After deciding to feature the work of Herman Daly in the Spring 2003 issue of* The Social Contract, *it was natural to invite John Attarian to assemble the articles to be printed and to interview Daly. The result is a sparkling interchange between two knowledgeable economists concerned about dwindling resources at the mercy of enthusiasts of perpetual growth.

A Conversation with Herman Daly

by John Attarian

The Social Contract chose to feature Herman Daly in this issue and invited me to assemble some of his writings for presentation. As guest editor, I was also asked to interview Dr. Daly, which I happily did. Over several days the following "conversation" took place by e-mail.

Our Situation and Our Prospects

John Attarian: *Professor Daly, you've maintained that resource finitude and entropy law make sustained growth impossible and that the economy is becoming unsustainably big relative to the ecosystem that supports human life. Have we overshot optimal size, and what evidence would you give for this?*

Herman Daly: I suspect that we have. The work I did with John and Clifford Cobb on the Index of Sustainable Economic Welfare indicates that we have overshot the optimum — environmental and social costs are increasing faster than production benefits as we grow physically. Also the work that people have done on ecological footprint leads to a similar conclusion. Of course empirical measures are difficult and fall short of proof. To me the most convincing argument comes straight from economics: diminishing marginal benefit and increasing marginal costs. We use growth to satisfy our most pressing wants first, and we achieve growth by employing our most productive resources first. Consequently marginal benefits of growth fall while marginal costs rise. If the curves have not yet crossed, they soon will.

JA: *We're burning the candle at both ends — depleting sources and overloading waste sinks. Is one more dangerous, more likely to take a toll on human life sooner or be permanently ruinous, than the other?*

HD: The sinks seem to be more limiting right now. That could change. I think the reason is that sinks tend to be open access commons, while sources are usually private property. As we know, the incentive is to overexploit open access resources.

JA: *On the source end of throughput, warnings are multiplying among petroleum geologists that some time in the next decade or so, annual world oil extraction will peak and then irreversibly decline.*

HD: I think they are right. And our dependence on petroleum keeps growing.

JA: *How about water?*

HD: Scarcity is increasing, and some form of higher price is inevitable. Privatizing the sources of water supply seems to me a bad way to do it. I'd much rather see a public corporation charge for water with profits going into the public treasury, permitting reduction of other taxes, especially the most regressive.

JA: *Is there still time to make a transition to a steady-state economy, or is it too late?*

HD: The steady state that we can now sustain is inferior to the one we could have had if we had started earlier. There is still a lot of natural life support and beauty to save, but it diminishes every year that we persist in pushing uneconomic growth.

JA: *If we achieved an SSE, could we keep it going for long at anything like current population levels? Or have we already depleted sources and filled sinks too*

John Attarian, Ph.D. *with a doctorate in economics from the University of Michigan, was a freelance writer living in Ann Arbor, a prolific and wide-ranging author, a frequent contributor to* The Social Contract.

much for an SSE to endure except at much lower population and living standards?

HD: I think lower levels will be necessary. We may, by a "fallowing" type of investment in natural capital, rebuild life-support capacity. But like all investment that requires a period of foregone consumption.

JA: *What do you make of our current slump and iffy recovery? Is it purely cyclical? Uncertainty over war and terrorism? Is the growth engine starting to stall?*

HD: I suspect that it is part cyclical — the crash of the info tech boom and all the hype about a virtual economy; and part secular — the loss of real growth possibilities for employing manmade capital productively in a world of diminishing complementary natural capital.

JA: *You've made a persuasive case for reversing population growth, so as not to reduce carrying capacity and bring on calamity. Yet, populations all over the world are aging and will require more taxpayers and caregivers. We may face a hideous dilemma: keep populations growing and go farther out on a limb, or lower birth rates and have the elderly population implode. What are your thoughts on that?*

HD: A problem to be sure. But rather than grow farther out on the limb I think we should structure things so that the able elderly take on more of the burden of caring for the disabled elderly. A stationary population with a low death rate is bound to have a high average age. We need to accept that, along with the inevitably of death and disability as we age. I am beginning to speak from experience on this issue!

