L’auteur de l’article argumente que désormais la qualité de l’environnement ne peut être maintenue que si l’on s’attaque sérieusement à ce qui cause sa dégradation, à savoir les pollueurs, et leur prolifération (l’expansion démographique). Il est peut-être trop tôt pour se demander quelle serait au juste la population humaine optimale, mais il est temps de réfléchir à ce qu’il faudra faire pour stabiliser la population humaine à un niveau raisonnable. En admettant que toute personne a, du fait d’être née, un droit à se reproduire, c’est-à-dire un droit de donner naissance à une autre personne, on cherche ici les règles d’une politique des naissances compatible avec une démocratie libérale. Chaque citoyen peut exercer son droit (faire un enfant), ou ne pas l’exercer. Celui qui décide de ne pas l’exercer peut le céder, donnant ainsi la possibilité à celui qui a déjà un enfant d’en avoir un second. L’échange (achat ou vente) du droit à donner naissance définit un marché, qui devra être administré (surveillé). Sont esquissés les arguments pour ou contre l’organisation d’un tel marché, et les problèmes (philosophiques, moraux, religieux) posés par le contrôle de la démographie.

First, a preliminary remark. I hope to persuade readers that over the next half century, sustainability of the environment, in anticipation of the next century or two, can only be achieved by focusing on the major problem, the polluters themselves, that is, people. We need a focus we do not yet have on reducing population in reasonable and equitable fashion. I will not focus on why there are good physical and economic reasons to be skeptical that any other course of action is practical. This is my current conclusion about the current state of things and the small chance of saving the environment if the growth of population is not stopped. I believe current data will support my skepticism, but marshalling the massive amount of quantitative information now available to make the case cannot be done here.

The second focus that I would like to have, but will not here, is to analyze what population level for the world would be optimal. This
problem is not well-defined, and will change over time. For perhaps another century or even half a millennium, the extravagant use of resources by many individuals, when these resources are available, will continue to grow. I am not against such extravagance, in fact, I favor it. My slogan is *More leisure and more wealth for everyone*. But there will be reasonable limits, not necessarily ones imposed by regulation, but simply by taste, education, and habits. This interesting and complicated question, however, will not be dealt with here. I will be content to make a satisfactory argument that we need to embark on the course of first stabilizing the size of the population and then reducing it gradually to a smaller level. Fifty or a hundred years from now may be the time to be asking, «What the global population optimal?» Now is too early.

So my entire focus in this article is the urgent one of selecting feasible approaches to stabilizing and probably then reducing the size of the world population.

**SECTION 1. THE NATURE OF THE PROBLEM**

Broadly speaking, the population of the world has been increasing over the last two thousand years, with the exception of some major plagues and famines, and since 1800 more rapidly. The epochs that decreased the total population may be very small in number. It will not be something I will try to estimate here. I only want to look at the general data for the last couple of hundred years, beginning about 1800. It will be more important to concentrate on the forecasts for the next fifty to hundred years, if birthrates are not substantially modified. I list here in Table 1 the 2008 population of seven of the largest countries.

<table>
<thead>
<tr>
<th>Region</th>
<th>Population</th>
<th>World Percentage of World Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1,345,751,000</td>
<td>19.71</td>
</tr>
<tr>
<td>India</td>
<td>1,198,003,000</td>
<td>17.54</td>
</tr>
<tr>
<td>European Union</td>
<td>496,204,000</td>
<td>7.27</td>
</tr>
<tr>
<td>United States</td>
<td>314,659,000</td>
<td>4.61</td>
</tr>
<tr>
<td>Brazil</td>
<td>193,734,000</td>
<td>2.84</td>
</tr>
<tr>
<td>Indonesia</td>
<td>229,965,000</td>
<td>3.37</td>
</tr>
<tr>
<td>Russia</td>
<td>140,874,000</td>
<td>2.06</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,919,190,000</strong></td>
<td><strong>57.39</strong></td>
</tr>
</tbody>
</table>

Table 1
I have put together one big aggregate of nations, namely the European Union, because it is already working at a fairly high level of supranational regulation and legislation. As Table 1 shows, the population of these countries taken together, using UN data for 2008, is 57.39% of the world’s population.

