



## A distant mirror: Ireland's great famine

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*In the 18th century, Ireland lost much of its forested land. This graph of wooded land for sale has been generated from data reported by Eileen Mc Cracken in "The Irish Woods since Tudor Times" (1971). The data are fitted with a derivative logistic, as for a "Hubbert" curve. The good fit indicates the over-exploitation of a slowly renewable resource.*

Deforestation was not the direct cause of the Great Irish famine of mid 19th century, but it was the start of a chain of events that led to it. In this article, I show the condition of "overshoot" that Ireland was in at the time of the famine has much in common with the "overshoot" condition our world is in today.

What shall we do for timber?

The last of the wood is down,

.....

There's no holly nor hazel nor ash here

But pastures of rock and stone

The crown of the forest is withered

And the last of its game is gone.

From "Kings, Lords and Commons", by Frank O'Connor (1903-1966), (reported in McCracken,

## 1. Introduction

Today, we are more concerned about being overweight than about not having enough to eat, at least in the industrialized world. Famines appear to us as events that occurred in remote ages, nothing that could happen to us in our enlightened era of progress and abundance. Yet, the last major famine recorded in Western Europe, the Irish famine that started in 1845, is not so remote after all. It took place at a time when people already had railways, steamships, press, telegraph and more. Those were also the times of the great gold rush in California, of the discovery of oil in Pennsylvania, of the unification wars in Italy. It was a period of optimism and of economic growth; and yet more than a million people died in a few years in a European country because of lack of food. That is not something that we can ignore so easily.

Trying to understand the Irish famine means, usually, to seek its causes. We could just say that it was caused by the "potato blight" (*Phytophthora infestans*) that killed the potato crops and, in a narrow sense, we would be right. But that is not enough, obviously. We are looking for deeper reasons: what had led to conditions so critical in the Irish agricultural system that the potato blight could have such devastating effects? Many interpretations have been proposed. One is that the famine was due to overpopulation, as Malthus would have interpreted it. But several studies maintain that the Irish land could have sustained many more than 8 million people--the island's population at the time of the famine.

An Irish tradition says that the English were the culprit in the famine. If they hadn't really caused the famine, it is said, they had at least exploited it to get rid of a good number of their unruly Irish subjects. For (perhaps) this reason, you sometimes see the term of "Irish holocaust" applied to the famine. There are other interpretations, such as those given by Joel Mokyr in his comprehensive work of 1983, "Why Ireland starved". We read of low productivity of labor, insufficient accumulation of capital, and other contributing factors.

Is a single one of these explanations the "correct" one, or are they all correct in a certain measure? Perhaps there is some confusion as to what we mean, exactly, as the "cause" of the famine. Ireland had, at that time, an immense and intricate web of relationships and connections that linked the social system, the political system, the economic system and the ecosystem. We call this kind of system "complex"; a characteristic of complex systems is that they can't be described in simple terms of "cause" and "effect". Rather, we speak of "forcings" to describe how an external influence (e.g. the potato blight) pushes the system in a certain direction. We speak of "feedback" in describing how the system reacts--amplifying or damping the influence. There were other failures of the potato crops before the Great Famine, but none had such devastating effects as the one of 1845. Evidently, at that time, the Irish social and economic systems were more sensitive to perturbations than they had been before.

So, if we want to understand the Irish famine, it is useless to look for a single cause to blame. Overpopulation was surely a factor, but it needs to be understood together with other parameters. Complex system need to be understood by looking at the specific patterns that they follow. One of these patterns, a typical one of economic systems, is resource overexploitation. It is a phenomenon that leads to the condition that we call "overshoot". A society in overshoot exploits resources beyond their capabilities to reform. Sooner or later, what has been borrowed must be repaid, and that implies a return to sustainability that may be traumatic: we call it collapse.

