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著者	Wesseling H. L.
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The Expansion of Europe, the Division of the World and the Civilisation of Modernity*

H. L. Wesseling

Leiden University

Let me first thank the Boards of the International Research Center for Japanese Studies and the International Science Club of Osaka for their kind invitation to speak to you. It is a great honour for me to give a lecture in such a famous institution and for such a distinguished audience.

As you probably know over the last three days both Professor Yamada Keiji and I have been attending a symposium on 'The Transfer of Science and Technology between Europe and Asia from Vasco da Gama to the Present'. This was the second meeting out of a planned series of four. As the title indicates we are studying this subject, the transfer of science and technology between Europe and Asia, in a long term perspective, taking into consideration developments over the last five hundred years. This project is the continuation of a previous one on the 'Comparative History of India and Indonesia' which covered more or less the same time span. The main topic studied in that research project was the problem of social and economic development—or underdevelopment—and the role of colonialism in this respect. The question we asked was whether the expansion of Europe furthered or hindered the development of Asia. After finishing this program we decided to continue this type of research but in a somewhat different form. On the one hand we enlarged the scope of the project by bringing two new countries into the comparison, countries moreover that never were colonies, viz. China and Japan. On the other hand we also narrowed our focus by concentrating exclusively on the subject of science and technology. Obviously the underlying assumption is that science, technology and industry are vital elements in the process of social and economic development, an assumption that this audience most probably will share.

Thus in our program we are dealing with three questions or sets of questions: the expansion of Europe, development and underdevelopment, the

* This is a paper Professor Wesseling presented as part of the public lectures given to round off the symposium, at the Osaka Science Technology Centre on November 7, 1992.

role of science and technology. These questions are of course interrelated. On the one hand the expansion of Europe played a certain role in the coming into existence of the Industrial Revolution in Europe, while on the other hand the industrialisation of Europe dramatically changed Europe's power and thus made it possible for her to conquer, administer and exploit vast portions of Asia and Africa. Expansion and industrialisation as it were went hand in hand. That there also is a relationship between expansion and industrialisation on the one hand and the levels of development of the various parts of the world on the other hand is also clear. Indeed it is almost a truism to make this observation. Much more difficult however is to find out what exactly the nature of these relationships is. I don't think anyone can really do this. I for one will not even try. The only purpose of my speech is to make some remarks, to ask some questions and to give you my views on some of these matters. In order to do so I shall first speak about the expansion of Europe, then discuss its effects on the development of Europe and Asia and finally make some observations on the role of technology and science in this. In a short epilogue I shall return to the present day's situation.

European Expansion

About the history of European expansion I can be very short because it is a simple and well-known story. In 1492 three small ships left a small port in southern Spain and set sail for the ocean. What their commander wanted to do was finding a sea route to the Indies. What he actually did was 'discover'—as we still say—the Americas. This was probably the single most important event in modern world history. It led to the creation of what is called 'the Western world', that is to say the continuation of European civilisation on the other side of the Atlantic, not on the small scale of the European subcontinent this time, but on that of an immense continent.

Five years later a few other ships also set sail from the Iberian peninsula. In 1497 Vasco da Gama rounded the Cape of Good Hope and arrived in Asia. Nobody will say that Vasco da Gama 'discovered' Asia. Asia had of course been known to Europeans from very old days. The voyage of Vasco da Gama was therefore from a European point of view less important than that of Columbus. It made no 'discovery' and it did not lead to the creation of a New World. There would not be a new Europe in Asia. But it was important all the same both in European and Asian history, because it opened the period of Western dominance over Asia or, as the Indian historian K.M. Panikkar has put it, 'the Vasco da Gama epoch of Asian history'.

These things happened about five hundred years ago and many things have changed since those days. In many respects the world is now very different from what it was then. In retrospect there is however one difference that is the most striking one, viz. the fact that since then a division of the world has come into being that had never existed before, the one between developed and less developed countries or to put it more bluntly between the rich and the poor. In those days the levels of development and wealth, that is to say of material civilisation, were still roughly the same all over the world as indeed they had been from the beginning of history. The biggest difference in wealth that existed between one part of the world and another was certainly less than one hundred percent, probably something like fifty percent. Today of course the distribution of wealth is much more unequal. The differences between poor and rich countries are in the order of three thousand percent. Thus the chronological correlation between expansion and development is obvious. The question is to know whether there also exists a causal relationship. We will come back to this question later. Before doing that, it is necessary to say a few more words about European expansion itself and the causes of this phenomenon.

