

**Why Western Economic Progress Surpassed
That of the Rest of the World**

by

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Why Western Economic Progress Surpassed that of the Rest of the World

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Abstract

This essay examines why, over the last several hundred years, significant economic growth has occurred in the West, but not elsewhere. It concludes that, although institutional considerations and the process of innovation have been intrinsic elements of Western progress, neither serves as a complete explanation. Further causes, many of which are primarily cultural, social, or geographic, must be taken into account. Any attempt to answer the question of Western progress must involve the above concerns, otherwise it will be at best incomplete.

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This paper will examine explanations for Western progress, evaluate these explanations, and attempt to provide insight to the question of Western growth. We will be looking at various perspectives, in particular those of Nathan Rosenberg, Joseph Needham, and Lynn White. The views of several others will also be cited.

There are many ways that our main question can be answered. Indeed, there are several views which I will present, some of which overlap, but each with its own perspective and its own truth. None of the views taken independently are complete answers. There are perhaps countless 'causes' of Western progress, each an important element- but each (taken in itself) incomplete; perhaps neither necessary, nor sufficient. I will concentrate on those elements of Western growth that I believe were necessary and, when taken together, sufficient. In the end, we will be left with a combination of answers that, in concert, go a long way towards answering our question.

Many different hypotheses exist regarding why the West progressed as it did. Indeed, there are many that deserve a second look, not only due to their insights, but also because they are simple and readily understandable. Even Rosenberg mentions several of these opposing views. I will briefly look at just three before proceeding to Rosenberg's view.

A simple answer to why the West grew rich is found in natural resources. After all, we know they were integral to our development. To those who believe this explanation, it is simply a

matter of ownership of natural resources leading inevitably to economic growth. Certainly here in Canada the argument could be made. But what of elsewhere? As Rosenberg points out, many developed countries have virtually no natural resources, and yet have some of the highest standards of living in the world, such as the Low Countries and Switzerland. At the same time, many countries with large amounts of natural resources remain economically stagnant, (Russia, China, and much of South America). Clearly what matters is not just the presence of natural resources, but the skills to extract and use those resources for the advancement of wealth. So the question is not one of ownership of natural resources, but instead, How did the West generate those skills needed to put the resources to use? This question will be further looked at later on.

Another such explanation might be found in colonialism. Certainly some Marxists believe it to be a source of economic growth and advancement. Indeed, in some historical cases, it has paid off. Spain with its gold discoveries, or the French in the early days of Algeria, for example. Yet, by and large colonialism has cost more than it has benefitted the mother countries: an example being the French in Indo-China. Further, some colonial powers have remained economically under-developed, for instance Portugal. And what of non-colonial powers such as Switzerland, who are relatively wealthy and have never ventured outside their own borders? So, while colonialism may have played a role in the development of some countries, it can also be shown that it played no role in the development of others. I believe we can consider colonialism's role in Western development to be relatively minor.

What about luck? Perhaps the West was set on the road to riches by fundamentally random occurrences, and that the explanation of Western growth is as escapable as asking why someone won the lottery. To many this is an appealing hypothesis. It avoids some of the unsavoury explanations often posed, many of which point to necessary inequalities, exploitation of the poor, or sometimes racism. And of course, luck is an explanation consistent with at least some of the West's experience: if institutional and organisational change has been intrinsic to Western progress, one must admit that the outcomes of such innovations are rarely known from the outset, and thus the results are often those of chance. On the other hand, given that Western Economic growth has been rolling along for a few hundred years (the exact amount of time depending on who you read) is it realistic to believe such performance could be sustained on luck? Was luck a necessary component of Western progress? As Rosenberg says, "...for some purposes, a sufficient explanation of how the West grew rich would be, 'By the sweat of the poor and the plunder and enslavement of the weak...'", (Rosenberg and Birdzell, "How the West Grew Rich", New York, 1987. pg.20). It could be argued that slavery, or luck, certainly helped the process of Western development, yet it is not clear that either were necessary elements.

We obviously need something that not only goes to the root of Western growth, but also looks at Western economies and economic history in a comprehensive way.