JA: *Population aging means that old-age entitlements will dominate First World domestic politics and government budgets. Meanwhile international relations are highly unstable, with nuclear proliferation and with the Middle East sliding toward real trouble, as populations in Muslim countries rise, water supplies decline, oil eventually does likewise, and Islamic fundamentalism increases. Even if we do try to shift to a steady state, how will all this complicate matters? Will there be a new push for faster economic growth in the First World, to finance the old-age entitlements, to buy off the rogue states and Islamic malcontents with aid?*

HD: Very likely, just as advocacy of growth has for a long time been motivated by a desire to avoid redistribution and "buy" peace.

II. Policy Tools

JA: *All this raises the issue of what to do. In* Eco-Economy, *Lester Brown stresses "making prices tell the ecological truth," and both you and Lester favor "taxing bads, not goods." As an economist I like these ideas. But might creating truthful prices and taxing bads in one country just accelerate the shifting of bads to countries with lower environmental standards? Might countries trying to do the right thing backslide so as to remain globally competitive? For right prices and taxing bads to work, don't we also have to attack globalization?*

HD: Indeed, globalization undercuts most national policies, especially the policy of internalizing external costs, so that prices will tell the ecological truth in so far as possible. We need tariffs to protect, not inefficient national industries, but efficient national policies of cost internalization.

JA: *To what extent is the appropriate set of policy tools a function of how far we are from optimal size? In an empty world (economy small relative to ecosystem), would internalizing externalities and taxing throughput have sufficed, but now that we've overshot optimal size, do we need to get a lot more radical in tackling scale?*

HD: Urgency is certainly a function of how far over the optimum we are, but I think controlling scale will in the final analysis require quantity restrictions rather than taxes to internalize costs. I advocate ecological taxes because they are effective in slowing scale growth and may be more politically possible than quotas, but I prefer quotas to set the scale with prices to do the allocation (rationing) of the set scale.

JA: *Given aquifer depletion, our dependence on fossil fuels, and the prospect of an oil peak and decline, are right prices, eco-taxes, and even tradeable permits enough? Might it become necessary to tackle throughput more directly, with, say, fuel rationing and municipal and county restrictions on water use?*

HD: It might. I prefer to fix the scale by quota and let the market allocate. However, the existing distribution

of income is so unequal that rationing by price for vital resources may be too harsh. Do we then redistribute income to the poor, or do we remove certain vital resources from the market? Politically it often seems easier to do the latter. The former would be better in my view, but one has to worry about what is politically possible.

JA: *The need to tackle globalization suggests that restructuring the economy will be necessary in addition to taxes and permits, especially in resource intensive sectors. The interstate highway system and air travel have been important factors in creating an unsustainable way of life spendthrift of fossil fuels. What should we be doing differently in transportation?*

HD: I think a truth-telling price for energy would straighten out our transportation system better than anything else and would concentrate efforts on that.

JA: For the Common Good *rightly points out that our industrialized agriculture is unsustainable. You call for ending government support for agribusiness (hurrah!), raising oil prices to disadvantage oil-based farming, taxing land degradation by farmers, and giving tax credits for land improvement. Are there other measures you'd recommend?*

HD: Not really — but I always learn a lot from Wendell Berry on this subject.

JA: *Should the government give inducements to encourage a return to the land and a renaissance of small family farms?*

HD: Yes, on an experimental scale. First eliminate subsidies to big agriculture.

JA: *Given the crucial importance of optimal scale at the macro level, does it not follow that we need to pay attention to scale at the individual firm and farm level also? As Berry observes, large-scale, monoculture farming rules out good husbandry of the land. Do we need additional tools to address scale of individual endeavors--antitrust? Ceilings on farm size?*

HD: Yes to anti-trust. Probably some limit on farm size as well.

