

Justice and Intergenerational Debt

by Prof. Clark Wolf

Abstract: Many of our obligations to future generations can be understood in terms of the intergenerational benefits and debts we pass on. This article proposes that we can think of environmental debts in the same way as financial debts, and that this will help us to understand our most important obligations of intergenerational justice.

No one, wrote my grandfather in the quotation below, can “make a world for his grandchildren.” As he argued, our present ideas about what would be good for our distant descendants will be cramped by the limitations of our own time and our own understanding. Later generations will have different tastes and different ideas, and we may hope that they will possess knowledge of things we cannot imagine. So the attempt to “create the world” in which they will live, if we do it badly, is more likely to impose inappropriate constraints on their lives than to liberate them.

Anyone familiar with the crippled appearance of any utopia fifty years after the death of its writer understands that no one can make a world for his grandchildren.

/ John B. Wolf 1952: 1. /

Still, our present choices can expand the range of opportunities that will be available to our descendants. By working to secure peace, by extending the scope of democracy and the protection of rights, we make it more likely that their lives will be secure. By expanding knowledge and promoting appropriate technologies, we may provide them with opportunities we cannot even imagine. Our present choices can constrain opportunities as well, and there are increasing grounds for concern that our way of life might create serious hardships in the future. I would like to suggest that we should understand important parts of this problem as a matter of intergenerational debt and saving, and that we can understand many of our most important obligations to the future using a simple economic model. While only some of the debts we incur are financial, the simple model of saving and expense provides an essential insight into the structure of our obligation to the future.

National Debt as a Problem of Intergenerational Justice

I must begin with the very practical problem of intergenerational financial debt. At the time of my writing, the present U.S. national debt is \$9,205,850,342,267.07 USD. This bewildering number needs to be put in perspective: This is about 67% of the Gross Domestic Product of the U.S. Given an estimated U.S. population of 304,223,926, this amounts to an average individual debt of \$30,260.11 USD. But the US debt is increasing at the rate of about 1.43 billion dollars every day, so the per capita debt burden changes regularly. President Bush has proposed a budget for 2008 of about \$3 trillion USD, which means that we would add about 240 billion dollars to the deficit this year even if no additional spending were to take place. Of course, the U.S. typically exceeds its planned budget by a significant amount, so this value underestimates the likely rate at which the U.S. debt will actually increase during 2008.

What is the United States purchasing with this massive pile of borrowed cash? Public frustration is often focused on the portion spent on the wars in Iraq and Afghanistan and other costs associated with President Bush’s “War on Terror”. The expenses associated with these wars do not appear in a single item on any official spreadsheet—at least, not on any I could find. The costs have been carefully sequestered under different headings in the budget, making it difficult to say exactly how much we are spending on the present military adventure. But while we should be concerned to ask what is being purchased with this loan, it is at least as important to ask who will eventually pay it off. Debts come due, and an ever increasing debt load cannot be maintained forever. Older Americans may take comfort in the thought that this debt probably will not be paid in our lifetimes. But just as individual debts eventually make it more difficult for people to pay for the things

they want and need, national debts can constrain a nation’s ability to accomplish important social goals.

Jefferson and Madison on Intergenerational Debts

Thomas Jefferson was deeply concerned about the possibility that the choices of one generation might come to bind or constrain later generations. In one context his concern was associated with his interest in the U.S. Constitution: he argued that the document should be re-written every nineteen years so that it would represent the continuing and ongoing consent of each new generation as it arrives. Nineteen years was the appropriate interval, urged Jefferson, because given the birth and death rates, it was the period after which a new majority would be in place. But Jefferson was also concerned about intergenerational debt: the possibility that a profligate generation might mortgage the future of the nation by borrowing vast sums of money, spending it irresponsibly, and passing on to later generations the burden of paying it off. He urged that public debts must be retired by the generation that incurred them, and that it would impose “solid and salutary” discipline on the government if this could be made a requirement of law. It is especially interesting to note that he thought that this financial discipline would discourage ruinous conflicts and wars, since the cost of war would then be carried by those who would take the nation to war. It is much easier to urge war when the cost of conflict can be transferred to a later administration, and ultimately to the younger generation.

Jefferson’s statement that “The earth belongs in usufruct to the generations of the living”¹ is often quoted as implying that we are stewards who hold resources in trust for later generations. Surely this is part of Jefferson’s meaning: usufructuary rights are stewardship rights or tenant rights. But Jefferson was also concerned that as stewards, we must avoid passing the costs of our present activities on to later generations. If later generations inherit the cost of debts but none of the benefits these debts were incurred to purchase, then they have been treated unjust-

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ly by the previous generation. So, at any rate, was Jefferson's argument.

