3. Toward a sustainable and desirable future: a 35-year collaboration with Herman Daly

Robert Costanza

3.1 ENERGY AND THE ECONOMY

My connection with Herman Daly began several years before I met him. As a PhD student at the University of Florida studying under H.T. Odum, I was introduced to Herman's 1968 article 'On economics as a life science' (Daly, 1968) and his path-breaking books on steady state economics (Daly, 1973, 1977). Daly was held in high esteem by Odum as the only economist he knew who understood the basic interconnections between humans and the ecological systems that supported them and which they were embedded within. It seemed obvious that the human economy, as a subsystem of the larger global ecosystem, could not continue to grow indefinitely. Obvious to everyone, that is, except mainstream economists.

Teaching thermodynamics to economists was also the goal of Nicolas Georgescu-Roegen, whose book on the entropy law and the economic process (Georgescu-Roegen, 1971) was also on my reading list. Georgescu-Roegen was Herman's mentor during his PhD at Vanderbilt and Herman is still one of the few economists that understand thermodynamics and its implications for economics. That economists could (and continue to) ignore the laws of thermodynamics has always been a frustrating mystery to both of us.

Part of my PhD research at Florida had to do with quantifying and modeling energy flows through ecological and economic systems. I used input-output (I-O) analysis to do this, based on work being done at the time by Bruce Hannon and Robert Herendeen at the University of Illinois (Hannon, 1973, 1976, 1979). I modified the US I-O model being used at Illinois to include the energy costs of labor and government and inputs of solar energy and found that such an inclusion greatly improved the correlation between total (direct plus indirect) or 'embodied' energy costs and dollar value of output by sector. I presented these results at a job interview

at Louisiana State University (LSU) for a position in the Coastal Ecology Laboratory. Herman, who was in the Economics Department at LSU at the time, attended the seminar. Herman liked this approach, I think partly because it was similar to what he had suggested in his 1968 paper mentioned above – to use an integrated I-O model to link ecological and economic systems. I got the job, no doubt partly due to Herman's favorable impression. Herman was also organizing a session at the upcoming American Association for the Advancement of Science (AAAS) meeting on 'Energy, Economics and the Environment' and invited me to present my energy I-O results there.

The AAAS meeting was in San Francisco that year. The session was well attended and the discussion lively. Alvaro Umaña, later to become the first Environment Minister in Costa Rica, was the co-chair of the session. He and Herman also co-edited a book including all the session papers (Daly and Umaña, 1981). I ended up with two chapters in the book (Costanza, 1981a, 1981b), one on the basic results of my I-O modeling and one in response to Herman's problems with interpreting these results as supporting an 'energy theory of value.' Herman and I have had a lively and ongoing friendly debate on this topic over the years. In the end, I don't think we are that far apart, but more on that in a bit. The thing I remember most about it was Herman's way of conducting the exchange. In this, and in most of his scholarly discussions, Herman has always assumed good will on everyone's part – that we should be investigating questions from all sides and searching for mutual enlightenment, not defending intellectual turf or jockeying for personal status or position. He has not always been right in this assumption about other people, but I learned much from his insistence on (and personal adherence to) civil discourse, even with those who do not themselves play by the same rules. There is no better exemplar of how scientific discourse *should* be engaged than Herman Daly.

Martha Gilliland, a former colleague at the University of Florida, had written an influential article on energy analysis that had been recently published in *Science* (Gilliland, 1975). Martha thought enough of my I-O results that she suggested sending a revised version of my paper to *Science*. I did that and got an immediate rejection without review. However, I thought this was a mistake and Herman agreed to write to the *Science* editors arguing that he thought the paper deserved to at least be reviewed. This, along with my own further arguments about the relevance of the paper, changed their minds and the article was sent out for review. It was reviewed favorably and ultimately accepted (Costanza, 1980).

This article used an 87-sector I-O model of the US economy for 1963, 1967 and 1973, modified to include households and government as endogenous sectors (so as to include labor and government energy costs) and

direct inputs of solar energy. This allowed me to investigate the relationship between total direct and indirect energy consumption (embodied energy) and dollar value of output by sector. I found that dollar value of sector output was highly correlated ($R^2 = 0.85 - 0.98$) with embodied energy when this was calculated including the energy costs of labor and government, and solar inputs. There was almost no correlation when just direct energy consumption or embodied energy calculated excluding labor and government energy costs and solar inputs were used. Thus, after making some necessary adjustments to estimates of embodied energy consumption in order to better assess total energy costs, I showed that the empirical link between embodied energy cost and dollar value of output by sector were rather strong.