In attempting to understand why vast, long term economic growth has occurred in the West but not elsewhere, it is appropriate to study those elements of Western economies that have been necessary for growth. One

might point to various institutions such as free markets, private property, money, and so on. After all, such devices are the mechanisms by which we generate economic activity. Indeed, they might seem to be the wheels of the 'juggernaut' we call growth. Yet they are inventions; they are the symptoms of economic growth, and as well they have facilitated economic growth, but they are not the cause.

However, in reading Nathan Rosenberg's "How the West Grew Rich", one might come away with a slightly different opinion. It is the flexibility of the West's institutions which he hypothesises to have allowed such dramatic growth. The dynamism and talent for adaptation which characterises Western institutions, has led to its wealth.

Rather than referring to a specific point in history, or a particular innovation, Rosenberg asserts that no such starting point of Western economic superiority can be defined. He identifies the "gradualism" (Ibid.pg.6) of the West's growth, and that due to this gradualism it is more difficult to ascertain a "cause".

A significant insight of Rosenberg's is that "the immediate sources of Western growth were innovations in trade, technology, and organization, in combination with accumulation of more and more capital, labour, and applied natural resources. Innovation emerged as a significant factor in Western growth as early as the mid-fifteenth century and from the mid-eighteenth century on it has been pervasive and dominant."(Ibid. pg.20) In fact, he considers innovation "virtually an additional factor of production." (loc.cit.)

Innovation is important to understanding growth, but what brings about innovation? Rosenberg looks at firms, markets, and competition as playing

important roles. Economic enterprises had, by the mid-eighteenth century, (Ibid., pg.24), evolved into autonomous units, capable of making their own economic decisions, and capable of failing or succeeding based on their actions. And their actions were up to them - in other words, when given the responsibility for their own economic status, they did that which allowed them to succeed. Therein was the incentive for firms to become innovators.

Markets and competition served to intensify innovation, in that not only did the markets provide ample testing ground for new products or services, but also the existence of competing firms assured that enterprises would innovate or perish.

Further, the evolution of autonomy for entrepreneurs allowed the merchant class to continue to expand the economic sphere. A firm's right to exist, to trade, to win or lose, contributed to not only an autonomous economic sphere, but also to motivation for innovation.

So, inherent to economic change and growth was the emergence of an autonomous economic sphere. No longer were the politics, religion, and economics of a society fully integrated. By the seventeenth hundreds, each had become relatively autonomous. No longer were the economics of a society under the political and religious jurisdiction of feudalism. Correspondingly, all forms of entrepreneurship started growing- including trade (at unregulated prices). With this growth, the merchant class grew too, encouraged by the weakening of guild and government control of the starting of new businesses.

The merchant class kept growing as economic progress continued. And, as markets continued to expand with trade, so did the range of available

goods. As consumers got more, they demanded more. Competition grew amongst merchants, not only in prices and goods variety, but also innovation- innovation in production methods, costs of production, and the introduction of new products. As the expansion of trade and development of resources continued, the bounds of existing technology were being tried and pushed outward. Innovation became increasingly the means by which economic growth occurred. The skilled artisan was quickly becoming obsolete.

More than ever, the sphere of science was being utilised by the economic sphere to assist in the process of innovation. Out of need, industry turned to scientists to aid them in change; however, the vistas that science held in terms of potential innovation were also recognised. The economic sphere turned to pure science not only for its survival, but also because of the possibilities it offered.

Links developed between these spheres, and they were mutually beneficial. Experimentation represented the possibility of succeeding (or failing) and it was a means of potentially making money. Industry fuelled increased experimentation and innovation. Because now the strongest incentive of all had found its way in to the realm of scientific inquiry: money.

Although innovation is considered predominantly in terms of technology, Rosenberg stresses the importance of innovation in organisation as well.

As the economies of Western countries have grown, and as they have changed their methods...and products, they have constantly modified the size and structure of their enterprise organizations.