James Madison's response to Jefferson was thoughtful and measured. He urged that it would introduce too much instability to require that the constitution be rewritten at regular intervals, and that the process would "engender pernicious factions that might not otherwise come into existence, and agitate the public mind more frequently and more violently than might be expedient."²² While he acknowledged Jefferson's principle that "the earth belongs in usufruct to the generations of the living," he allowed that the present generation might be responsible for *improvements* that would render later generations better off than their predecessors. These improvements, he urged, constitute the basis of a debt that the living owe to the dead, which can best be paid off by "obedience to the will of the Authors of the improvements."²³ With respect to the problem of monetary debt, Madison noted that some debts might be incurred "principally for the benefit of posterity." In such cases, he saw no reason why the debt might not be passed on with the benefits, even if they could not be retired before the new generation arrived. Madison praised the spirit of Jefferson's argument, and urged that it should always be "kept in view as a salutary restraint on living generations from *unjust and unnecessary* burdens on their successors."²⁴ While he argued against legislative provision prohibiting the acquisition of intergenerational debt, Madison clearly shared Jefferson's concern that it is unjust for present generations to pass on a debt burden to their successors *except* where those burdens are fully compensated.

Intergenerational Debt, Sustainability, and 'Hicksian Income'

Characteristically, debts accrue interest over time. But when we borrow and spend, we don't simply incur the burden of interest, our society also foregoes the benefits it might have gained in the future from present investments. Just as borrowing shifts consumption from the future to the present, investments can shift it from the present to the future. Sir John Hicks described this dynamic long ago, and the resultant view of saving and consumption has come to be known as 'Hicksian income':

"The Purpose of income calculations in practical affairs is to give people an indication of the amount they can consume without impoverishing themselves. Following out this idea, it would seem that we ought to define a man's income as the maximum

value which he can consume during a week, and still be expected to be as well off at the end of the week as he was at the beginning. Thus when a person saves, he plans to be better off in the future, when he lives beyond his income, he plans to be worse off. Remembering that the practical purpose of income is to serve as a guide for prudent conduct, I think it is fairly clear that this is what the central meaning must be.”²⁵

A person’s Hicksian income might be considered the amount she or he can sustainably consume, or alternatively, the amount one can consume without accruing either debt or credit. When we consume at our Hicksian income rate, we maintain the same underlying stock of capital so we are neither poorer nor richer over time. Of course, people have varied needs at different points in life, so even the most prudent people do not usually consume at the Hicksian income rate. For example, one might decide to consume less when younger, in anticipation of greater needs in old age. When young people decide to stay in school instead of entering the job market earlier in life, they are “saving”, in a sense, since they are foregoing present income and consumption in order to build up their personal capital so that they will be able to earn more over the course of their lives.

One kind of careless imprudence is exemplified by the person who fails to save appropriately over time, burning through the stock of capital early on. Those who are blessed with a large stock of capital early in life may not be personally imprudent when they behave like this, as long as the capital stock they hold at the beginning is large enough that it will not be used up over the course of life. But those who burn through capital in this way are using up resources that will not be available later. Profligate heirs will not leave a fortune for their descendants because they consume at a rate faster than their Hicksian incomes would allow.

As individual persons, our saving and consumption rates are usually planned around the life-cycle changes we expect to live through. But as *nations*, or as a *global society*, we might plan for a longer time horizon. A nation that lives beyond the means provided by its Hicksian income consumes its capital resources, leaving later generations impoverished. And a global community that behaves in the same way will impoverish the human population of the earth. Just as individuals need to plan for different needs at varying stages in their life-cycle, nations and global communities also need to plan consumption and saving to

accommodate for expected needs. In the case of nations and of the global community, however, changing needs are not created by a natural lifecycle but by changing size and constituency of our population. Populations with different age constituencies have very different ability to address their own needs. To plan for a larger population with more people whose needs must be met, we may need to insure that available resources will expand to meet their needs. Where population is growing and needs are expanding, it will not be sufficient to pass on the same fundamental stock from one generation to the next. If we want the members of subsequent generations to have fully adequate life opportunities, we may need to *increase* the stock of resources that will be available to them.

True peace is not merely the absence of tension: it is the presence of justice.

/ Martin Luther King, jr. /

Of course, people are not just consumers. We might expect each generation to provide for the circumstances of its own economic welfare. Instead of focusing on the availability of raw capital resources, it might be more appropriate for us to insure that future generations will enjoy circumstances that will enable them to maintain or increase the marginal rate of per capita productivity so that they will be able to support themselves. While the future productivity rate does not depend *only* on the availability of raw capital stocks, the focus on future productivity will not allow us to *ignore* these stocks either. Nor will it allow us to ignore the rate of intergenerational debt: intergenerational debt can be understood as a drag on future productive possibilities.

