

Response to Oswald Schmitz and Willis Jenkins

Professor Schmitz has offered many gems of wisdom, with most of which I heartily concur. One in particular I wish to endorse especially. Let us conceive of the human economy as a subset of the Economy of Nature and let us deploy that re-conception as a foundation for a new and better way to think about sustainable development. The now classic and oft-repeated definition of *sustainable development* in the famous Brundtland Report—development that “meets the needs of the present without compromising the ability of future generations to meet their own needs”—is very dangerous. In this definition there is no mention of ecological exigencies, ecosystem functions and services, biodiversity, or environmental quality—only human needs. According to the substitutability axiom of neo-classical economics, when any “resource” becomes scarce, its price increases thus incentivizing entrepreneurs to invent a cheaper substitute. Absent any reference at all to ecological exigencies, ecosystem functions and services, biodiversity, and environmental quality in the Brundtland-Report definition of sustainable development, all that the present generation ought to bequeath to future generations, in order for them to meet their own needs, is wealth capital and an entrepreneurial spirit. According to this way of thinking, nothing provided by the Economy of Nature is irreplaceable. Let us, rather, conceive of sustainable development in the way Schmitz suggests: adapting the human economy to the larger economy of nature in which it is embedded—an economy that sustains itself on its solar-energy budget and takes the wastes of one process as the resources of another; an economy that thrives on the ingenuity of evolution; an economy that relies on biodiversity and the functional redundancy it entrains to buffer it against the inevitability of various disturbances at every scale.

I do not concur, however, with Professor Schmitz on another point germane to this occasion. I call on Professor Jenkins as my witness. Both Schmitz himself and Jenkins remind us of the temporal and spatial *scale* of the journey of the universe—from the distant Big Bang to the present and from the present to the distant death throes of our Earth’s star, the sun, one among billions of stars in the galaxy, one among billions of galaxies in the universe. As Professor Jenkins wryly notes, “it is not obvious how the emergent universe guides right behavior for any concrete problem. Consider anthropogenic biodiversity loss. After the stars shame us out of our indifference, can the unfolding universe inform the practice of conserving biodiversity?” Hardly. Thus, from this journey-of-the-universe perspective, Professor Schmitz’s plea for a *non-anthropocentric* environmental ethic echoes hollow. We need an environmental ethic to be sure, but even the *temporal scale* of organic evolution on Earth requires, rather, an ecologically enlightened—and I stress, an *ecologically enlightened*—but nonetheless *anthropocentric* environmental ethic.

To think that we humans can jeopardize the creative process of evolution is the height of human arrogance, pace Professor Schmitz. We couldn’t do that even if we tried. Gaia is too old and too resilient for that to happen. To think that we live at the dawn of the anthropocene is also the height of human arrogance, pace Professor Jenkins. We can no more seize creative control of the long-term future of life on Earth than we can utterly

destroy or even significantly impede it. What we can do—indeed what we are doing—is to drive the whole Earth ecosystem toward a new domain of ecological attraction, first attended by a collapse of its sub-ecosystems and by the sixth great mass extinction event, followed—as in the previous five—by renewed species radiation and eventually the full recovery of biodiversity. Millions of years hence—and that is the temporal scale of the journey of the universe—biodiversity will recover, but that future biodiversity will be composed of species and ecosystems quite unlike those that presently exist. The moral of the journey-of-the-universe story then is this: Unless we are very careful and very prudent, *Homo sapiens* will go extinct with its Quaternary cohort or, more likely, be reduced to small scattered populations living barbarously in a new and unending Dark Age. *We* are an endangered species. Let us, therefore, concern ourselves with our own future. But as Professor Schmitz so eloquently reminds us, our future as a species depends on how deeply we appreciate and how carefully we conserve and protect our fellow voyagers in the odyssey of evolution and the existing sub-ecosystems of the Gaian planetary ecosystem—to the present conditions of which we are precisely adapted and on which present conditions we depend absolutely for our sustenance, now and forever afterward.