Ecologists (including H.T. Odum) and physical scientists (including Frederick Soddy) had proposed an energy theory of value to either complement or replace the standard neoclassical theory of subjective utility-based value. It is based on thermodynamic principles in which solar energy is recognized to be the only 'primary' or net input to the global ecosystem. This theory of value represents, in a sense, a return to the classical ideas of David Ricardo and more recently Sraffa (1960), but with some important distinctions. The classical economists recognized that if they could identify a 'primary' input to the production process then they could explain exchange values based on production relationships. The problem was that neither labor nor any other single commodity was really primary since they all require each other for their production. The traditional primary factors (land, labor and capital) are really intermediate factors of production. The classical economists were writing before the science of thermodynamics had been fully developed. Energy – or, more correctly, free or available energy defined as the ability to do work – is not a typical commodity and has special characteristics that satisfy the criteria for a 'primary input':

1. Energy is ubiquitous.
2. It is a property of all the commodities produced in economic and ecological systems.
3. It is an essential input to all production processes – without energy, nothing happens.
4. Although other commodities can provide alternative sources for the energy required to drive systems, the essential property of energy (the ability to do work) cannot be substituted.
5. At the global scale, the earth is essentially a closed system in thermodynamic terms (only energy crosses the boundary), so at this scale it is the only primary input.

6. The classical three sources of exchange value (wages, profits and rent) are intermediate inputs in this global scheme and interconvertable using the primary energy input.

While my results reported in the *Science* paper seemed to support an energy theory of value, neither the natural scientists nor the economists liked that conclusion. Odum, for example, thought that money left out so many things that the correlation I showed couldn't possibly exist – that money was an inherently flawed measure and that embodied energy represented 'true' value. Economists thought that since energy (just another commodity in their view) was only one input it couldn't possibly correlate with dollars, and if it did it had to be an artifact of the calculation scheme (cf. Huettner, 1982).[1] I have a more nuanced explanation (Costanza, 2004). Energy (and earlier labor) theories of value are inherently based on relative production costs. Thus, it is more accurate to speak of energy cost or labor cost and not energy value or labor value. However, in well-behaved economic systems it is well known that cost and price will, in general but not in all cases, come to equilibrium. This is the essence of the basic ideas of supply and demand. On the other hand, economic I-O tables and gross domestic product (GDP) are also themselves 'cost-based' systems of accounts, which leave out much that is of value to supporting human well-being and quality of life. They also include many things that are of negative value (like the costs of natural capital depletion, crime and family breakdown). The fact that embodied energy cost and dollar cost are correlated implies that embodied energy is a good, comprehensive indicator of total (or true) costs, and it's use can be extended to pick up costs that are external to markets and not included in economic I-O tables or GDP. But *neither* GDP nor embodied energy are comprehensive measures of total value, in terms of contributions to sustainable human well-being (more on this later). On this interpretation of my results I think Herman and I can agree.

3.2 THE *ECOLOGICAL ECONOMICS* JOURNAL AND THE INTERNATIONAL SOCIETY FOR ECOLOGICAL ECONOMICS (ISEE)

Herman and I were both keenly interested in bridging the gap between ecology and economics and in creating a more transdisciplinary 'ecological economics' to understand and manage our world. While interest in creating an ecological economics dates back at least to the 1960s in the work of Kenneth Boulding (1966) and Herman (Daly, 1968) the first formal efforts to bring ecologists and economists together occurred in the 1980s.

The first of these was in 1982, when Ann-Mari Jansson organized a symposium in Saltsjöbaden, Sweden, funded by the Wallenberg foundation on 'Integrating Ecology and Economics' (Jansson, 1984). The 48 participants at this meeting included many of those who would later be involved in establishing the *Ecological Economics* journal and in forming ISEE, including myself, Herman, Charles Hall, Bruce Hannon, Ann-Mari Jansson, H.T. Odum and David Pimentel; 17 of the participants from this meeting ultimately served on the editorial board of *Ecological Economics*.