As I boldly lay out these numbers, people might object that this is pretty naïve, without considering the problems, perhaps especially the problems that will be encountered from religious opposition in some countries to any direct or indirect methods of birth control. I turn to these issues in Section 5.

I would like to consider a future world population stabilized at about one-fourth of the 2008 population, say by 2200, but it is probably a weakness of my thinking that I find even trying to have such detailed imaginative speculations is quite difficult.

SECTION 2. FREE MARKETS IN BIRTHRIGHTS

An underlying premise of the analysis given here is that each person now living, or not yet born, acquires at birth the birthright to reproduce himself or herself. It may be at some future time that this right will need to be restricted, but it is a good place to start.

In principle, this would permit each person, whether part of a couple or not, to be entitled to one birthright. The natural and presumably most frequent use would be to give a birthright to his or her child. However, such a birthright could also be used by a person to adopt a child or even possibly to arrange for the birth of a child by methods already familiar, and by ones that are yet to be put into practice, to give birth. Note that this use would be apart from the free market. You would not have to go to the market and buy this one birthright; you would be entitled to it. On the other hand, you would also have the right to make an irrevocable sale of your birthright in the market, that is, the market for birthrights.

This role of birthrights has been stated in such a way that a couple – a man and a woman – would be entitled to reproduce themselves: two sperms from the man fertilizing two eggs from the woman at different times, but the rule would still apply, with two birthrights required if the births were essentially the same time, i.e., twins. In the case of triplets, or more, the couple would have to buy the necessary additional birthrights on the open market in order to carry the triplets, quadruplets or
quintuplets to full term and be born. Notice that this rule is more liberal than the one that has been in place in China for some time, as the doctrine of one child to each family.

Rather than having to adopt rather Draconian methods, the Chinese have, with some exceptions, used very effective social pressures by the local community of each individual. Of course, as an un-reconstructed libertarian on many matters, I am not happy with this. I do think it is reasonable to give each person a birthright, but no more, and to have then the consequence that a couple is entitled to two children without going to the market for birthrights.

The question might be asked, while we are still dealing with some general questions, What if a society economically, socially, and perhaps environmentally ends up with the kind of crowding characteristic of modern India? Well, the answer should be that, rather than having the Draconian measure of one child per family, the government could buy up birthrights on the market so as to reduce by a substantial amount the number of families having more than one child. In fact it seems that it would be generally a good principle, in many parts of the world where there is substantial poverty and also a substantial birthrate, to have sooner rather than later markets in birthrights. As of this year, it is estimated that the number of persons below the poverty line in India, which is over 400 million, is a larger number than that for the whole of Africa 1.

SECTION 3 : ORGANIZATION OF FREE MARKETS

In the present structure of the world’s societies, mainly into more or less independent nations, it would be a mistake to try to impose a single global market in birthrights, though this may be what should be achievable in the next century. However, I am not trying to make any forecast or recommendation about that. For the present, my proposal is that each nation should handle its own birthrights, though consolidation of small nations in organizing such a market would be strongly encouraged, as would the kind of global trade we now have for a great range of

1. The definition of poverty is still controversial, but most definitions are relatively robust, in the sense of roughly agreeing on the numbers. For a relatively recent new definition, in contrast to the familiar criterion of being below the poverty line if earnings are less than $1 per day, see the multidimensional definition, based on a cluster of features. «Acute Multidimensional Poverty : A New Index for Developing Countries » by Sabina Alkire and Emma Maria Santos, Working Paper 38, 2010, Oxford Poverty and Human Development Initiative (OPHI).
products. But the inevitable legal aspects of birthrights might severely restrict cross-national markets, even though we have already a variety of agreements on children in one country being adopted in another. Details of how this might be done I do not pursue here. Rather, I assume, for further discussion, something like markets for birthrights could be established in all countries, or groups of smaller ones, with a population of a hundred million or more.