And later

In addition, the competitive element within Western economies...led enterprises to try to differentiate themselves from other enterprises in ways that carried a competitive advantage...This combination of necessary adaptation...and competitive attempts at self-differentiation has produced diversity in the size,...functions, and organization of enterprises. (Ibid.pg.28)

The conclusion of Rosenberg is that innovation in technology and organisation was the source of the West's economic growth. But just as important were the elements which allowed this innovation to occur. He sums them up in three "thematic terms" which we have so far discussed: autonomy, experiment, and diversity. Of further interest is Rosenberg's identification of the "causal loop" existing between experiment and additional resources and human wants. Experiment created not only new resources, but also sparked an ever expanding desire to consume, both of which fuelled additional experiment.

Rosenberg's look at the West's growth to riches is thorough, in that he describes the history of Western economic growth with precision. Further, his explanations for Western growth may seem intuitively appealing. Yet, to my mind they do not fully answer the fundamental question which we are trying to answer: Why? (Why the West).

Yes, Rosenberg talks of autonomy, innovation, and flexibility. Yet these answers seem to be telling us a story, rather than telling us what was behind the development of these things. And, I think the reason for this is that Rosenberg does not go back far enough in history.

He starts with the middle ages around the thirteenth century, for two

reasons: A) Up to this point, Chinese, Islamic, and Western wealth were all on a roughly equal footing; B) Prior to this point, Western institutions had not been functioning in "an approximately normal way" (Ibid.pg.37) (where Rosenberg considers "normal" as meaning relatively modern in the economic sense). Rosenberg does not go back far enough in my opinion. This is all the more difficult to understand, given Rosenberg's perception that "it is important to keep this long and uncertain time gap between cause and effect in mind when we...evaluate possible explanations of Western growth."(Ibid.pg.8)

Although Rosenberg gives several descriptions of the emergence of modern Europe from the middle ages, he avoids going back further than approximately the fourteenth century. He describes governments as allowing increased economic autonomy, the bringing in of laws to help facilitate trade, and the involvement of government in health and education. He speaks of the rise of Europe from the middle ages where "Political and Economic leadership were one and the same"(Ibid.pg.67). He speaks of the fall of feudalism and the rise of pluralism. But even though his analysis and historical perceptions seem sound, they could be given more credence if looked at in a broader historical context; in fact, my later discussion of the observations of Lynn White does this. First though, I believe we can elucidate some of Rosenberg's conclusions in the context of Joseph Needham's work.

Needham's analyses of Chinese economic history provide a reference point against which Western progress can be viewed. In "The Grand Titration", Needham tries to discover why the West pulled ahead of China.

He asks, What *was* in Europe, but *not* in China, that could have caused this 'split'?

Prior to the time of economic divergence (about the fifteenth century, according to Needham), both regions could be termed feudalistic. Yet in China, power was held by a non-hereditary elite - the mandarin - which was reselected every generation. This constituted a bureaucracy of individuals who had control - thus Needham's phrase "bureaucratic feudalism".

It was the very nature of this structure that did not allow China to progress technologically; by implication, it was the lack of this structure that did allow the West to advance.

Bureaucratic feudalism inhibited capital accumulation in any form among the people, because anything accumulated (in the industrial sense) would be passed down from generation to generation, thus creating the potential for wealthy individuals to gain power and thus usurp that of the mandarin.

This elite group of bureaucrats, chosen on the basis of their talents, reselected every generation, so noble in concept, was the main impediment to its society's advancement. It is ironic that in the West, where power often rested in the hands of those who lacked legitimacy, technological progress was free(er) to take place.

Needham identifies further explanations for the West to have advanced relative to China. There was a distinctly noninterventionist attitude in China, which fostered an entirely different attitude towards science than that in the West. Nature was to be observed and studied, which is why Astrology and the study of tides and Navigation flourished. In the West

however, nature (and science) were to be dominated and put to use. By the fifteenth century the Chinese had developed the Natural Sciences to a far greater degree than in Europe; it took the Europeans to borrow this science and exploit it in the pursuit of wealth though. In the West, we have an interventionist attitude, "so natural to a people of shepherds and seafarers."(Joseph Needham, "The Grand Titration", London, 1969. pg. 211)

Thus in fostering the study of nature, China succeeded in developing a formidable knowledge of Natural Science; yet in its bureaucratic feudalism it stifled the mercantile mentality, and thus the incentive to make use of its knowledge. As Needham suggests, it was precisely the development of a mercantile mentality which allowed the West to advance.