JA: *How about advertising? In* The Perennial Philosophy, *with which you're familiar, Aldous Huxley maintained (p. 219) that craving is "the principal cause of suffering and wrong-doing and the greatest obstacle between the human soul and its divine Ground" and attacked advertising as "the organized effort to extend and intensify craving." And William Catton argued in* Overshoot *(p. 235) that practicing the "mandatory austerity" entailed by "ecological modesty" required making an end of "the widespread, deliberate badgering of people into wanting more, more, more." So a respectable case exists on both spiritual and ecological grounds for some sort of social control of advertising. What do you think?*

HD: Yes. A modest first step might be to disallow expenditure on advertising as a deductible expenditure in calculating profit for tax purposes. After all it is a bit silly to count the creation of the "need" for a product as a cost of its production.

JA: *Are there other sectors where we need structural reforms to help minimize throughput?*

HD: If quotas or taxes are applied at the input end of the throughput we get an across-the-board effect and should not have to go sector by sector.

JA: *You rightly dislike socialism and respect the market and market prices for their superior allocative performance. But is there a risk that eco-taxes plus tradeable permits plus structural reforms, negative income taxes, etc. will amount to incremental, rock-soup socialism? (That's what critics will say anyway.) Or is that a chance we'll have to take, rock-soup socialism being a lesser evil than overshoot and crash?*

HD: Critics want to privatize benefits, but are only too happy to socialize costs. I want to privatize costs as well as benefits, so I claim to be less socialistic than the critic. Also corporations are islands of central planning in a sea of market relations. As the islands merge and get big, the sea of market relations dries up and more of economic life is regulated by the within-firm principle of central planning rather than the between-firm principle of markets. Only central planners could have robbed Enron so badly.

JA: *Is there a danger that the lateness of the hour, our continued nonresponse to the problem of unsustainability, our obstinacy in growth, greed and gluttony, will be seized on as a pretext for a micro-managing socialism? Some politician could say, "It's*

too late for tradeable permits and taxing bads, this is no time for half-measures, we've got to put the screws to throughput with nationalization and all sorts of rationing and controls"?

HD: An unhappy, but possible, outcome if we can't teach politicians some economic principles.

JA: *So if we want to preserve as much of the blessings of liberty as possible, we've got to act sooner rather than later?*

HD: Yes. I think the general point here is that crisis is the enemy of civil liberties. If we want to keep civil liberties we had better avoid those crises that cannot tolerate the error, and even malevolence, that inevitably come with freedom.

JA: *So much seems to depend on our ability to see what we look at and our will to act on what we see! Right now we seem to be sorely lacking in both. Do you think that will change any time soon?*

HD: I am not optimistic, but one must be hopeful.

III. Immigration

JA: *You've endorsed immigration reform as a means to stabilize America's population. Specifically,* For the Common Good *called for ending illegal immigration and regaining control of our borders. It also called for maintaining legal immigration at roughly 600,000 a year. Have you given any more thought to immigration since?*

HD: Yes, but have come up with no better proposal. However, see "Globalization and Its Inconsistencies."

JA: *Doesn't mass immigration to the developed world make shifting to an SSE harder? We've got droves of people coming here in search of affluence, going from low per-capita throughput countries to a much higher per-capita throughput country. Not only is their presence an added burden on our ecosystem, won't they exert powerful political pressure for more affluence, more growth?*

HD: Yes, see article.

JA: *Given that, would you keep legal immigration at 600,000, or does that figure now seem too high?*

HD: For a start it seems reasonable, given politics.

IV. Daly's Own Projects, Politics

JA: *What are you working on now?*

HD: A textbook in Ecological Economics.

JA: *Unfortunately,* Steady-State Economics *is out of print. Any prospect of bringing it back? Or perhaps of new, updated editions of* Steady-State Economics *and* For the Common Good?

HD: Don't know. The latter has a 1994 edition. Years pass too quickly!