The point that I'll discuss in the rest of this article is the hypothesis that Ireland in the 19th century was a case of overshoot followed by collapse. It appears that the whole cycle started with the cutting down of the island's forests, in the 18th century. Deforestation generated a series of positive feedbacks that eventually led to the great famine. One of these positive feedbacks was the creation of arable land and the consequent increase in agricultural production. That, in turn, generated an economic boom that led to a population explosion. But population couldn't keep growing forever. Agriculture had reached its productive limits and was using a resource that

couldn't be renewed: topsoil--easily eroded in a rainy northern country such as Ireland. Eventually, the return to sustainable population levels was triggered by a potato disease that generated the great famine, but some form of collapse was unavoidable one way or another.

## 2. Origins of the famine

The Romans of imperial times knew about the remote island of Northern Europe that they called *Hibernia*. It was a sparsely populated land covered with thick forests. It was too poor and too far away to be worth conquering, and so the Roman legionnaires never set foot there. Ireland was nearly unaffected by the collapse of the Roman Empire and played an important cultural role in early medieval Europe. But, as Europe recovered it became clear that Ireland was too small and too weak to compete with the new European powers of the time; of these, England was the closest and the most dangerous.

There were several waves of invasion from England; the final one was led by Oliver Cromwell and ended in 1653 with the complete conquest of Ireland and the collapse of the Gaelic Irish society. The ancient Irish nobility was exterminated or sent to exile. The surviving Irish lost all their lands, had little or no civil rights, could not carry weapons, and couldn't vote or have representatives. Even the practice of the Catholic religion was forbidden. All the economic activities of Ireland fell into the hands of the English rulers, and the role of the Irish was only that of peasants or workers. Ireland was the first British colony; even though never formally declared one.

In the meantime, the modern era had started. New worlds had been discovered beyond the seas, and Spain, France and England were engaged in a worldwide struggle for power. All three faced the same problem: how to feed their population and at the same time equip their armies and their military fleets. Britannia, it is said, ruled the waves by means of wooden ships and iron men. But iron men were not enough: armies needed iron weapons and warships. Every kingdom needed forests; a strategic asset that provided charcoal, needed for smelting iron, and timber, needed for building warships. "No wood, no kingdom" had said Arthur Standish in his "The Commons Complaint" of 1611.

But kingdoms also needed food for their troops and their population. For that, it was necessary to clear as much land for agriculture as possible. It was a difficult strategic game: how to keep a country's forests and at the same time feed the population? Eventually, England found a way of winning the game by using its abundant coal reserves. With the process of "coking" developed in 18th century, plenty of iron was available for weapons. With England's powerfully armed fleet, England could get timber from anywhere in the world and, at the same time, prevent its competitors from getting it. More timber meant more warships and more warships meant more world domination and, therefore, even more timber. Weapons and warships also meant that powerful armies could be ferried overseas. Everywhere in the world, foreign kingdoms were brought down and transformed into colonial plantations that produced food for their remote rulers. More food meant larger armies and that, in turn, meant more plantations and even more food. It was this mechanism that created the British Empire, the first planetary empire of history.

But there was a problem with the food coming from far away colonies. In a time of slow sailing ships and without refrigeration, few kinds of food could survive a long trip without spoiling. One was sugar: the main product of remote plantations. That was the origin of the "tea at five" habit in England. But sugar wasn't enough to feed the growing British Empire and Ireland was the right place for getting the kinds of food, meat and butter for instance, that couldn't be shipped to England from remote colonies.

Making room for food production spelled the end of the Irish forests. At the time of the British Empire, we don't have to think that Ireland was still covered with the lush forests of the time of the mythical hero Cuchulainn. But the data reported by Michael Williams in his "Deforesting the Earth" show that Ireland in the 17th century still maintained about 12% of the land covered with trees, significantly more than most European countries of that time. Ireland didn't need trees for

a navy or an army, so there were no incentives or laws that could protect the Irish trees. That gave rise to a deforestation boom.

From the trunks, timber was produced and sold on the international market. From the shrubs, charcoal was made and used for producing iron. The Irish iron industry couldn't compete with the English one, but Ireland had enough iron ore to keep the forges running and produce iron for local uses and for export. Then, the land cleared of trees left a rich fertile soil that could be used for agriculture. Exporting food could pay for even more deforestation and the process fed on itself. Jonah Barrington, Anglo-Irish landlord, said in late 18th century that, "Trees are stumps provided by nature for the repayment of debt."