Although Needham downplays the role of cultural-spiritual factors in the development of the West, he does cite one such element (or more precisely the lack of it) in explaining China's failure to keep up with the West. "Wealth as such was not valued. It had no spiritual power. It could give comfort but not wisdom, and in China affluence carried comparatively little prestige." (Ibid.pg.202)

So, by implication, there are three elements that the West had that China did not which allowed for Western growth: a type of feudalism which allowed for the development of capital accumulation and mercantilist ways; lack of barriers to the exploitation of scientific knowledge; and a societal value that wealth was good and to be strived for.

Thus, in their attempts to understand Western advance, Needham and Rosenberg have two elements in common. First is that the European

feudalistic system allowed a "mercantilist mentality" to develop. Second is the coming together of science, technology, and economic growth. I will briefly describe Rosenberg's thoughts on both points, that they may be viewed in light of what Needham has said.

Rosenberg stresses that Western European feudalism "contained the seeds of social arrangements suited to sustained economic growth" (Rosenberg, op.cit.,pg.60). In the West, the essential feature of feudalism was the "parallel structuring of military authority and land tenure" (Ibid.,pg.61), where land was parcelled out to the Sovereign's military leaders, who in turn allotted their holdings to their underlings. The leaders' tenure of the land stayed in the family. This allowed for, over generations, the development of many "power centres", each with its priorities and aspirations.

Like Capitalism, feudalism evidently belongs to the class of societies with plural hereditary power centres, and it is tempting to believe that capitalism first arose in such societies in Europe...because hereditary property and a substantial measure of personal autonomy (albeit only in the top strata of society) were already established institutions."(loc.cit.)

Western European feudalism had in itself the makings of its own demise: it inevitably had to lead to change. Its pluralism provided opportunities for "experimenting with new modes of trade and warfare."(Ibid.pg.67) In short it allowed for the beginnings of economic growth. Conversely, the bureaucratic feudalism of the East, while trying to maintain its power structure, created barriers to change, and in so doing sealed its fate.

It is clear from reading Rosenberg that science and invention do not in themselves account for Western advancement. China, and even Islam, were both ahead of the West in the Natural Sciences; yet neither China nor Islam experienced significant economic progress. Obviously science and invention in themselves do not fully explain growth. Indeed, as Rosenberg makes clear, in the first few hundred years of Western progress, science developed practically independently of industry (Ibid.,pg.23). In fact, technology frequently originated with the artisans themselves.

Yet, since the mid-1800's, the relationship between science, technology, and economic growth has been systematic, typified by and embodied in the industrial research laboratory. The boundary between pure science and industrial technology has become blurred, especially in such areas as chemistry and electricity. The base of scientific knowledge has expanded greatly, and the industrial laboratory has allowed markets, firms, and scientists to draw on this base and push out the bounds of progress. "It was not so much that the possibilities of artisan invention were exhausted as that the expansion of science had opened a new world of professional invention."(Ibid.pg.29) As Needham points out, it was precisely this "world of professional invention" that China did not exploit, and thus a cause of its failure to match the progress of the West.

As a note, it is interesting to point out that although Needham and Rosenberg have two common elements in their analyses of Western progress, their explanations have different elements as well. Needham points to how the West valued wealth, and thus cites it as a reason for Western advancement, whereas Rosenberg does not attach significance to it. This is because Needham approaches the problem completely

differently: he looks at what *was* apparent in the West, but *not* in China, that could account for the West's progress. This allows Needham to gain a different perspective than Rosenberg, and thus reach different conclusions. Further, Rosenberg chooses to look at Western growth but to avoid cultural explanations; Needham has no such reservations. Finally, Rosenberg is an Economist, whereas Needham is an Historian, and each approaches the question from a different point of reference; it is not surprising therefore that Rosenberg does not identify Needham's cultural explanations, and that Needham does not identify all of Rosenberg's institutional explanations.