For all practical purposes the expansion of Europe started in the 1490's with the voyages of Columbus and Vasco da Gama that were already mentioned. With this, in the words of the famous French historian Fernand Braudel, Europe was facing an 'extremely grave choice': either to play the American card and develop this immense continent—that was the difficult, the long-term option—or to play the Asian card and exploit the riches of Asia, which was the easier and short-term option. Europe decided to practice both forms of expansion but it did this with some division of labour. The Spaniards devoted themselves to America and created there an empire. The Portuguese, who were weaker in resources, especially demographically speaking—the whole country counted less than a million inhabitants—chose the other possibility, not the creation of a new world overseas like a New Spain or New England, but the exploitation of existing trade and wealth. Theirs was an empire of trade, forts and factories, more oriented towards Asia than towards the Americas.

But the Iberian hour was only a short one. The great world historical event of the 'long sixteenth century' (1450-1650) was the transfer of Europe's centre of gravity from the South, the Mediterranean world, to the eastern shores of the Atlantic. For a short while the Dutch Republic took over the banner of world hegemony. It fought the Spaniards in Europe and chased the Portuguese out of India. But Holland was essentially as vulnerable as Portugal, as became increasingly clear when it was challenged by the British. Towards the end of the seventeenth century Britain became the true world hegemonial power, a position

it maintained until the end of the nineteenth century. Then its position was challenged by other nations which began claiming parts of the overseas world. Of this new imperialist competition the partition of Africa was the most spectacular, but not the most important episode. Asia always remained much more important. Here the British consolidated their Indian Empire and made it the most important of their colonies. The French built up their empire in Indochina. The Dutch, who for half a century had only been interested in Java, started their expansion into the 'Outer Possessions', that is to say the other islands of the great Indonesian archipelago like Borneo, Sumatra, etc. Unexpected newcomers like the United States in the Philippines and Japan in Korea and Taiwan also entered the imperialist scene. Every country, great or small, new or old, wanted to play a role in the partition of the world. That was the new thing about imperialism.

However, the days of European expansion were not to last for long. After the First World War, President Wilson's concept of self-determination, comrade Lenin's message of anti-imperialism and the driving forces of nationalism in Asia and Africa were indicating that the days of the Empires would soon be over. Thirty years later Europe had all but withdrawn from Asia. Within a decade and a half the European empires were dissolved, much more quickly than they had been created.

Development and Underdevelopment

As I told you, the story of European expansion is a simple story that can be easily summarised. Much more complicated is the question of the impact of European expansion on development and underdevelopment. This is the second topic of my speech. In the nineteenth century this was not considered as a complicated subject. Colonialism was seen as a progressive force, beneficial to the colonised peoples. The peoples of Asia and Africa were in the words of the most famous historian of that century Leopold von Ranke, 'peoples of eternal standstill'. Europe brought to them the light of civilisation. Not only Ranke, but also Karl Marx himself considered colonialism as a progressive force. Western colonialism was the instrument of progress because it created in Asia the transition of feudalism to capitalism and thus, eventually, to socialism. Generally speaking and aside from its abuses, colonisation was therefore considered as important and beneficial. It brought civilisation to backward peoples who knew no progress and thus no history.

Not surprisingly, with decolonisation another interpretation came into being. The new vision was that colonialism was wrong. It had created the development of the West but only by underdeveloping—that is to say

exploiting—the 'Third World', to use an expression that became popular in those days. Some even argued that decolonisation had not made much difference after all because it had only brought about formal, i.e. political independence while at the same time continuing economic exploitation. Thus it had only replaced colonialism by new forms of imperialism. The rich were still getting richer and the poor becoming poorer. Imperialism was 'structural' to use another then popular term.

The debate about the impact of European expansion on the underdevelopment of the overseas world is a fascinating one and it has been fought with great passion and vigour. It is interesting to see that both positions, the one that considers European expansion as a progressive force and the opposite view that sees it as a negative phenomenon, are still defended today. At this moment, however, we cannot go any deeper into this. What interests us here is the question why and how the great technological breakthrough, that we know as the Industrial Revolution and that really laid the foundation for the modern world, came into being. Why did it take place in Western Europe and not elsewhere? What was the role of European expansion in this?