But, of course, trees were being cut much faster than they could regrow, and this was taking a heavy toll on the Irish forests. Arthur Young, an English writer, reported in 1776 in his "Tour of Ireland" that the greatest part of the kingdom exhibits a naked, bleak, dreary view for want of wood. That doesn't mean that the whole island was cleared of trees at that time, but it does tell us that the effects of deforestation had started to become important.

We don't have detailed data on the extent of deforestation; apparently nobody would keep such a record at that time. But we can learn from Eileen McCracken ("The Irish woods since Tudor times") that, for instance, the Irish exports of timber went from more than 170,000 cubic feet in mid 17th century to nearly zero in 1770 (p. 113). Timber imports, conversely, grew nearly 20-fold from 1711 to 1790. Evidently, in the 18th century Ireland was gradually becoming unable to produce enough timber for its internal market. We also learn from McCracken's book that the Irish iron production died out in late 18th century, most likely because there was no more wood for making the charcoal necessary to smelt iron ore.

The only quantitative data we have on the actual deforestation trends are from the extent of wood acreage on sale advertised in newspapers, again as reported by Eileen McCracken. The data can be plotted as shown in the figure at the beginning of this article. We may reasonably assume that the acreage on sale is proportional to the deforestation rate and, therefore, we see that Ireland had a "deforestation peak" in mid 18th century.

The curve is in agreement with the estimates of various authors on the extent of deforestation in Ireland. At the beginning of the 19th century, no more (and probably much less) than 1% of the Irish land was still covered with trees. The deforestation curve in Ireland very much like the oil production curve in the United States that was studied by Marion King Hubbert. Wood is a renewable resource, in principle, but if the forest is cut down too fast it doesn't have the time to reproduce. This behavior seems to be general of slowly renewable biological resources and I found it also for the case of [whale oil](#).

Deforestation in Ireland was not only nearly total, but it also paid no attention to things that today we take for granted; for instance leaving at least a few natural reserves. Native species were exterminated without regret, and even squirrels and deer went extinct--to be reintroduced only much later, in 20th century. The last wolf of Ireland is reported to have been shot in 1770.

The same destiny was reserved for the "woodkernes", dispossessed Irish who had taken to the woods. We may be tempted to see these forest dwellers as romantic freedom fighters, an Irish version of Robin Hood and his merry men. But woodkernes, rather than sung as sylvan heroes, were lumped together with the wolves. They were hunted down and exterminated in an activity that seems to have provided much merriment to the landlords, as well as prizes provided by the government. Woodkernes were reported as still existing in the 18th century. But, just as it is difficult for us to imagine Robin Hood without the forest of Sherwood, the Irish woodkernes couldn't exist without the Irish forests, and no mention is made of them any more in the 19th century.

The transformation of Ireland into a food producer for England's sake was highly successful. Historians have calculated that during the first half of the 19th century, Ireland provided more than 10% of all food available in England, including high quality food such as meat and butter. The

Irish, instead, had to content themselves with potatoes--easy to cultivate and providing an abundant harvest. But relying on a monoculture is risky, and intermittent famines were a normal feature in Ireland. It was one of these periodic famines that had led Jonathan Swift to write his "A modest proposal", published in 1729, where he satirically proposed to solve the problem of hunger in Ireland by having the Irish eat their children. Sir Jonah Barrington, cited before, tells us about the Irish peasants, "The only three kinds of death they consider as natural are--dying quietly in their own cabins, being hanged about the assize-time, or starving when the potato crop is deficient."

Despite the recurrent hard times, an Irish family could get enough food to survive the year round from a relatively small patch of land by cultivating potatoes. The time that they were not working on their potatoes, they would work for their landlord in order to pay the rent. For the landlords, it was the perfect arrangement: they had manpower for free. For the Irish, it was far less than perfect but, at least, they had something to eat. And, as it is usual in a growing economy, population was growing, too. We don't know whether the rapid growth of the Irish population was actively encouraged by the landlords in order to have more manpower for their plantations. It may also be that the Irish had reasoned as all peasants in the world do: more arms in the family, more wealth. Perhaps, they also dreamed that their growing numbers would allow them, one day, to get rid of their hated English masters. Whatever the case, the island experienced a real explosion in population. There had been fewer than two million people in Ireland at the time of the English conquest. By 1840, the historical population maximum had been reached--more than 8 million.

