to achieve the great project. Money is required to pay the workers who, now far from home, have lost their means of subsistence. However, the limited supply of gold that can be mined is insufficient to supply the monetary requirement of the project. Faust has taken care of this with the help of the emperor, that is, the state, by founding a bank that issues paper money, a currency not convertible into gold:

'Twere hopeless now the flying leaves to stop;  
With lightning speed they spread through-out the land.

The state profits from the invention of paper money by using it to pay its debts. But Faust invests the money in the production of real goods and through this transaction creates an equivalence between manufactured goods and paper money, thereby turning valueless paper into an instrument of real buying power. The potency of this buying power derives from both traditional and new sources of energy. Faust no longer relies on human labor alone, but also on newly created, energy-driven machines because these are more efficient. The change seems almost magical:

Vain all day is their hacking, tearing,  
Pick and shovel, stroke on stroke!  
Where night-long great fires were flaring,  
Stood a bank when morning broke.

The prerequisite for this is the renewed establishment of the laws of property which grants mankind the right of absolute power over nature, and now Faust unabashedly proclaims, "Property and dominion I want to gain."

In *Faust* Goethe thus describes, with historical accuracy, the establishment of three crucial instruments that enabled economic growth and served as a motor for further development: (i) The creation of paper money, which began with the issuance of bank notes by the Bank of England at the end of the 17th century and forms the basis of our global system of currency, with its potential for constant expansion; (ii) James Watt's invention of the steam engine at the end of the 18th century and the use of coal, which marked the beginning of the Industrial Revolution; (iii) the Roman property law of "dominium," the *ius utendi et abutendi re sua* (the right not merely to use, but also to consume, one's private property) in the *Code Napoleon*—the new civil code created by Napoleon at the beginning of the 19th century. This concept of ownership provides the necessary legal sanction for the increasing subordination of nature to the requirements of economic exploitation.

Goethe not only reveals how Faust, the representative modern man, realizes this massive project of economic progress, but also shows the existing and potential dangers associated with it. Human progress entails curbing nature by constructing an artificial world consisting of cities, industry, transport, and intensified agriculture, symbolized in *Faust* by land reclamation through building of the dyke. With great insight Goethe tells us that the intervention into the natural environment that this demands may have unforeseen consequences because nature reacts according to its own laws, which humans can never entirely predict. Unintended or unanticipated consequences may wipe out wholly or in part the successes gained by earlier interventions or cast retrospective doubt upon them. In *Faust* Goethe draws attention to three dangers, in particular: (i) Environmental damage may ensue, exemplified by a "foul morass" in the reclaimed land, because there is no outflow for the stinking water. This is a consequence of the short-sighted construction of the dyke, which has led to the formation of algae and the silting up of drainage channels. As attempts are made to correct these problems, new ones are created, which in their turn require further corrections. Thus Faust's megalomaniac project is never-ending! (ii) To realize his plans Faust needs more and more land. So he drives out the established population—exemplified in *Faust* by the old couple, Baucis and Philemon—from the dunes above the newly embanked land. The beauty of the natural landscape, which had evolved and been carefully maintained over centuries—everything we associate with the idea of "home"—is now ruined. (iii) New risks arise that could completely destroy Faust's entire project. For example the dam, which Faust sets against the might of the ocean, could break! Faust knows this, but he believes that if all available forces are coordinated, then all possible dangers can be overcome:

Howe'er may rage the angry baffled tide,  
Striving to sap, to force an entrance, each  
And all rush swiftly to close up the breach.

But Mephistopheles disagrees:

Yet all your labor's spent for us alone.  
With your fine dams and bulwarks vast,  
You're but preparing a superb repast  
For Neptune, the sea-fiend, to feast upon.  
You're trumped and done for every way,  
Into our hands the elements play,  
Destruction onwards is striding fast.

The real danger is that Faust—modern man—will not acknowledge the need for careful planning to forestall such damage as he pushes on relentlessly, not seeing what is going on around him. Goethe

symbolizes this blind irresponsibility by Faust's loss of eyesight. In other words, Faust is so obsessed with his plans to subdue nature that he loses sight of the realities that may require careful reflection and possibly a total rethinking of the project. Hence mankind compounds its natural limitations—its inability to fully understand nature's complexity—with a blindness induced by hubris.

The Rio conference on “Sustainable Development” (1992) demonstrated that we live in a finite, limited world and that development is only sustainable if we take account of these limitations. This is a challenge for Faust, a challenge for modern man. Here, too, Goethe was prophetic. In his comments on “Contemplative Judgement” he writes: “Our aim must be, through contemplation of the ceaseless processes of nature, to make ourselves worthy to share spiritually in her productions.” <sup>\*\*</sup> In other words, we must be careful observers of nature's parameters and allow ourselves, more than ever before, to be guided by them. Instead of continuing our attempt to dominate nature with linear thinking, we must cultivate an intuitive sensitivity and responsiveness to her complexities. Science must respond to this reorientation by developing the corresponding technology. We need to develop products—consumer goods, machines, buildings—that produce less waste, last longer, are recyclable, consume less energy, and fit gracefully into the landscape and/or model themselves on natural forms (bionics).

This is only possible if economists, too, understand that less can be more, that in economic production what matters is not so much the amount produced but its increased utility, and that, accordingly, both quantitative and qualitative growth can benefit mankind without damaging nature. Perhaps Faust, or modern man, may never, as Goethe once hoped, achieve a moment so lovely that he would want to hold on to it forever. But if we strive to develop a more respectful relationship with nature, we may very well come closer to creating just such a moment.

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<sup>\*</sup> Translations of *Faust* in this essay are from *Goethe's Faust, Parts I and II*, translated by T. Martin [Dent, London, (Dutton, New York), 1954, reprinted 1971]. This translation was originally published as Johann Wolfgang von Goethe, *Faust, A Dramatic Poem*, tr. T. Martin (Blackwood, Edinburgh, London, 1865).

<sup>\*\*</sup> *Goethe's Samtliche Werke*, in dreissig Banden (Cotta'scher Verlag, Stuttgart und Tübingen, 1851), 30 Band, S. 345.