JA: *Are you active at all politically?*

HD: I publicly supported Nader in the last election, but am not what you would call an activist in campaigning.

JA: *Are either of the major parties aware of the unsustainability problem? Both seem firmly committed to growth and globalization. Is anybody in either party receptive to your message?*

HD: No. At least not yet!

JA: *How much progress has there been in politics and public policy toward a saner course of action?*

HD: Some, but disappointingly little officially. Some NGOs are doing great work.

JA: *In* For the Common Good *you locate yourself on the Left due to your commitments to social justice, restoration of community and local control, and so on. Yet much of what you say would be agreeable to conservatives of the line of Edmund Burke, the Southern Agrarians, Richard Weaver, and Russell Kirk. Burke maintained that prudence is the highest quality in politics, and moving to a steady-state economy is the prudent course if anything is. The Agrarians staunchly defended small family farms and business, and broad distribution of ownership of productive property. So did Weaver, whose* Ideas Have Consequences *(1948) deplored economic centralization, consumerism, and the dogma of economic man, and shared Joseph Schumpeter's concern about the evaporation of property. The economist Wilhelm Roepke had similar views and decried exploding population. Russell Kirk knew Weaver and Roepke and shared their positions, was aghast at the loss of community, called the automobile a "mechanical Jacobin," and declared that "There is nothing more conservative than conservation." Are*

you familiar with this strain of conservatism? If so, how has it influenced your thought?

HD: Somewhat, and becoming more familiar. Lots of smart and decent people in different intellectual traditions.

JA: *Could a coalition of a traditionalist, anti-globalist, decentralist, localist Right and a localist, populist, environmentalist Left possibly be a useful vehicle for blocking the destructive trends you deplore and exerting pressure to get us onto a saner path?*

HD: A worthy hope!

JA: *How likely is that, given the formidable obstacles to creating viable third parties in America?*

HD: Not likely, but we are operating in the realm of hope rather than optimism.

JA: *Not to get too far afield, but given the death grip which gluttony, growthmania and globalization apparently have on the "demopublicans," are reforms to open up our political process, so greener perspectives can gain a voice and some clout, a precondition for creating a steady-state economy?*

HD: Yes.

V. Economics

JA: *Our unsustainable economic system is in a compelling sense the house that economics built. What's your assessment of academic economics today?*

HD: A very large waste of time and resources, once we get beyond the most basic courses.

JA: *You've rightly lambasted economics for the "fallacy of misplaced concreteness" — abstracting from reality, treating abstractions as if they are real, neglecting the aspects of reality which models omit. Also, economics has been mathematicized into unintelligibility, often to make trivial or obvious points. Yet despite persistent criticism, abstraction and hyper-math still dominate. How can so many bright people not know that so much of what they do is dysfunctional and a horrid waste of time?*

HD: I don't know — it looks like sleepwalking, or follow the leader blindly.

JA: *Do these things persist because that's what academe's reward system — tenure, promotions, prestige, grants, etc. — encourages?*

HD: Yes, but that just pushes the question one step back. The rules of the game are as you indicate, but why continue to play a stupid game? Especially if one already has tenure?

JA: *Is there a psychological appeal as well? I've wondered if economists want to acquire the prestige of genuine sciences like physics by emulation, and that model building is driven by* libido dominandi *— a desire to replace a messy, complex reality which one can't control and manipulate with a reductive, substitute reality called a model which one can, which one can create out of thin air like a god, disregarding reality's limits (Gary Becker's notorious assumption of human asexual reproduction for example), and then manipulate at will?*

HD: Yes, some call it "physics envy."

JA: *If this dangerous abstraction from reality endures because it has powerful psychological roots, what does this imply for the prospects of adopting an economics disciplined to the facts, such as resource finitude and entropy? Working out one's ideas within the confines of such reality constraints seems to require more humility than most academics have.*

HD: Yes, humility is in shorter supply than IQ.