### 3. The deadly trap

Cutting forests to make room for agriculture is an ancient practice, often referred to as "slash and burn agriculture". The idea is that a cleared forest leaves a soil rich in nutrients, also resulting from the ashes of burned trees. Slash and burn agriculture is not necessarily bad for the land if it is practiced with moderation--that is if trees are allowed to regrow while crops are moved elsewhere. If that is not done, the result is irreversible desertification. In Ireland, we don't know whether trees were commonly burned on the spot but, in any case, there was no attempt to rotate the cultures and re-grow forest patches.

Ireland is a rainy country, so desertification is less evident there than in arid areas. Nevertheless, the Irish soil is fragile since the low sunlight makes plant growth slower than in more southern areas. Without trees, and with the effect of the rain, Ireland's fertile soil is easily eroded and washed into the sea. It takes a lot of time for soil to reform--centuries--and we can be sure that erosion was a problem in the deforested Ireland of the 19th century. Soil erosion doesn't seem to have been studied in great depth in relation to the great famine, but a paper by Patrick Macgregor (1989) shows that the famine was more severe in those areas where erosion, too, was more severe. Evidently, these areas were in a condition of a more advanced overshoot than others.

Today, you can see how serious the erosion problem still is if you travel in southern and south-western Ireland. You can also use Google Earth or other satellite images to see erosion in those areas. In the picture below, you can see the characteristic appearance of south-western Ireland, with large patches of eroded land and the walls that the Irish have built over the years. The walls may have served as property marks but, clearly, had also the purpose of trying to free the fields from the stones that erosion had brought to the surface. (Picture taken by the author in 2007).



For the first half of 19th century, potatoes could still feed the growing Irish population. It is even reported that when the harvest was good, there was a surplus of potatoes, and some had to be thrown away. But the Irish were exploiting resources that couldn't be renewed, and population could not keep growing forever. Something had to bring it back to levels that the land could support.

The return to sustainability started in 1845 when a series of waves of infection destroyed the potato crops of Ireland, one year after the other. The results were devastating. About one million people died in a few years as the direct result of the famine. Another half million died of diseases related to the lack of food. Many tried to escape to the United States. In many cases, they left Ireland on ships totally inadequate in terms of hygienic conditions and lacking sufficient food and water. These vessels were termed "coffin ships" and caused the death of an untold number of Irish emigrants.