While this first meeting was certainly stimulating for all involved, it also led to the perception that the gap between ecologists and economists had become quite large indeed. Part of the reason for this perception had to do with the specific ecologists and economists who were invited. The ecologists were mainly ecosystem ecologists while the economists (with the notable exception of Herman) were mainly mainstream environmental economists (that is, Ralph d'Arge, Partha Dasgupta, Karl-Goran Maler, Rick Freeman and Allen Kneese).

Partly as a response to this meeting, Herman and I (we were both still at LSU at the time) began to pursue the idea of starting a new journal. As a first step, we decided to edit a special issue of the journal *Ecological Modelling* on the topic of ecological economics (Costanza and Daly, 1987a), to test the water and see if there would be enough interest for a full journal. This special issue included invited contributions from several scholars who would later become central to the journal and to ISEE, including Cutler Cleveland, Robert Goodland, Richard Norgaard, David Pearce and Rufie Hueting. The special issue included an introductory article (Costanza and Daly, 1987b) that laid out both the need for and the basic agenda of ecological economics. The response to this special issue was sufficiently enthusiastic to warrant going forward with the creation of a new journal. The first book with 'Ecological Economics' in the title (Martinez-Alier, 1987) also appeared in this year, adding further momentum to the movement to start a journal.

After planning meetings in Lidingo, Sweden and Warsaw, Poland, involving Ann-Mari Jansson, Joan Martinez-Alier and Thomas Zylicz, a second workshop on 'Integrating Ecology and Economics' was held in Barcelona, Spain, on 26–29 September 1987, sponsored by the European Centre for Research and Documentation in Social Sciences. This meeting was organized by Joan Martinez-Alier, and included several individuals who had been at the earlier meeting in Sweden or who had contributed to the special issue of *Ecological Modelling*, along with several new people who would also figure prominently in ecological economics. In addition to Joan Martinez-Alier, other prominent attendees at the Barcelona

meeting who had not been involved in the earlier activities included Charles Perrings, Martin O'Connor, Sylvio Funtowicz, John Proops, Jerry Ravetz, René Passet, Matthias Ruth and Enzo Tiezzi.

A consensus emerged from this meeting that the idea of creating a new journal was a good one and should be further pursued, with several of the papers presented at the meeting serving as initial submissions.

During 1987 and early 1988, Herman and I negotiated with several potential publishers for the journal, finally deciding on Elsevier Science. I took on the role of Chief Editor, with Herman, Ann-Mari Jansson and David Pearce as the initial Associate Editors and a broad ranging editorial board. The first issue was published in February 1989. The journal has been a huge success, progressing from an initial four issues per year to twelve issues per year by 1992, with an impact factor now ranking it in the top quarter of all academic journals. The journal now publishes a large number of articles across a broad range of transdisciplinary topics. In 2007 it published 277 articles, ranking it number 1 among 191 economics journals in this category and number 12 in terms of total citations. Among 52 Environmental Studies journals it ranked 2nd in total articles and 1st in total citations. Among 116 Ecology journals it ranked 10th in total articles and 33rd in total cites, reflecting the generally higher publication and citation rates in the natural versus the social sciences.

During the initial negotiations with Elsevier, it became clear that the only way to get reasonably priced subscriptions to the journal for individuals would be to form a society. Therefore, during 1988 the International Society for Ecological Economics (ISEE) was formed and incorporated in Louisiana, with myself as the first president. Shortly thereafter, both Herman and I left LSU. I moved to the University of Maryland and established the editorial office of the journal and the secretariat for ISEE there. Herman moved to the World Bank in Washington, DC.

A third workshop was held in La Valletta, Malta, in April 1988, again sponsored by the European Centre for Research and Documentation in Social Sciences on 'Environmental Training of Economists' that also helped to move the ecological economics agenda forward and provide initial submissions for the journal.

Once the journal was underway and ISEE was created, it was clear that we needed to have meetings of the society. I organized the first meeting of ISEE (with funding support from the Pew Foundation) in May 1990 in Washington, DC. Herman, along with Robert Goodland (one of the few ecologists working at the World Bank) convinced the Bank to provide in-kind support by donating meeting space. Holding the meeting at the World Bank raised its profile significantly. About 200 attendees were expected at the meeting, but almost 400 showed up. A report on the conference was

carried in *Science* and the World Bank published a working paper that included all the abstracts from the talks at the conference along with a summary of the meeting (Costanza et al., 1990).