Still, it would be a mistake to think of our legacy to the future only in terms of the debts we accrue. We provide future generations with knowledge and capital improvements, not just with debts. These benefits constitute at least partial compensation for the disadvantages represented by the debts we pass on. But it is appropriate for us to ask whether our capital improvements constitute effective and appropriate compensation for the burdens we leave behind. Jefferson and Madison do not specifically speak of Hicksian income, of course. But they both express concern that a profligate administration might impose inappropriate debts on subsequent generations. And in both Madison and Jefferson, we find support for the

underlying idea that such debts are unjust if they are not fully compensated. To avoid perpetrating injustice of this sort, we must pass on to later generations productive resources fully sufficient to provide them with adequate opportunities. And if our own opportunities were more replete than this, perhaps we owe the future more.

Non-Monetary Debts

The idea of Hicksian income is tightly tied to Jefferson and Madison’s conception of unjust intergenerational debt: Where a nation consumes at a rate higher than its Hicksian income, it passes on uncompensated disadvantage to later generations. Of course the calculation is more complicated than the simple description above might seem to imply: we cannot simply

look at growing national debt—to know whether a nation is consuming beyond its means it is necessary to look at the entire package that is passed on to those who inherit the debt. If the economy has grown, is this compensation for the burden? If knowledge has been created, can we consider this to be adequate compensation?

Many of the costs we pass on to later generations are non-monetary, but they have precisely the same structure as a monetary debt: Where our present actions damage or degrade the natural environment, we pass on a burden that can be measured in terms of the rate at which the environment can recover from our assaults. The rate of recovery translates to a measure of the cost we pass on, since future generations will not only need to forego the direct benefits they might have enjoyed if we had passed on more intact environmental resources. The cost of present environmental damage also includes the investment they would need to make in order to recover the resource to its condition before our damage.

Consider, for example, the management of the ocean fisheries, which are currently being harvested at a rate much faster than they can regenerate. Our present consumption standard means that we will pass on to later generations a resource that is depleted, and stands in need of recovery. At some point, fisheries collapse. Recovery after collapse is a complicated matter, since a new environmental

equilibrium may arise that simply does not include the depleted species. But in the interval before collapse, when recovery is still possible, we can model the cost of recovery as the payment of interest on an environmental debt. If later generations simply wish to maintain the resource in its depleted state, they might pay no more

Laws change, depending on who's making them, but justice is justice.
/ Odo in 'Star Trek: Deep Space Nine' /

than the 'interest' on the environmental debt we pass on to them. That is, they might continue to harvest fish but at a lower rate that will permit them to pass on to subsequent generations a fishery that is no more damaged (but no less damaged) than the one we will pass on to them. If later generations of US citizens were to decide to pay only the *interest* on the current debt instead of retiring the principle, they would be making a similar decision. But in order to restore the fishery resource, future generations would need to consume at a rate much lower than the 'sustainable' rate. The resources needed to pay down the environmental debt burden are much greater than those necessary to maintain a depleted system. But over time, a *depleted* system will produce at a lower rate. The fishery will produce less fish over time if it is a depleted system than it would if it were a healthy fishery managed at a sustainable rate of consumption. And unless later generations behave much better than we are currently behaving, it is quite possible that this resource will never recover.

Other intergenerational environmental burdens can be modeled in exactly the same way, but the recovery period can be much longer: By some estimates, a forty acre farm's worth of Iowa topsoil flows down the Mississippi river every day. Topsoil regenerates itself when Iowa land is left as prairie, but the time period required is very long. Topsoil regenerates over *geological* time, so when it is gone it is as if it were gone forever. To be sure, it is possible to organize agricultural systems so that there is little topsoil loss, but the high-input productionist agriculture favored in the United States (and increasingly, elsewhere in the world) does not conserve the resource on which it depends. Iowa is blessed with a thick layer of the most fertile soil to be found anywhere in the world, and at present it seems to many people that it is an inexhaustible resource. But just like our fishery

practices, our agricultural practices involve passing on an environmental debt. Some day, Iowans will be forced to live within the bounds of their Hicksian income for topsoil. But because soil regenerates slowly, it is vanishingly unlikely that we will ever recover the resource that is presently being squandered.