SECTION 4: IMMEDIATE ISSUES ABOUT A REDUCED POPULATION

There are several problems that are repeatedly mentioned when any discussion of reducing population occurs. I am talking now not about questions of religious belief or restriction on birthrights for families, but consequences of actually reducing the population. At first what is often emphasized are the problems created by the scarcity of new young workers. There are two remarks to be made about this, one from a short-term and the other from a long-term perspective. The long-term one is different in the sense that we would naturally think of reaching a relatively stationary population, that is one not changing in time, so that the number of new workers would be approximately constant, once we reached equilibrium. There would be no complaints of new shortages, because the population would be stable as it was in various parts of the world at various times in the past, over a good many centuries. In the short term, problems would arise, and would need to be dealt with, but there would also be opportunities arising from such shortages, namely, increases in standards of living for those in the bottom quartile or half of the income distribution; for the rewards for this group, in the case of shortage of young workers, would in general tend to increase and therefore their wages should increase.

SECTION 5: LONGER-TERM ISSUES

A deeper prospect is to look first at what has happened as over the past two hundred years. We have passed from mainly agricultural societies to industrialized ones, in large parts of the world, and now properly we already think of ourselves as being in or approaching post-industrial times. In the post-industrial society, as usually discussed, the Information Age replaces the Industrial Age. Manufacturing is reduced – but I
will have some remarks about that in a moment. What is left, for example, in developed countries now, is that a large part of the population is employed in the service sector. So it is this service sector which would be particularly subject to shortages with a decrease in new young workers. It seems to me the answer is pretty obvious as to what would happen to a society that is the successor to what we can think of as the information and service-oriented current society. Service will not be a main source of employment, but there will be a substitution of robotics, automated equipment and software of every kind to perform the work now mainly done by persons employed in the service sector. This change is already underway, and can be seen in the increasingly prominent discussions of using technology to both improve the services available to retired people but also to reduce the need for new workers. I plan to write elsewhere about the coming age of robotic service.

There is, however, another remark that needs to be made about the distribution of age in the population. I have not yet mentioned the problems that will arise from continued increase in the longevity of the population. As this happens, the reduction of the percentage of young people will be inevitable, until again some approximate equilibrium is reached and increase in longevity is no longer a significant biological phenomenon. Some may think that this will be a very long time in the future. I am among those. It is easy to make an argument that the continued increase in biological research aimed at a fundamental understanding of the processes of aging will lead to continued increases in longevity for as far as we can see into the future. It is certainly impossible for me to have any serious, detailed ideas about when the impact of such research will come to an end, or, more likely, make no further progress for several centuries. So this presents a different problem, to which I hope to devote more effort in the future. Generally speaking, increased longevity is, from the main perspective of this article, another strong argument for less people. This means there should be even less creation of new people, because we will have continually more people staying around longer for the indefinite future.

There is another issue, perhaps one of the most fundamental, that I want to discuss briefly, when dealing with this question of an aging population. When manufacturing becomes highly automated, and then services become highly automated as well, as seems highly predictable, what is left for people to do? Well, it seems to me that the opportunities are golden. The kind of intellectual and creative activity characteristic of what we so often think of as our society when our members are opera-
LESS PEOPLE, THE MOST FEASIBLE APPROACH TO SUSTAINABILITY

...ting at the highest level, should become mainly a feature of the entire population. I do not have some narrow vision that everyone is to become an academic like myself, but rather a society in which each individual is realized in the vastly many different ways in which this can happen. So I am sanguine about the solution here, even though it involves, perhaps, from a psychological standpoint, the single most fundamental change that will occur under the vision that I have of the future. I emphasized deliberately psychological standpoint. For too many creative persons, including academics from all disciplines, exhibit all too clearly, in many kinds of settings, their discontent about essential aspects of their lives, from research time to sex and salaries. Deep attention to these matters should be, and probably will be, characteristic of the coming period I label the Golden Age of Learning and Fulfillment.

SECTION 6: MORAL ISSUES CONCERNING BIRTHRIGHTS

A thorough discussion of the moral issues of birthrights is needed; I will try here only to list some of the positive and negative arguments, with some comments, beginning with the positive case.

1. Bad consequences of too many births. The moral issue is a collective one of the many bad consequences of not limiting birthrights. There are, of course, other methods, but the virtue of a market in birthrights is that no one is being coerced, everyone can at least reproduce himself or herself, and the decision about having further children is not governed by rigid bureaucratic regulations, but rather by having the means to raise more children properly. Examination of qualifications for purchasing birthrights for more than two children might be required. This could be of the sort now often required for adopting children. The market also provides an economic opportunity for families that need to sell birthrights. The economic advantage of this is something I will not examine further as a moral issue.