There is—as yet —no theory that offers a satisfactory explanation of this phenomenon. The most widely accepted theory is one that could be labeled as a 'convergence theory', that is to say an explanation comprising various independent variables that came together more or less by accident and that cannot be reduced to one *prima causa*. Historians mention in this respect such features as demographic growth, literacy, the scientific revolution, capital formation and low interest rates. Some historians have argued that the essential condition for the Industrial Revolution was capital formation and that this capital formation was the result of overseas trade, thus of European expansion. This position cannot be maintained even for Britain, the prime example of an overseas trading nation—and thus a *fortiori* for other countries—the capital formed as a consequence of overseas trade cannot have represented more than 15% of the gross investment expenditures undertaken during the Industrial Revolution. What can hardly be denied, however, is that without the previous development of the Atlantic economy, Britain's industrial revolution would not have been possible.

If, then, the theory that industrialisation was the result of colonialism and overseas trading is unjustified, the related theory that the West, after its industrialisation, became dependent on the colonial world as a producer of raw materials or a market for industrial commodities is also untenable. The Swiss economist Paul Bairoch has demonstrated that as far as raw materials are concerned the developed world has been practically self-sufficient up until far into the twentieth century. In 1914, after a century of intense colonisation, Europe

provided 97 to 99% of the minerals it needed and about 90% of the raw material for its textile industry. As far as energy is concerned, Bairoch's figures are even more striking. During the first half of the twentieth century Europe exported more energy to the Third World than it imported from it. In the nineteenth century the surplus on the energy balance was very great. England played a major role in this. Coal amounted to about 14% (in value) of British exports. To put it briefly, until the Second World War, Europe itself provided about three quarters of the raw materials it needed for its industry.

Let us now return to the original Industrial Revolution, the one in Britain in the eighteenth century. There is no doubt that this industrial revolution was based on a revolution in technology. To what extent was this technological revolution for its part connected with the so-called scientific revolution which had taken place in sixteenth and seventeenth century Europe? This is a matter for debate. It has been argued that before the nineteenth century the influence of science on technology was non-existent. This is perhaps an exaggeration. Indeed it is true to say that science and technology are not necessarily interconnected. There has always existed technology and important technology for that matter, which was not based on science but on practical learning by doing. It is also true that modern Western science, as it was developed during the scientific revolution, did not find its origins in technical needs or problems. The problems these scientists were interested in were those of pure science. But it is also true that the great originality of the development of Western science and technology in modern history was the strong interconnection between the two.

This was the result of a long process of preparation as one of the founding fathers of the history of technology, Lewis Mumford, wrote in 1934 in his *Technics and Civilization*: 'Men had become mechanical before they perfected complicated machines to express their new bent and interest.' This was the result of a change of mind. 'Before the new industrial processes could take hold on a great scale, a reorientation of wishes, habits, ideas, goals was necessary.' This took place in Europe during the transition from the Middle Ages to the modern period when traditional religion lost its impact on the European mind. Or as Mumford summarises it: 'Mechanics became the new religion, and it gave to the world a new Messiah: the machine.'

After about 1750 in Europe, science and technology became nearly as inseparable as Siamese twins. The results of this are overwhelming. Until about 1750 there was no rich and privileged North as against a poor South. China and Latin America probably had the highest level of wealth and development. North America was a developing country and Australia was not even yet a penal colony. There were differences but they were marginal because all societies were living

under what Fernand Braudel has called the ceiling of 'pre-industrial material civilisation'. Then was Prometheus unbound and the world would never be again as it had been before. In 1800 the productivity of an English textile worker was about one hundred times higher than that of one in India. This was a truly revolutionary development. From a traditional colonialism comparable to that of the Romans, Arabs, Ottomans, Chinese, etc.—as it had been until then—European colonialism became something very different, a colonialism *sui generis*, a world system. That this was possible was the result of industry, science and technology.

Science and Technology

So we can fairly say that science and technology were the decisive factors in the historical process that led to the formation of the modern world and that they still are of decisive importance today. All the same we maintain an uncomfortable relationship with them. On the one hand, we realise only too well that we owe practically all our prosperity and most of our well-being to science and technology, that the future of mankind depends upon this. On the other hand, we also know that this knowledge carries problems with it as well. Knowledge in itself is not a boon. The point is that it has to be used in a sensible way. We might even go further than that and state that to many people knowledge and science have something dangerous, even diabolical. Science evokes forces it is not always able to control. The scholar is not only seen as a benefactor, but also as a danger. This is one of the Western views on science. It is one of the leitmotifs in the well-known Faust saga, the notion that all human knowledge is inspired by the devil. There is another vision as well, the one not of men producing useful knowledge but pure science, not Dr. Faust but Archimedes of Syracuse who, when he was stabbed by a Roman soldier, merely asked him not to ruin his circles. In practice, however, this difference can often not be maintained, because even pure science may lead to practical results.