Since that first meeting in Washington, DC, ISEE has held biannual meetings in Stockholm, Sweden (1992); San Jose, Costa Rica (1994); Boston, USA (1996); Santiago, Chile (1998); Canberra, Australia (2000); Sousse, Tunisia (2002); Montreal, Canada (2004); New Delhi, India (2006); Nairobi, Kenya (2008); Oldenburg, Germany (2010) and Rio de Janeiro, Brazil (2012). The maximum attendance at these meetings has been over 1500.

3.3 THE SCIENCE AND MANAGEMENT OF SUSTAINABILITY

The Washington conference was followed by a three-day workshop at the Aspen Institute's facilities on Maryland's eastern shore, attended by 38 invited participants, most of whom were plenary speakers at the Washington conference. The result of this workshop was an edited volume representing the state and goals of the emerging field of ecological economics, the research agenda and policy recommendations (Costanza, 1991). Herman and I, along with Joy Bartholomew who facilitated the Aspen workshop, wrote the introductory synthesis chapter for the book (Costanza et al., 1991), laying out the consensus of the participants on the agenda for Ecological Economics. It is interesting to look back, almost 25 years later, at how this agenda has played out.

As far as I can tell, the first published use of the term 'natural capital' was in the 1991 book. One of the major section heads in the synthesis chapter was 'Valuation of Ecosystem Services and Natural Capital' and this topic has been a major one in Ecological Economics ever since. In 1992 Herman and I published a paper in *Conservation Biology*, defining the term 'natural capital' as 'a stock of natural ecosystems that yields a flow of ecosystem services into the future' (Costanza and Daly, 1992, p. 38) and further elaborating the concept. I also published a paper in a book that Herman, Robert Goodland and Salah El Serafy edited in 1992 elaborating on these themes (Costanza, 1992). At a recent check of the ISI web of science database (August 2013), since then there have been 527 journal articles published with 'natural capital' and 4177 with 'ecosystem services' in the topic field (this does not include books and book chapters).

The major research questions we identified in 1991 in the section on valuation of ecosystem services and natural capital were:

- How do we measure the value of ecosystem services and natural capital? Under what conditions can values be translated to single scales, for example, money, utility or energy?
- Do measures based on subjective preferences (contingent valuation, contingent referenda, willingness to pay) have any relationship to values based on ecosystem functioning and energy flows?
- What is the appropriate discount rate to apply to ecosystem services?
- What (or where) are the thresholds of irreversible degradation for natural resources?

These are certainly still the relevant research questions in this area today, and there has been an explosion of research on these questions. The questions listed in the other sections of the paper (titled: Sustainability: Maintaining Our Life-support System, Ecological Economic System Accounting, Ecological Economic Modeling at Local, Regional, and Global Scales, and Innovative Instruments for Environmental Management) also still ring true today, as do the policy and education recommendations that came out of the workshop.

The title of the 1991 book was *Ecological Economics: The Science and Management of Sustainability*. The term 'sustainability science' has taken off recently, with several new journals and degree programs structured around this theme.[2] Ecological economics has from the beginning tried to link this more comprehensive, whole systems science with how we manage our world to create a better, more sustainable and more livable one (Costanza, 2009).

3.4 POLICIES TO ACHIEVE A SUSTAINABLE AND DESIRABLE FUTURE

In 1994 Herman left the World Bank after six years of battling to have environmental concerns taken more seriously there. Through the diligent efforts of Peter Brown, my colleague at the University of Maryland in College Park at the time, Herman was recruited to be a professor there. I also recruited Herman to be the Associate Director of the Institute for Ecological Economics that I had founded at Maryland in 1991. At Maryland, we worked on several educational projects, including ecological economics courses, seminars and a Graduate Certificate in Ecological Economics that was finally approved in 1998.

Herman's farewell speech on leaving the Bank is now a classic (Daly, 1994). In it, he articulated four policy recommendations that have become central to ecological economics.

1. Stop counting the consumption of natural capital as income.
2. Tax labor and income less and tax resource throughput more.
3. Maximize the productivity of natural capital in the short run, and invest in increasing its supply in the long run.
4. Move away from the ideology of global economic integration by 'free' trade.

Let's take each of these in turn and review their current status.