2. Need to limit population. It will be important to separate the issue of controlling by various noncoercive methods population size, and making the case as such that population be limited to a certain size. The latter argument should come from analyzing more general problems of sustainability. But having reached political or social agreement on management of the population size over coming decades, it is important to argue that a market in birthrights is one of the least restrictive ways of
managing such agreed restrictions, in terms of the freedom of individuals.

3. **Unrestricted right to reproduce yourself.** An important feature that should be built into this market is that each person has the moral right to reproduce himself or herself. I think of this as a limited libertarian objective. The state should not be able to restrict in any complete way the right to have children. On the other hand, it does seem reasonable to impose restraints on the number of children that someone can have. I recognize I have to develop this argument in more detail, for there are certainly religious views, for example, that mistakenly argue that any limitation is very much against some basic principles. I will return to this point shortly. From a secular viewpoint, I need to reflect further on what the arguments are, nuanced as they must be, to permit each person to reproduce himself or herself, but to restrict the numbers beyond that.

4. **Religious acceptance.** Religious views on children and birthrights require a separate discussion from secular ones. Here I restrict myself to the attitudes held by various religions concerning the adoption of a child. They all agree, at least in the developed countries, to restrictions on and the careful vetting of families that adopt children. An important point to make here is that there have been, in general, no religious objections *per se* to adoption, at least as far as I know. There have been strong feelings that, for example, a child who came from a Catholic family should be, if at all possible, adopted by someone who is a Catholic, and similarly for other sects and religions.

On the much more sensitive and more important topic of abortion, acceptance of other methods of birth control in the current situation has many positive developments from the standpoint of religious acceptance, on either a practical or theological basis. Continued rejection of abortion is understandable, but I do defend the ultimate decision to be a fundamental right of a pregnant woman. The literature is large and complex, so I give here only a few examples.

The Catholic Church is adamant about abortion, but accepting of abstinence as a method of birth control. Moreover, the use of contraception methods, other than abortion, especially condoms or birth-control pills, is widespread in Europe and United States among a large number of Catholic families, as a practical matter, often even approved by local priests. Such approval is much more widespread among Protestant clergy.
In the important cases of India, there are now too many positive data to survey systematically here. I mention only a few. In southern India e.g., in the state of Karnataka, there has been a steady decline of fertility rates over the past two decades or so, mainly attributed to state-sponsored family-planning programs, and literacy programs as well. Though there is practical religious acceptance by both Hindu and Muslim families, acceptance by Hindus is greater, with a mean difference in fertility of about one child between the two groups. However, the lower fertility rate of Hindu families in this case, may be not only a religious attitude difference, but also a more favorable economic situation, in terms of family income and higher levels of education. Among poorer families, sterilization seems to be by far the most popular form of family planning.

What I sketch next is analyzed in detail in Buddhist texts, which is theologically perhaps the most accepting of family planning, since the celibate monk is the ideal of Buddhist society, and has the greatest social prestige. Yet from a practical and social standpoint, especially in rural areas of Buddhist countries, the desire and prestige of having a son who becomes a monk encourages families to have at least one son (see on these points, Ling, 1969). For a report on the effectiveness of a national government program in family planning in Buddhist Thailand in the 1960s and 1970s, see Allan Rosenfeld et al. (1982).

As the last of this survey I mention Islam, which, to the surprise of many Americans and Europeans, is more liberal about birth control and family planning than the Catholic Church. Indeed, in the 1970s Pakistan had an extensive government sponsored and organized national family-planning campaign. From a theological standpoint, no Qur'an text forbids prevention of conception. (This does not imply any acceptance of abortion.) Second, the saying hadith of the Prophet (PBUH) accepted the principle of preventing conception by permitting the practice of 'azl, or coitus interruptus, justified already in early medieval legal reasoning, as expressed in such sayings. Here is one from a certain Abu Sa'id cited in


According to Abu Sa‘id, « We rode out with the Prophet (PBUH) to raid Banu al-Mustaliq and captured some female prisoners... we desired women and abstinence became hard. [But] we wanted to practice `azl; and asked the Prophet (PBUH) about it. He said, ‘You do not have to hesitate, for God has predestined what is to be created until the judgement day’. » Later, Al-Ghazzali (1058-1111) justified `azl by a careful and detailed argument in his great treatise Ilya `ubam al-Din (The Revival of Religious Science), in the chapter on biology of religion.