This, we also see when we look at the role of sciences in European expansion. From the very beginning colonialism faced a dilemma: to develop or not to develop, to interfere or not to interfere, to impose Western values as universal truth or to respect indigenous values. This is an old debate which is still going on. The British in India in the eighteenth century already wondered: 'What are we doing here? How should we act? What right do we have to meddle with this society, to interfere with this culture?' We are all familiar with the outcome of the debate. Colonialism followed its inner dynamics. Economy, science and technology collaborated in the exploitation of the overseas territories. Knowledge

about the East was absorbed and systematised in Western science. Western science and technology were exported to the overseas world.

This process of exchange has been going on now for some five centuries and in an ever more increasing way. It is, as I said, the aim of our project to study this huge field of research. We are only at the very beginning and at the moment I can only try and say a few words about the general pattern of the process. The first scholar to suggest that such a general pattern can be distinguished was George Basalla who, in 1967 in a famous article in *Science*, presented a diffusionist model of the spread of Western science in non-Western areas. Basalla distinguished three phases. During Phase I the non-European world acted only as an object of study for European science; after that came Phase II, the one of colonial science; in Phase III the transition found place to a situation in which non-Western countries dispose of an independent scientific tradition.

This model has been criticised as being too simplistic and one sided which undoubtedly it is. But what is true is that in the first stages of European expansion there was not much diffusion of European science and technology. Nor was European technology necessarily superior to Asian technology. On the contrary, Indian shipbuilding for example had been greatly appreciated by the British. The same was the case with textiles. And even when Asian technology struck European observers as backward and non-productive, as was the case with mining, this was not necessarily true within the context of the Asian economy of those days with its particular proportion of factor endowments.

Generally speaking one can maintain that in the first stage of European expansion the non-Western world functioned primarily as an object for Western scientific curiosity. Originally, of course the need for knowledge included the weather and climate, the geography and topography of the Eastern world, as well as astronomical observation, indispensable knowledge for shipping and exploration. Next, obviously, scientific concern turned towards the flora and fauna of the tropical world, another understandable field of interest. After all, in the beginning nearly everything revolved around spices!

But in addition there was an interest in Eastern culture and society, both in the material sense of products and artifacts, and in the immaterial sense of languages, customs and traditions. This interest also existed right from the beginning, but it has considerably increased since the eighteenth century. There were three successive movements to provide it with strong impulses: the Enlightenment in the eighteenth century, the geographical movement in the nineteenth century, and finally full colonialism in the late nineteenth and the twentieth century. The Enlightenment gave the first impetus to the formation of numerous learned societies in Europe as well as in Asia. The Batavian Society of

Arts and Sciences was founded in Indonesia in 1778, just a few years before the well-known Asiatic Society of Bengal founded in 1784 by the famous orientalist Sir William Jones.

In the nineteenth century travels and particularly exploratory journeys became the great passion of Europeans. This also explains the rise of geography and ethnology. In the years between 1820 and 1830 geographical societies were founded in most European countries. Ethnology became popular in the late nineteenth century, the age of Darwinism. No wonder that ethnology, or anthropology as we call it now, also adopted the evolutionary perspective of Darwinism and divided mankind into higher and lower races or—a milder variety—into peoples at different levels of development. This taxonomy later became the object of severe criticism.

The greatest impulse for the diffusion of science and technology however was engendered by the colonial system itself. An increasing degree of involvement necessitated knowledge in all kinds of areas. It dawned on people that as one colonial administrator observed 'every form of government should be based on sound knowledge'. If one was to respect the indigenous society, one would have to get to know it first. On the other hand, this also held true if one was to develop this society. This led to the dilemma which I have already mentioned and which is known as the 'Oriental-Occidental Controversy'. The classical example of this almost universal debate we find in India at the beginning of the nineteenth century. The issue at stake was whether the colonial power should promote the spread of Western education and science or rather stimulate indigenous civilisation and traditions. In the Indian case both positions were defended by the British but also by the Indians. Thus it was not purely a matter of colonialists vs. colonised. Some British orientalists had a very high esteem of Indian civilisation and scientific knowledge, some Indians on the other hand were crying for instruction in Western knowledge and languages. But there were also Indians who took the opposite view and there were British who found Oriental sciences absurd and worthless. The famous British administrator Lord Macaulay, for example, observed that 'a single shelf of a good European library was worth the whole native literature of India and Arabia.' Macaulay had his way and in 1835 the controversy was solved once and for all: the Government of India was to promote European languages, literature and science among the natives of India.