1. The idea of moving beyond GDP as a measure of economic well-being (something for which it was never designed) to a more comprehensive measure that can account for the depletion of natural capital is something that Herman had long advocated. In 1989 he and John Cobb (Daly and Cobb, 1989) created the 'Index of Sustainable Economic Welfare' (ISEW) that did just that. The ISEW showed that in terms of welfare (rather than mere marketed income) the USA had been in a period of 'uneconomic growth' since 1975 – GDP was growing but it has become 'uneconomic' because well-being as measured by ISEW was not improving. The idea that economic growth – touted by the economic mainstream and especially the World Bank as the solution to *all* problems – had costs that could outweigh the benefits was heretical at the time. It is an idea that is finally gaining broad support, however, and many institutions are now questioning the dominance of GDP growth as a primary policy goal and searching for alternatives (Costanza et al., 2009). It is also clear from new research is psychology, neuroscience, sociology and a range of other disciplines that quality of life or well-being is a much more complex function than merely the more consumption of marketed goods and services the better, as reliance on GDP as a policy goal would indicate. In a recent transdisciplinary synthesis, we defined Quality of Life (QOL) as the interaction of human needs and the subjective perception of their fulfillment, mediated by the opportunities available to meet those needs presented by the built, human, social and natural capital assets of the system (Costanza et al., 2008). New aggregate measures of quality of life are beginning to take this complex relationship into account to turn economics from 'the dismal science' into the 'science of happiness' (Layard, 2005).
2. The idea of ecological tax reform has also been gaining ground in the policy arena. The idea of taxing carbon emissions in some way[3] is now firmly on the political agenda, even in the USA. In 1996, Herman and I organized a workshop on ecological tax reform and produced a short consensus statement published in *BioScience* (Bernow et al., 1998). Our proposal consisted of the following elements:

- Levy taxes on air pollution (for example, particulates, carbon dioxide, ozone precursors and other noxious substances that are not effectively controlled).
- Rebate this revenue to the taxpayers in a way that would maintain a progressive tax structure.
- Phase the tax shift in gradually and predictably over a number of years to help ensure an orderly and low cost transition.
- Use a small portion of the tax revenues to provide transitional assistance for communities, workers and pollution-intensive industries that are strongly affected by the tax and to support the development of clean technologies.
- Address the implications for international competitiveness of those industries that are most affected by the tax.

Many of these elements are appearing in the carbon emission control ideas being proposed at both the national and international scale (cf. Barnes et al., 2008).

3. The idea of investing in natural capital, and valuing natural capital as a major contributor to human well-being is also gaining significant traction. A significant stimulus to this recognition was a paper (motivated in part by Herman's encouragement) that we published in *Nature* in 1997 (Costanza et al., 1997a).[4] We estimated (admittedly crudely and conservatively) the total value of global ecosystem services at $33 trillion per year, significantly larger than global GDP at the time. Herman reviewed this paper informally before we submitted it and gave us positive feedback and encouragement.

   The paper stimulated a broad range of reactions and discussion (Costanza et al., 1998), but it has stood the test of time and is now the second most highly cited paper in the environment area since its publication. In a later paper (Balmford et al., 2002) we estimated the benefit:cost ratio of investing in conserving remaining global natural capital at 100:1 – a great investment from society's point of view, especially considering that the Corps of Engineers funds dam building projects that have benefit:cost ratios of barely better than 1:1.
4. The mainstream idea that 'free' trade makes all parties better off, even though it ignores environmental and social externalities and other problems, has been challenged by Herman for years. As Herman has often pointed out, achieving the theoretical benefits from international trade depends on several assumptions about the nature of international markets and other institutions that simply do not hold. These assumptions include that there be: (1) no externalities; (2) stable prices; (3) equally dynamic comparative advantages; (4) no coercion in

> production or exchange; and (5) no international mobility of capital. The current system lies very far from matching *any* of these conditions, but especially numbers 1 and 5. To actually make trade mutually beneficial and sustainable, the burden of proof should be shifted to the trading parties to demonstrate that adequate steps have been taken to assure that the conditions for sustainable trade are actually met as a *precondition* for trade (Costanza et al., 1995).