I have only superficially touched the surface on this topic of the greatest importance for the sustainability of modern civilization and culture. But I said enough to give hope about the role of religion in future family planning.

SECTION 7: TWO NEGATIVE ARGUMENTS

1. **Unrestricted libertarian rights.** Many libertarians and feminists, in particular libertarian feminists, will strongly object to any restriction on the rights of a woman to have as many children as she wants. In practice, this argument does not seem to be a very powerful or important one, but conceptually, it is one that must be dealt with. I have already encountered it in some preliminary discussion, to my surprise, with my youngest daughter, Alexandra. Even if it is not a great practical matter, I think it is important to have some conceptual arguments that it is not a matter simply to be left to the private beliefs and desires of an individual woman or family. I support the view that unrestricted individualistic libertarianism is a romantic view of how any modern society can be organized. I am critical of such an unconditional stance, while at the same time very supportive of a general libertarian viewpoint.

2. **Bureaucracy is better.** Doubtless for many, the argument for the management of birthrights being a bureaucratic government matter rather than a free-market one has merit. There are two kinds of arguments to be considered here. One is the general sort of argument that holds that very many activities in a society that are currently governed by markets in many countries would be better managed by government


bureaucracies. This is the general conceptual argument covering lots of intellectual terrain concerning free markets versus government control of many human activities. The interesting thing about this argument is that really no one on either side, except for a few extremists, believes that there should be either no markets or no bureaucracy at all. Even the most extreme forms of communist rule in the last hundred years have not advocated complete elimination of markets. There are large government units that focus on minimizing the use of markets, for example the military, in terms of the soldiers as consumers, but this is a rather special case.

At the other extreme, there are a few libertarians who want everything privatized, from health services, retirement benefits, defense, the courts, to the police enforcement of laws. Yet almost no one, or at least no group of any magnitude, in any current country, advocates this extreme version. The general view of libertarians is to support smaller government and reduced bureaucracy. As we go beyond these slogans, the general argument of interest and, I think, of importance, is the one that government does have a role in defense and in enforcing the rule of law, and in other domains, primarily as a limited regulatory agent. This can be formulated as the ideal case, unrealized in any current society.

It is an important matter of general political philosophy and political theory to dig deeper into these arguments, positive or negative, in terms of their foundational basis. This means a careful examination of to what extent we can derive these principles from more general ones, or let me put it in more realistic terms, give good arguments without offering anything like a serious rigorous derivation. That task is beyond the scope of this inquiry, but not, I think, an impossible one.

SECTION 8 : IN CONCLUSION

In closing, I turn back to examining some of the issues, particularly those recommending free markets in birthrights. I use the plural deliberately. Initially we should focus only on markets in the large countries. In fact, a pluralistic approach is in order. Almost certainly. Just to give some obvious examples, birthright markets in the United States, if established in the near future, would be more like other free markets than what would be found in, say, China, or many parts of the European Union. I can imagine already the hundreds of pages required by the Brussels bureaucracy of the European Union to establish such a market. The
regulations would likely be quite extravagant in size and complexity. On the other hand, given the current attitude about the role of Brussels and the role of bureaucracy for the whole of the European Union, I could well see having a pluralistic result of different nations within the European Union opting for different birthright arrangements.

Even in the United States, there may be a plethora of markets, at least one for each state, run more or less independently of any other, with different regulations, and within the large states, like California, Florida, New York, or Texas, there may even be a variety of markets, running semi-independently, but all regulated just in the way that many other kinds of markets are. There could well be some regulations nationwide, following from some kind of federal mandates. I do not propose to get lost in the wilderness of the possibilities here. If we examine the current complicated network and patchwork of markets and regulations in many economic areas, we could spend more time on that than anything else.

I am just assuming the ordinary kind of view here, i.e., that there would be free markets, but subject to some considerable regulation. It would in fact be a great triumph for the future of this planet if markets in birthrights were to become accepted as desirable and ordinary.