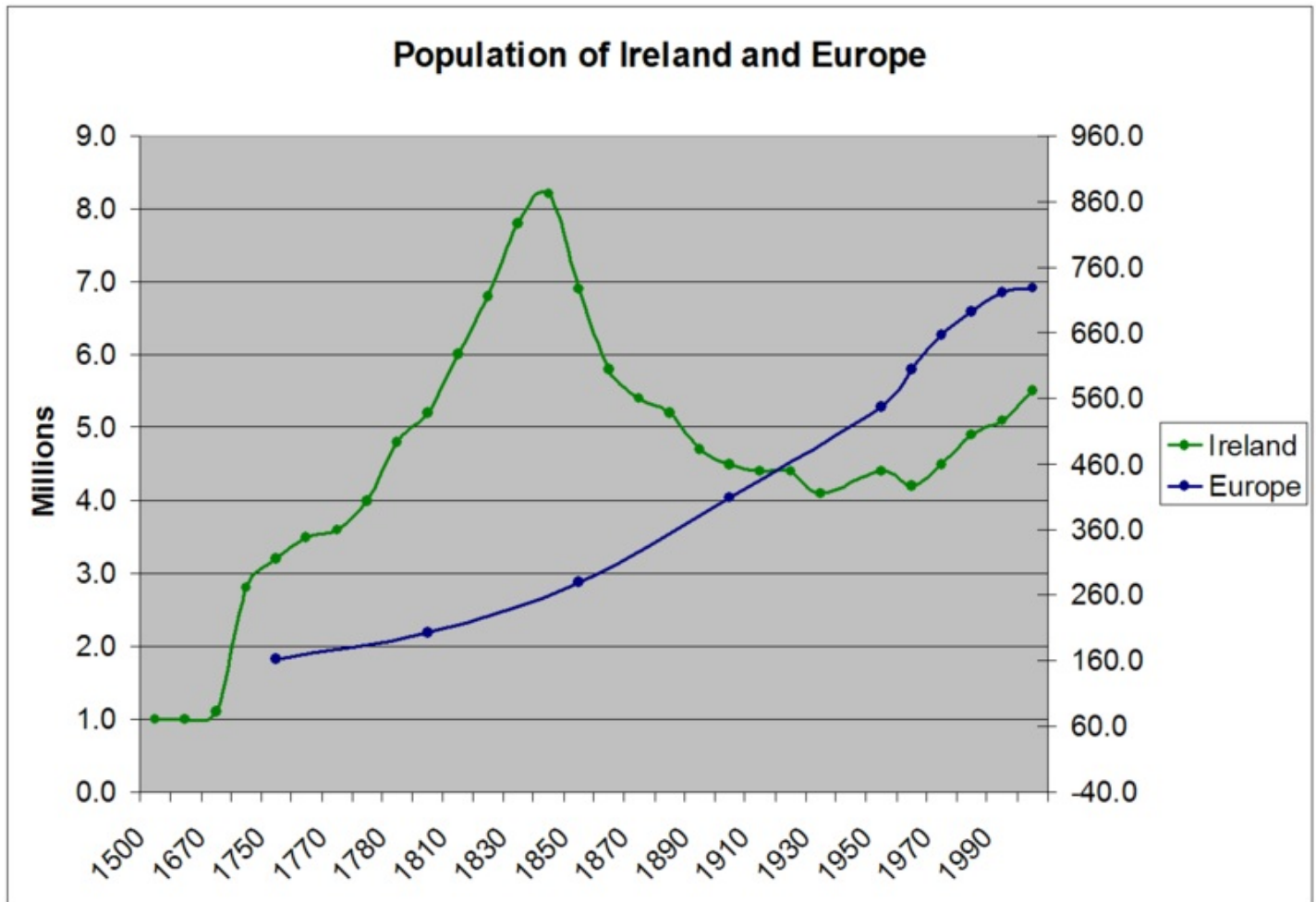
We know that Ireland continued to produce food for England even during the worst years of the famine. That has generated the legend of the "Irish holocaust" that blames the English for the famine. But, surely, the British government had no interest in depopulating a colony that was producing plenty of food for England. Rather, the English simply were indifferent to what looked to them just like one more of the recurrent Irish famines.

And the British weren't exactly sympathetic to the Irish population. In the documents of the time, the Irish are often described as an inferior race and culture; lazy and good for nothing people who created by themselves the disaster that befell on them. Jonah Barrington describes the Irish peasant of his times (late 18th century) as something of a mixture of the troll and the hobbit; sometimes dangerous, sometimes funny, never fully human. Benjamin Disraeli, prime minister at the time of Queen Victoria, is reported to have said, "The Irish hate our order, our civilization, our enterprising industry, our pure religion" (we read this sentence at page 6 of Cahill (1985)).

Why should the English have cared about a colony peopled with primitive peasants who spoke an incomprehensible language, practiced a different and hated religion, and didn't seem to be at all grateful for the civilization that England had brought to them? Not that the British government

didn't try to do something to mitigate the effects of the famine, but what was done was always too little and too late.

Ten years after the start of the famine, Ireland had lost one-fourth of its population. Three decades afterwards, the Irish population had been reduced to about four million--half of its historical maximum. At that point, population stabilized; in part as the result of emigration but also because of a specific choice of the Irish to limit population growth, obtained mainly retarding the age of marriage. Still today, the Irish population has not returned to the level of before the great famine. Still today, the Irish forests have not re-grown in full. The northern regions of the country seem to have been scarcely affected, but southern and south-western Ireland still show the scars of the events of mid-19th century. (illustration from Wikipedia).