As we all know this was to become the general pattern. In the nineteenth century Western science and technology became so overwhelmingly superior that nobody questioned the need to export them to the overseas world. The complaint now was not that the colonial power did too much in this respect but rather that it

did too little and therefore was to blame for the tardy development of the non-Western world.

Conclusion

This then brings us to our conclusion. We have seen that over the last five centuries an enormous transformation has taken place. The world was first interconnected by European expansion, then united by modern and industrial colonialism. After 1945 that particular system fell apart but it was continued in the form of the capitalist world system that we know today. Economically speaking our planet has become one world, although with different and competing blocs. On the other hand political and cultural divisions continue to exist and are if anything becoming deeper. It is interesting to observe how complicated the present situation from the Western perspective is. On the one hand there is Japan which is seen as an economic but not as an ideological opponent. On the other hand there is the Arabic world which is considered, at least by some, not as an economic but as a cultural danger. It is also interesting to note that there is a definite globalisation and westernisation to be seen at the level of material civilisation and popular culture (Coca Cola, jeans, hamburgers, pop music, Dallas and Dynasty) but also a revival of traditional values as is illustrated by the rise of fundamentalism and various forms of linguistic and cultural nationalism. These phenomena as well as the recently discovered problems of the acculturation of immigrants from the Islamic world have led to an extensive debate in the West on the question of cultural universalism as against cultural relativism. Are Western values and ideas about human rights, democracy, the rights of women, etc. universal or has every civilisation the right to cultivate its own values which cannot be tested to some universal moral code?

This question although recently recovered is an old one. In one form or another it has been with us since the beginning of European expansion some five centuries ago. It became acute with the emergence of modern colonialism in the nineteenth century. When looking at it from this long term perspective it is interesting to notice that both schools of thought, universalism and relativism, have always existed. The dominant school however was the universalist one. In the early phases of European expansion, let us say from the the sixteenth to the eighteenth centuries, Christianity was the most important ideology. In the nineteenth century, as a result of the Enlightenment and the democratic revolutions of the eighteenth century, the dominant ideology was liberalism, that is to say the belief in liberty, democracy and material progress. In the twentieth century, of course, socialism became very important. Whatever the differences

between these ideologies, what they all had in common was their claim that they were universally valid.

On the other hand there also always has existed a certain counterpoint to the value-imperial of the West. In the old days there was the admiration for the ancient civilisations and the wisdom of the East. This was summarised in the well-known word: *Ex oriente lux* (the light came from the East). In the eighteenth century the philosophes criticised European societies by holding them up the mirror of Eastern examples. Montesquieu's 'Lettres persanes' is perhaps the most famous example of this. Voltaire—to give another example—wrote that China was the best empire the world had ever seen. Voltaire of course knew very little about China. At the same time Rousseau and others developed the myth of the *bon sauvage*. In the nineteenth century under the influence of romanticism and historicism the argument was developed that every civilisation was an entity of its own, with its own set of values which cannot be judged from outside. So Europe has always known both universalism and cultural relativism.

The debate seems to be as lively as ever. At the end of the Cold War and with the disappearance of the Soviet Empire and indeed of the Soviet Union itself, for a moment the world seemed to have become a very simple place. After the death of fascism and communism only one ideology survived, that of liberal democracy. As we all know Francis Fukuyama called this: "The End of History". The Gulf War was the most shining example of a new world order based on this new ideological consensus, and of its possible consequences for those who do not want to take part in it. Incidentally, it also indicated that the "The End of History" was not the end of what we are used to calling historical events.

If one looks more closely at the world, however, things are not all that simple and the triumph of the West, be it political or ideological, is not altogether so self evident. There exists a great number of doubts. The celebration of the fifth centenary of what we used to call 'the discovery of America' is offering clear indications of the conceptual and moral problems that the West is facing when reflecting about its own past. The violent debate that takes place on the American campuses about what is called 'political correctness', is another example of a collective form of *mauvaise conscience*. The uncertainty in Europe about the attitude to take towards the phenomenon of migration is still another aspect of this problem. The question has been asked whether or not Muslim fundamentalism or some form of Confucianism are the new alternatives to the apparently all powerful liberal ideology. That modernisation does not simply amount to westernisation has already been argued some time ago. The sociologist S. Eisenstadt has coined the expression the 'civilization of modernity' to illustrate that modern civilisation has a character of its own. At this moment we cannot go

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deeper into this. Moreover the historian should speak about the past and not about the future. For this, and other reasons, this seems to be the appropriate moment to finish this speech.