JA: *Eventually, or so we're told, the truth will win out in academe's "marketplace of ideas." Yet it happens with glacial slowness if at all. Mavericks who tell awkward truths (e.g., Georgescu-Roegen) get marginalized. Also, there's no penalty for being wrong. Prominent economists can assert that "the world can, in effect, get along without natural resources" (Robert Solow) or make nonsensical assumptions (Becker), yet their prestige endures. Why does the "marketplace of ideas" have so little market discipline?*

HD: Prestigious big shots have the power to ignore critics. Also they have no interest in dealing with critics, because if they win they get no credit because they are expected to win. If they lose, then they lose big — a big upset. The easiest course is to ignore criticism.

JA: *Are there any signs of improvement? Or are the*

reward system and psychological factors too powerful, reinforcing all the wrong things?

HD: Ecological economics is an improvement, and there are other dissidents within and around economics.

JA: *Repeatedly in economics we see paradigms changing only in response to external phenomena that can't be ignored. It took the Great Depression to make the Keynesian revolution possible; it took the horrors of the Soviet bloc to discredit Marxism. Will it take another external calamity — an environmental crisis, a painful collision with the limits to growth — to topple the growth/globalization consensus in favor of steady-state economics?*

HD: I think this is a likely scenario. Probably the reason for worrying about steady-state and ecological economics is not that it will avoid the crash, but that after the crash we will not have to start from scratch — there will be some good ideas on the table already.

JA: *Sounds like you regard a crash as inevitable, or overdetermined. Correct?*

HD: No, not inevitable, but certainly possible and even likely. I am not optimistic about avoiding a crash, but I am hopeful.

JA: *If the crash is baked in the cake, is the goal of steady-state economics really to salvage as much as possible of a humane, sustainable civilization after the wreck?*

HD: After the wreck the task would be to rebuild. If we have some ideas about how a steady-state economy could work, we might then have the will to try it, to do something different rather than just start another boom and bust cycle with whatever is left. This is hope versus optimism again. Optimism says we can, through human intelligence, avoid the crash. Hope says maybe, but perhaps not. Yet, even if not, we can try to rebuild something better out of the ruins.

JA: *Is there a generation of ecologically aware economists coming up? Can you name any younger economists you deem especially promising?*

HD: Yes, there are some. I will refrain from naming them.

JA: *What advice do you give to students who aspire to become economists?*

HD: Learn economics as it is taught, but keep your independent critical attitude, and be prepared for resistance.

JA: *Besides your own works, what literature would you especially recommend, both to young economists and to laymen?*

HD: The journal, *Ecological Economics*.

JA: *You've said elsewhere that C. S. Lewis's* The Abolition of Man, *Rachel Carson's* Silent Spring, *and Georgescu-Roegen's* The Entropy Law and the Economic Process *were crucial in forming your thinking. What other books were important to you?*

HD: The writings of Kenneth Boulding, and Frederick Soddy.

JA: *Who in your view are the truly great economists?*

HD: Smith, Ricardo, Malthus, Mill, Sismondi, Keynes, Irving Fisher, Boulding, Georgescu-Roegen.

JA: *What is your view of Malthus?*

HD: Enormously important and influential, not only in his own right, but through his influence on Darwin, Marx, and Keynes.

JA: *Given our predicament and your view of our likely prospect, will Malthus have the last word?*

HD: Malthus spoke of both "preventive" and "positive" checks on population. I think he has the last word, in the sense that if we don't adopt preventive checks then we will experience the positive checks (famine, war, plague). We should extend Malthus' logic to populations of things as well as people — cars, houses, refrigerators. All these things, like human bodies, are what the physicists call "dissipative structures." Their default tendency is to fall apart. Their construction and maintenance requires an entropic throughput from the environment — in other words, a load on environmental carrying capacity.