Our climate debt is one of the most disturbing debts we presently accrue. Some green house gases (GHGs) have a very long 'lifetime' in the atmosphere of the earth. In this case, the 'interest' rate on our present consumption is measured by the rate at which the earth's atmosphere can absorb and digest our emissions. So if we chose to pay only the *interest* on the climate debt incurred through the course of the industrial revolution, we would produce GHGs at the rate at which the earth's atmosphere and its biological systems, can metabolize them. Call this rate M. When we produce GHGs at a rate higher than M, we are consuming an exhaustible capital stock. We can think of M as the rate of interest on our climate debt, and if

All human situations have their inconveniences. We feel those of the present but neither see nor feel those of the future; and hence we often make troublesome changes without amendment, and frequently for the worse.

/ Benjamin Franklin 1706 -1790 /

we were to live within our means, on our Hicksian climate income, we would at least need to pay the interest on the loan we inherited by dumping GHGs in the atmosphere at a rate no *faster* than M. For three important reasons, this is especially difficult in the case of climate: first, the earth's climate is a lagging indicator of its present GHG burden. This means that the climate implications of present and past emissions have not arrived yet. Even if we were to cease our production of GHGs immediately, global changes would continue on more or less the same course for a long time—perhaps for 50-100 years. Second, environmental changes caused by climate change are likely to affect the rate of global GHG production as well as the rate of global heat absorption from the sun. As permafrost melts, especially in the arctic north, it is releasing naturally pre-

sent GHGs at an unprecedented rate. Much of the gas released is methane, which is many times more potent, as a GHG, than carbon dioxide. Finally, the rate of global GHG metabolism, M, is itself subject to change as a result of environmental degradation. As forests are turned into pasture in South America, as natural areas are transformed into housing subdivisions in California, the earth's environmental systems are able to fix carbon at a lower rate. The corresponding reduction in M constitutes an *increase* in the environmental rate of interest associated with our inherited GHG debt. The sustainable rate of GHG emission is thus decreasing over time.

Fixed Stock Resources

Where the resources we consume, like Iowa topsoil, are regenerated at geological rates of time, we should consider them to be a non-renewing finite stock. Soil and oil are available to us in a fixed quantity, and if we consume them, we cannot expect to do so at a sustainable Hicksian rate. The best we can hope is that as we use these resources up, we may provide later generations with economic substitutes for them, so that our depletion will not leave the future worse off overall. But can we reasonably hope that our improvements in computer technology will com-

pensate later generations for the loss of a stable climate, along with the other debts, financial and environmental, that we seem prepared to pass on to them?

Growing out of our Debts?

There are economists who urge that the U.S. national debt is not a problem. It is an advantage that other nations are willing to continue to lend us money, and if the economy grows quickly enough the debt may come to seem smaller when we compare it to the size of the U.S. economy itself. If we cripple the economy in an effort to pay our debts, it is urged, then we will pass on less, not more, to future generations. By diminishing the rate of economic growth, we diminish their economic prospects and the opportunities that will be available to them. In response to the present threat of economic recession, the U.S. President

and Congress are apparently prepared to take out an additional loan to provide an economic stimulus package. But when we consider the financial debt in the context of all the non-monetary loans we continue to draw, can we reasonably hope that the process can continue over time? In the quotation at the head of

The sad duty of politics is to establish justice in a sinful world.
/ Jimmy Carter /

this article, my Grandfather, John B. Wolf, urged that we should avoid making decisions for our descendants, because we are likely to make the wrong ones. We can't know what they will want or need or value, so our efforts to promote their welfare may be a hopeless shot in the dark. But by mortgaging their welfare to purchase present advantages, we risk promoting their *illfare*. We need to begin to live within our means, within the economic and environmental budget that represents our Hicksean income. Failure to do this, as Jefferson and Madison would have urged, is a violation of our obligations of intergenerational justice. I close with a quotation from Bertrand

Russell, who saw more clearly than most that the rate of consumption in the modern world must create debts that will one day come due. Writing on this subject many decades ago, he wrote: "I cannot be content with a brief moment of riotous living followed by destitution, and however clever the scientists may be,

there are some things that they cannot be expected to achieve. When they have used up all the easily available sources of energy that nature has scattered carelessly over the surface of our planet, they will have to resort to more laborious processes, and these will involve a gradual lowering of the standard of living. Modern industrialists are like men who have come for the first time upon fertile virgin land, and can live for a little while in great comfort with only a modicum of labor. It would be irrational to hope that the present heyday of industrialism will not develop far beyond its present level, but sooner or later, owing to the exhaustion of raw material, its

capacity to supply human needs will diminish, not suddenly but gradually."⁶

If we wish to avoid imposing our debts on our grandchildren, we need immediately to begin to live within our means.

Notes

- (1) Peterson 1977: 445.
- (2) Madison 1992: 23.
- (3) Madison 1992: 23-24.
- (4) Madison 1992: 25.
- (5) Hicks 1948.
- (6) Russell 1951: 37.

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