Herman and I, along with several other colleagues, elaborated these and many other ideas central to Ecological Economics in a series of books and papers in the late 1990s and 2000s (Costanza et al., 1997b; Costanza et al., 2000; Prugh et al., 1995; Prugh et al., 2000). In all of these joint projects, Herman has always been the perfect collaborator – using dialog and discussion to build consensus where possible, while not straying from his fundamental principles. These ideas continue to evolve, but it feels like the time has finally come for them to begin to be more broadly understood, accepted and acted upon to create the more sustainable and desirable future we all want.

3.5 JUST REWARDS: THE HEINEKEN PRIZE

Herman has received several awards and prizes over the years, but the one I remember best is the Dr A.H. Heineken Prize for Environmental Sciences, awarded to Herman by the Dutch Academy of Sciences in 1996 (see Costanza, 1997 for a longer description). I remember this one not only because I'm a lover of Heineken beer, but because I was asked to write a letter of support for Herman's nomination. This gave me the opportunity to summarize Herman's contributions as succinctly as possible and make the case for him receiving the prize. I think enough time has passed that I can reproduce the support letter here as a fitting ending and summary of this chapter.

February 11, 1996

Dr. Heineken Prize/Miliwukunde
attn: Prof. P. Nijkamp, Honorary Secretary
KNAW

I can think of no one in the world more appropriate for and deserving of the Dr. Heineken Prize for Environmental Sciences than Prof. Herman Daly. Daly has been steadily swimming against the stream for the last 20 years and the real value, magnitude, and brilliance of his

contributions have only recently begun to be widely realized and appreciated. Daly's 'steady state economics' can honestly be pointed to as the intellectual progenitor of the sustainability movement, which has grown to be so important in recent years. Awarding him the Heineken prize at this point in his career would both acknowledge and validate Herman's enormous past contributions, and give him the freedom and recognition necessary to pursue the even greater challenges of actually creating a sustainable society.

Daly was among the first economists to link the study of human systems and ecosystems, and to deal with them as an integrated whole, subject to a common set of physical and biological constraints. His 1968 article 'On economics as a life science' attempted to change the entire world view of economics. The importance of this shift in 'pre-analytic vision' cannot be overemphasized. It implies a fundamental change in the perception of the problems of resource allocation and how they should be addressed. Daly further elaborated on this theme with his work on 'steady state economics' which elaborated the implications of acknowledging that the Earth is materially finite and non-growing, and that the economy is a subset of this finite global system. Thus the economy cannot grow indefinitely (at least in a material sense) and ultimately some sort of sustainable steady state is desired. This steady state is not necessarily absolutely stable and unchanging. Like in ecosystems, things in a steady state economy are changing constantly in both periodic and aperiodic ways. The key point is that these changes are bounded and there is no long-term trend in the system.

Daly's work in steady state economics can be seen as one of the direct antecedents of ecological economics, an area of rapidly growing interest and importance. His more recent writings on natural capital and the meaning and measurement of economic welfare are particularly important. His 'Index of Sustainable Economic Welfare' has caused a major shift in thinking about wealth measurement. But to list all of Daly's achievements would be impossible in this short letter. Suffice it to say that Daly is an intellectual giant whose enormous contributions have not yet been adequately rewarded. What more fitting recipient of the Dr. Heineken Prize for Environmental Sciences.

Sincerely,

Robert Costanza

NOTES

1. Robert Herendeen and I investigated this latter claim and found it not to be true (Costanza and Herendeen, 1984).
2. For example, the journal *Sustainability Science* was launched in June 2006. Another scientific journal SAPIENS (*Surveys and Perspectives Integrating Environment and Society*) was launched in February 2007, and *Proceedings of the National Academy of Sciences* (PNAS) has launched a new section of their journal dedicated to sustainability science. A Google search for 'sustainability science' yielded over 700 000 hits on 11 May 2009. For comparison, a Google search for 'ecological economics' on the same day yielded over 1.5 million hits.
3. Cap and auction systems, where the permits are sold upstream (at the point where greenhouse gas emitting products enter the economy) is similar in effect to a tax, the major difference being that a cap sets the quantity and allows the price to vary, while a tax sets the price and allows the quantity to vary.
4. An interesting backstory is that we first sent the paper to *Science*. The editor there had the paper reviewed and received one positive and one negative review. He therefore declined to publish the paper, but recognized its importance and promised that when we did publish it, he would run a news story in *Science* about it, which he did.

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