It is not just the Irish land that keeps the scars of those times; it is also the memory of the famine that still lingers and still hurts. We can barely imagine the humiliation and the rage of people who saw their children dying of hunger while they knew that food produced in Ireland was being shipped to England. But we have very little material from those times that can tell us how the famine was perceived by the Irish. Most of them could speak only Gaelic and there wasn't a Gaelic press that could record their thoughts. We only have reports by English travelers that tell us of a devastated landscape where desperate figures moved aimlessly along the roadside. From one of them, we have the story and the image of Bridget O'Donnell, almost a walking skeleton with her famished children. Still today, that image summarizes the tragedy of the Great Hunger, *An Gorta Mor*. (Image from Wikipedia)



#### 4. Implications for today

If you have read thus far, you have surely noticed the many similarities of the Island of Ireland at the time of the British Empire to the larger island that is the whole world at the time of the greater empire that we call "Globalization". Deforestation was a feature of both. The last chapter of Michael Williams' book "Deforesting the Earth" is entitled "The Great Onslaught". He reports that more trees have been cut and more land cleared in the 20th century in the world than in any other period in history. Deforestation has affected mainly the tropical regions, whereas the temperate regions have been partly spared only because the abundance of fossil fuels has reduced the need for wood (so far).

Economic factors are leading to the onslaught of trees, but there also seems to exist a certain degree of aesthetic satisfaction in removing those ugly trees to make room for agriculture. I already mentioned Jonah Barrington's sentence "Trees are stumps provided by nature for the repayment of debt." It seems to be a common kind of feeling. Many people see forest clearing not just as an economic activity, but as an embodiment of the human right of dominating nature. The forest is the place of wilderness and barbarism; the place where woodkernes live. Clearing it means to bring civilization and refinement. This feeling has a certain logic. We are predators of trees. We cut trees for fuel and for making shelter, just as we kill animals for food. Arthur Standish had said in 1611 "no wood, no kingdom": We can still say it: no wood, no civilization. So, there is nothing wrong in cutting a tree, not even in cutting many trees. But we don't seem to be able to understand when it is time to stop.

Over and over, we have exterminated the creatures that provided us with food, pushing them to extinction. We have destroyed the resources that provided us with wealth: the case of trees is, perhaps, less spectacular than that of woolly mammoths, but tree species do become extinct, too. More than single species of trees, what we seem to be able to do, and to do all the time, is to destroy whole forests, to clean the land bare until it becomes "naked, bleak and dreary", as Andrew Young had described Ireland in 18th century. And that, as we saw, destroys our main source of survival: topsoil.

The destruction of the topsoil is the ultimate rape of the land. It started when our ancestors discovered that slashing and burning was a good way to transform forests into fertile land. We are still doing it today, although mechanization has given us ways of destroying forests much faster than any previous time. We do that because of the ruthless mechanisms that push people for short term benefits, forgetting about long term survival.

But the Irish disaster places us in front of our relationship with the land, which is the source of our existence. We can't miss the analogy of the Irish potato, wonder of the agricultural technology of that time, with our "green revolution" and our "genetically modified crops". Wonders of agricultural technology, too, but how fragile? The green revolution and genetic crops are all based



on the availability of cheap fertilizers and pesticides. And both need topsoil that, with deforestation, is disappearing worldwide at rates perhaps faster than the Irish topsoil of two hundred years ago.

Something more that strikes us about the great Irish famine is the rapidity of the passage from abundance to scarcity. It is reported that in the years before the famine, there were so many potatoes in Ireland that people had to throw them away. Then, in a few years, people were dropping dead of starvation along the streets. Yet, the famine was not, and could not, be unexpected. There had been many other famines in Ireland before the great one of mid 19th century. Couldn't people see that with the growing population, they were becoming more and more vulnerable to another harsher, famine? But the lack of memory of the past, even the recent past, is not just a characteristic of mid 19th century Ireland. We tend to see our prosperity as the way things are and will always be. But, how long is it going to last?