JA: *How strong is the Simon flat-earth school in economics and the environmental debate today?*

HD: Simon's latest reincarnation, Bjorn Lomborg, was recently censured by the Danish Science Council for playing fast and loose with the facts. That is encouraging. But like Simon he is filling a demand for

"optimism." Optimism is cheap hope or "hope lite" and most people need it because the spiritual demands of hope are too heavy.

JA: *Have you read Lomborg's book?*

HD: No, I have not. I did my part in reading carefully and reviewing Julian Simon's works. I am too old to waste time dealing with this junk any more. Not to imply that others should not — I hope they do.

JA: *It's telling that flat-earthers traffic in caricatures (Malthus is falsified routinely) and focus on easily-ridiculed extreme specimens such as the Earth First! eco-terrorists and the Deep Ecologists. Serious thinkers are often simply ignored — both Simon and Lomborg ignored Hubbert in their discussions of oil. Have any of them attempted to seriously, thoughtfully engage your work?*

HD: I think it is safe to say that there has been no serious review or critique of my work by standard economists, just a few fleeting skirmishes. I have, however, received considerable attention from noneconomists, including academics of various stripes, and have even received some international prizes. So I cannot complain too much. In some quarters I do get a hearing.

JA: *Some pro-free market Christians such as Doug Bandow, Father Robert Sirico, and E. Calvin Beisner attack environmentalists and are devotees of Simon. They've published books full of Simonesque rah-rah: it's getting better and better; no environmental problems, it's all scaremongering; there's no such thing as overpopulation; carrying capacity is inoperative since nobody can say just what it is; fossil-fuel based fertilizers are raising crop yields; global warming is good: air with higher CO_2 concentration accelerates plant growth! One (Beisner,* Where Garden Meets Wilderness, *pp. 25-26) even argued that Christians are mistaken in seeing the universe as a closed system and the Second Law as always operating. They never even try to deal with your works. Are you aware of this school of thought? How would you answer them?*

HD: I have heard of them, but they are both scientifically and theologically below my cut-off point. Too much good stuff to read that I can't justify spending time on these folks. I am sure some ignore me by the same logic. So be it. But only one of us is wrong. I trust others will deal with them.

JA: *What do you suppose is the attraction of Simon, who was not religious, for such Christians? Traditionally, Christianity taught that this is a fallen world, and that our true reward and goal is union with God in Heaven. When did this secular Panglossian minstrel of economism become pro-market Christian scribblers' favorite economist?*

HD: Unfortunately many brothers and sisters in Christ are also ignoramuses and proud of it. I hope others have the patience and long suffering charity to engage them. As indicated previously my patience is thin right now. That is a spiritual defect, but I need to recognize it!

VI. Religion and our Prospect

JA: *One theme that emerges in your work is that our crisis is ultimately religious: man is in a sinful relationship with God, Creation, his neighbor, even himself — and that the ultimate solution is spiritual, too: manifesting love of God by giving Creation and community their due. There's a spiritual hunger now. Is the climate of opinion getting better regarding community and stewardship?*

HD: I think so.

JA: For the Common Good *mentions the Amish as a counterexample to corporate farming and economic man: people who use low-impact farm technology, practice outstanding soil husbandry, have strong communities, and actually turn in a better economic performance than many industrial farms. But they are also a people whose religion dominates and prescribes their way of life, and generates a complete system of social control, even to which machines and modes of transport they are allowed to use. Most Americans seem to want an undemanding, nonjudgmental "Christianity lite" that's miles away from the Amish faith. It certainly doesn't prescribe much in the way of technology and standard of living, and its concern for community doesn't seem to go beyond endorsement of the welfare state, and sporadic community service. As a Christian, I'm all for a more religious way of life, but is "Christianity lite" really up to the job of helping orient us to a saner, sustainable way of life?*

HD: No, "Christianity lite" is no substitute for

"economics lite."

JA: *More to the point, could it keep us on a more ecologically modest path once the material forfeits start to bite and people get nostalgic for the good old days of affluence and are tempted to backslide?*

HD: No, the need is for grace and divine help — the source of hope.