At this point, having identified the conclusions of Rosenberg and Needham, I believe we can gain insight to our fundamental question by going back even further in history. It is with this in mind that we can look at the work of Lynn White in order to understand what made the West different from the rest of the world.

Of particular interest, White (in his essay "What Accelerated Technological Progress in the Middle Ages?") talks about the relative freedom with which technology flowed between Western Europe, the Orient, Africa, and so on. He shows that, as far back as Antiquity, technological innovation often ended up in geographically diverse areas. From this, he makes the interesting point that technological innovation must be seen not only as the skill to create new technologies, but also the ability to utilise imported techniques and to adapt and improve upon them. A reason to take this to heart is seen in modern Japan's ability to integrate and improve upon Western innovation and institutions.

I find it interesting that White disagrees with Rosenberg and Needham on when the West began pulling ahead. Rosenberg looks to the thirteenth and fourteenth centuries, Needham to the fourteenth, whereas White identifies innovations which showed the West's "distinct originality" (White, "What Accelerated Technological Progress in the Middle Ages?", New York, 1963.pg.277) as early as the sixth century.

White points to the heavy plough, field rotation, the modern horse harness, and the introduction of the nailed horseshoe as being intrinsic to Northern Europe's agricultural preeminence of the time.

He follows these innovations through their many consequences: increased food production, rises in population, increased sizes of agricultural villages, urbanisation, and the freeing up of labour to leave the farms for the cities.

"More than any other single factor, this agricultural revolution of the early middle ages helps us to understand the shift of (the West's) focus from the Mediterranean to the Northern Plains."(Ibid.pg.278) It becomes clearer later on as to not only why the shift took place, but also why this shift was important.

White makes reference to developments in military invention in Western Europe between the eighth and tenth centuries. Military inventions which were either created in Western Europe, or just fully utilised there, had dramatic implications (including the development of the feudal system) (loc.cit). The stirrup, new types of armour, lances held at rest, to name a few, were used to their fullest in the West. "Thus having seized the leadership in agrarian methods in the sixth century, the medieval west did the same in military technology two hundred years later."(Ibid.pg.279)

As final evidence of the West's dramatic movements forward, White examines the fact that, by the year 1000, the West had begun to utilise natural power in the forms of wind and water, as labour saving devices. This innovation spread throughout all of Europe and much of the East, and revolutionised industry over the next five hundred years.

Given these three broad technological revolutions in Europe, (specifically Northern Europe), we find ourselves asking why it occurred where it did, rather than in either of its "sister cultures of Byzantium and Islam"?(Ibid.pg.280)

White provides several explanations. I believe they are not only compelling, but also serve as a foundation upon which Rosenberg's hypothesis can be built. White's explanations do not contradict Rosenberg's; they do however, go further to the 'root'.

The source of Western progress has frequently been cited as its ability to adapt. Indeed, the barbarian invasions which occurred in the West between the third and the tenth centuries virtually ensured a flexible, fluid attitude in the West. Chaotic times forced a society to develop which was open to change- out of necessity; "(the West) was singularly open to change." (Ibid.pg.282)

Invasions forced the West to adapt, and to take on new responsibilities. Therefore it is no surprise that this should be a fundamental reason for the ensuing growth which occurred in the West. Growth is a form of change, and thus growth could not be expected to occur where change does not.

But surely a society's ability to change and adapt must be accompanied with a motivation besides force, if it is to progress. Needham, as we saw,

acknowledged the West's ability to use and adapt science and technology to advance itself; the motivations for doing so however, are primarily a question of culture.