We may not be losing just our topsoil. Stuart McLean in his book "The event and its terrors" tells us that in some measure, Ireland lost her soul because of the famine. Together with her trees, Ireland lost her language, Gaelic, and her traditions. Today, languages and tradition are disappearing all over the world. It is all part of the exploitation of the world's riches, forests and many other resources. As in the past, we don't seem to know when it is time to stop. In the "Morte d'Arthur" published in 16th century, Thomas Mallory tells us the ancient Celtic legend of a king whose sickness changes the fertile land of his reign into a barren land. At the time of the great famine, the ancient Irish kings had abandoned Ireland and the land had become just an economic resource. Trees had become "excrescences useful for paying debt". For us, the fertile land of our planet has also become just an economic resource useful only for paying debt. In the end, we are all Irish.

## 5. Final notes and acknowledgments

This post grew out of a trip that I made to Southern Ireland in 2007. I had visited Ireland many times before, but, up until then, I had never been in that area. What I saw was a devastated landscape: almost no trees anywhere and nude rock at the surface as the result of topsoil erosion.

That led me to study the subject of Ireland's ecosystem more in depth. I hope it is clear from what I wrote that I don't mean to disparage or contradict the excellent work that people much more expert than I have done on the subject of the great famine. Not being Irish myself, I hope that I can be forgiven for having ventured into this subject, apparently remote from my personal experience. But I have always felt that the great tragedy that was "*an gorta mor*" is not something that should be seen as relevant for Ireland only. It is a mirror in which we can see an image of our world of today and of ourselves as well.

I wish to thank Bobbins and Colin Campbell for having taken me to Southern Ireland after the "ASPO-6" conference in Cork. I wish also to thank Lindianne Sarno who brought ancient Ireland alive for me with her novel "Greensleeves, An Historical Novel of the First Irish Diaspora."

## References

Regarding the literature I have consulted, a classic work that tells you the history of Ireland in remote times is "How the Irish Saved Civilization" by Thomas Cahill, Doubleday, New York, 1985.

Of the many academic texts about the famine, the most detailed one and perhaps the most complete is the one by Joel Mokyr, "Why Ireland Starved", George Allen & Unwin publishers, London, 1983. Mokyr's conclusion is that the Irish famine was not due to overpopulation but to factors such as insufficient accumulation of capital and low labor productivity. Surely these factors contributed to causing the famine, but Mokyr seems to miss the dynamic nature of overshoot, and he doesn't explicitly consider the conditions of the Irish soil in his study. On this point, a paper by Patrick McGregor "Demographic Pressure and the Irish Famine: Malthus after Mokyr", Land Economics, Vol. 65, No. 3. (Aug., 1989), pp. 228-238, corrects and integrates Mokyr's

The Oil Drum: Europe | A distant mirror: Ireland's great famine <http://europe.theoil drum.com/node/4498>  
interpretation by looking for an explicit correlation between the condition of the soil and the famine.

With respect to the reaction of the Irish to the famine, a text that is both fascinating and shocking is the one by Stuart McLean. "The Event and Its Terrors: Ireland, Famine, Modernity", Palo Alto, CA, USA: Stanford University Press, 2004.

Not much can be found on the internet about the history of the Irish forests. The book that I have extensively used as a source of data is Eileen Mc Cracken's "The Irish Woods since Tudor Times", David & Charles, 1971. A qualitative account of the present condition of the Irish forests was written in 1997 by [Rebecca Solnit in the Sierra Magazine](#). From this paper I learned about the extinction of the Irish squirrels in the 19th century.

A general description of the world's deforestation over the past centuries can be found in Michael Williams's book "Deforesting the Earth" (2006). It is from this book that I took the quote, "No wood, no Kingdome" by Arthur Standish. Another book on the same subject is, "A New Green History of the World", by Clive Pointing (2007). In this book, the author explicitly notes the relationship of deforestation and erosion to the collapse of civilization; this is a point also made by Jared Diamond in his "Collapse" (2006). Regarding the economic mechanism of plantations and empires, it is worth reading "Sweetness and Power: The Place of Sugar in Modern History", Sidney W. Mintz, (Penguin Books 1985). A good description of the loss of topsoil in the modern world can be found at [this link from the University of Michigan](#).

A description of Ireland's ancient economy and agriculture can be found in Lindianne Sarno's novel "Greensleeves" (Music Garden Press, 2003).



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