JA: *This spiritual crisis at the bottom of our predicament — do you see this as a new phenomenon in history, a child of post-Enlightenment secularization, or a more virulent manifestation of an intrinsic flaw in our nature that's been there all along? From the Garden of Eden on, history is full of examples of people who could not rest content within the limits of creaturehood, who couldn't leave well enough alone, be content with what they had, or stop when they'd had enough. There's a tendency in man to rebel, to try to be his own god. Irving Babbitt defined man as "the infinite animal" and Weaver argued that man is "impious." Roger Shattuck wrote a wonderful book titled* Forbidden Knowledge. *He argued that there's a fatal curiosity for the forbidden in human nature that leads us to go where we shouldn't — into Faustian science such as genetic engineering, for example. I think Babbitt, Weaver and Shattuck were right and that modernity's decisive contribution has been to make impiety of all kinds intellectually respectable and convince man that impiety is the royal road to happiness. What do you make of it all?*

HD: The above is convincing, even if the Enlightenment was an acceleration of impiety and quest for forbidden knowledge. I find C. S. Lewis helpful on this. He gives science its due without following it into impiety.

JA: *Also, there's an obstinacy in sin. Humanity has a bad record of disregarding voices of wisdom who tell us what we don't want to hear, and it takes very hard knocks on the head to get us to shape up. The attentive, repentant Ninevites are the exception, not the rule. There seems to be a lot of blindness about how we live and what we're doing to our ecosystem. Is there enough wisdom, enough of a desire to live, to pull us back from the brink? How do you see it all coming out?*

HD: See below. (Article on page 198)

JA: *If there's self-will, restlessness and impiety at the core of our souls, could a steady-state economy hold up over the long run? Do we have the self-control and wisdom to live within limits (in Garrett Hardin's phrase), or would we eventually slip the leash of the SSE and get gluttony and impiety going again?*

HD: See below.

JA: *Or is there a silver lining in our predicament? Will we finally shape up because we have no other choice — because our choice is piety or oblivion, and we'll have to live within limits if we're going to live at all? So ultimately, in the extreme long run, is the human prospect hopeful?*

HD: See below.

JA: *You've been wrestling with all this for thirty years. You must have had some bleak moments pondering our situation. How do you keep up your morale?*

HD: Closer to forty years now. As you will have inferred from previous comments I think morale is a function of hope, not optimism. Optimism is cheap, usually ill-founded, and often disappointed. It leads to despair and burn-out. But hope is not easy — it requires faith and spiritual grounding. Since modernity does not value faith, it generates little hope, and all the more tries to find a substitute in optimism.

JA: *Could you elaborate a bit on the distinction between optimism and hope?*

HD: It is basically a religious distinction. If one believes that we are merely the product of random mutation and natural selection (the selective criterion being fitness to a randomly changing environment, where "fitness" means reproductive success) — that reality, including one's self, is not creation but accident; that what we used to call Creation is really "Randomdom" — then one may attain optimism in the gambler's sense, but not hope. There is in Randomdom no providence or power in which to hope. Hope arises from religious experience, for example that of the psalmist:

> *For thou didst form me in my inward parts, thou didst knit me together in my mother's womb, I praise thee for thou art fearful and wonderful. Wonderful are thy works! Thou knowest me right well; my frame was not hidden from thee, when I was being made in secret, intricately wrought in*

the depths of the earth. (Psalm 137:13-15)

The damage done by Darwinism was not to show us that we are related to other species — that is all to the good. The damage comes from the odd doctrine that random, purposeless processes "explain" everything about our origin and our being. The psalmist's cry says, "I know that I am not an accident, I hope in God who made both me and you and all Creation." We pay too much attention to the Darwinists, not enough to the psalmists.

JA: *We've covered a lot of ground here. It's been a great experience. Thank you for your time.*

HD: A pleasure. Thanks for your penetrating questions. ■