There is a tendency with White to emphasise the religious motivation for the West exploiting its surroundings. He points to "the fundamental change in the attitude toward nature which occurred with the spread of the new religion."(White,op.cit. pg.282) Further, "the last traces of the old Greek mythological subservience to the cosmos were eliminated by the influence of Christianity."(Sambursky, "The Physical World of the Greeks", New York, 1956. pg.241) In other words, the spread of Christianity contradicted the view that nature contained a spirit and that somehow the Earth, wind, and trees were intrinsically spiritual entities. Christianity came along, and with it a "cult of saints" (White, op.cit. pg.283) which usurped the mystique of nature and asserted humanity's monopoly on spirituality, thereby leaving nature to be despoiled and plundered as the inanimate thing it was. "The cult of saints smashed Animism and provided...the naturalistic...view of the world which is essential to a highly developed technology."(loc.cit.)

The idea that the West's attitude toward nature changed and thus so did its economic growth pattern, is appealing. We can look at many societies who still (up until recently) worshipped nature. For instance, many of the North American Indians had such beliefs. And it is also a fact that their technology remained relatively unadvanced.

However there is evidence that a change of attitudes toward nature was occurring in the West even before the spread of the new religion (White, "Medieval Religion and Technology", Berkeley, 1978. pg.251)

In fact, White acknowledges this: he points to the heavy plough, in the sixth century (loc.cit.), as being an agricultural innovation that totally reversed attitudes to the land; "formerly (man) had been part of nature, now he became an exploiter of nature"(Ibid.,pg.251).

The heavy plough, developed in Northern Europe, and specifically suited to the rich heavy soil of the region, not only may have been responsible for a change of attitudes, but also was the basis of the manorial system (where peasants pooled their resources [such as oxen] in order to increase efficiency [operate the heavy plough]). In relatively short order (the eighth century) the invention of the three field system dramatically increased the productivity of agricultural labour. These improvements brought improved prosperity and a decided agricultural advantage to the North. Both innovations were undoubtedly responsible in great part for the shift from the Mediterranean to the North as the centre of European civilisation; by implication they were sources of the West's advancement relative to the rest of the world (Ibid.pg.17).

White nevertheless points to more compelling evidence of the religious influence. It has become a fundamental element of Western Christianity that work is good- indeed (as St. Paul asserts) labour is a form of worshipping God. In its most extreme form, Puritanism looks to work as being the *fundamental* means of worship. What a stark contrast to the Greco-Roman view that labour was more of a sin than a virtue. It is conceivable that this 'work-ethic' has had a considerable influence on Western growth.

However two points have to be made here. First concerns the West's desire to embrace egalitarianism as it is propounded in Christianity. All "people" (people meaning men) were equal in God's eyes, and no one was lesser than anyone else. Therefore, to make someone do servile labour was unjust. Further, if it was possible to enable a human to be spared the wretchedness of mindless work, then it was to be encouraged. There is no contradiction; yes, labour was worship; however, labour which was severe and undignified was unworthy of one of God's children and therefore if you could find a machine to do it, all the better.

Thus White sees much of the West's technological innovation as being the result of the religious desire towards labour-saving machinery. "Western labour-saving power technology is profoundly humane in intent, and is largely rooted in religious attitudes."(White, "What Accelerated...?" op.cit. pg. 291)

Second, Christianity is not the same everywhere, and in describing its effects on the West I am stressing Western (as opposed to Byzantine) Christianity. The two are fundamentally different. Eastern Christendom is more mystical, contemplative, and abstract than Western Christendom. It is primarily a question of *theoria* versus *praxis*. In the East, "activity was something to be transcended,"(Ibid.pg.290) whereas in the West, it was a priority. "In this Western atmosphere, technology could thrive."(loc.cit.)

The West found it important to invent and innovate; but this was not the case in Byzantium or Islam (White,"Medieval Religion and..."op.cit.pg.224), or, as Needham points out, in China. Christianity, as compared to Buddhism and the religions of the East, is decidedly pro-technology. Matter was

created to be used. "Technological aggression, rather than reverent coexistence, is now man's posture toward nature" (Ibid.,pg.251). Just as God created the cosmos, so must man (created in his image) alter and create his surroundings."These are the characteristics of the Judeo-Christian view of reality and of destiny. They are alien to all the other major religions except Islam" (Ibid.pg.237). White further asserts that "engineering had become explicitly connected with the virtues; it was integral to the ethos of the West" (Ibid.pg.261). And finally "this new religion was the essential novelty and stimulus to innovation..."(Ibid.pg.253).

There has been criticism of White's work. I mentioned that, although I agree with many of his conclusions, I think he emphasises religious explanations at the expense of agricultural/geographical ones. Bertrand Gille, in particular, has two major concerns: "a)in the North there was good soil, good forests, permanent waterways- thus inevitable was the watermill, the heavy plough, rotation of crops...Had other conditions prevailed (elsewhere) there too without doubt would have been similar innovations and ...rapid development...b) from around 1150, the population of Western Europe grew a lot, thus forcing agriculture to be transformed." (Gille,"Comment," Scientific Change, 1963.pg.312)

E. Olszewski's following comment is food for thought:

To put it in a few words, it was not the Christian saints who did away with the nymphs who had under their care the rivers and streams and made them free for the water-wheels, but just the contrary- it was the water-wheels that drove away the water nymphs and made place for the Christian saints.(Oszlewski, "Discussion," Scientific Change, 1963. pg.332)

I would like to make one further point. It is very intuitively appealing to attribute some of the West's progress to its religious background; indeed, from what we have considered so far, the religious influence has been very important. But it is also clear that Christianity alone did not cause economic growth. It allowed, however, many of the barriers to economic growth to evaporate. It allowed the West to exploit nature; it allowed people to pursue material objectives unabashedly. As Landes says in his explanation for Western progress, "rationality and change" (Landes, "The Unbound Prometheus," London, 1969.pg.546) were the necessary elements. The new religion allowed for both of these.

I have given much time to White's work because I believe it contains many of the answers to our original question: Why the West? I believe Rosenberg's analysis to be accurate, but incomplete. I think Rosenberg was intent on avoiding cultural and religious explanations since they are often too difficult to analyse, and are subject to less academic acceptance; they are explanations lacking in legitimacy to some. But that is an opinion. What is clear however is that Rosenberg fails to get to the source of Western progress. White at least gives it a shot. Both of their perspectives are nonetheless highly useful.

I have also cited some points posed by various individuals which call into question the findings of White; hopefully they have provided a bit of balance.

Joseph Needham's work, although it focusses mainly on China rather than the West, is the kind of study which is most illuminating. By comparing

two very different cultures, Western and Chinese, he weighs their similarities and differences and thus tries to show why one progressed and one did not. Perhaps we should question those hypotheses, (such as those of Rosenberg and White), which do not spend enough time on comparative study in their efforts to explain Western growth.

In trying to answer our main question, we initially indicated that we were looking for necessary elements, and that only when taken together could these elements be considered sufficient in explaining Western progress. I believe that the three main views discussed- Rosenberg, Needham, and White- are compatible. They are three entirely different perspectives, but they are not contradictory. Further, I believe that when they are viewed in concert, they provide an answer to Why the West? that is robust and comprehensive. To summarise: By the year 1000, three broad technological revolutions had occurred in the West involving agriculture, military equipment, and natural power, which coincided with a revolution of cultural attitudes regarding the exploitation of nature, the sanctification of labour, and the desire to increase individual wealth. This 'attitudinal' revolution was encouraged by the fluidity of Western society resulting from the early Barbarian invasions, and more importantly by the spread of Western Christianity. Further, Western feudalism allowed the religious desire to exploit nature and create wealth to be fulfilled via capital accumulation, the development of institutions favourable to economic progress, and an autonomous economic sphere. As feudalism allowed for change, it fostered its own demise, thus giving way to a more pluralistic society. The ensuing evolution and freedom of economic institutions saw increasing diversity *within* these institutions, and

increased exploitation of science and knowledge for the purposes of attaining wealth: both of which fuelled innovation, which has since become one of the main elements of Western growth.

All of the above were, I believe, vital components to the West's rise to wealth. Taken individually, each only tells part of the story. I hope I have provided an explanation of Western progress that is comprehensive, and successful in identifying the primary causes.

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