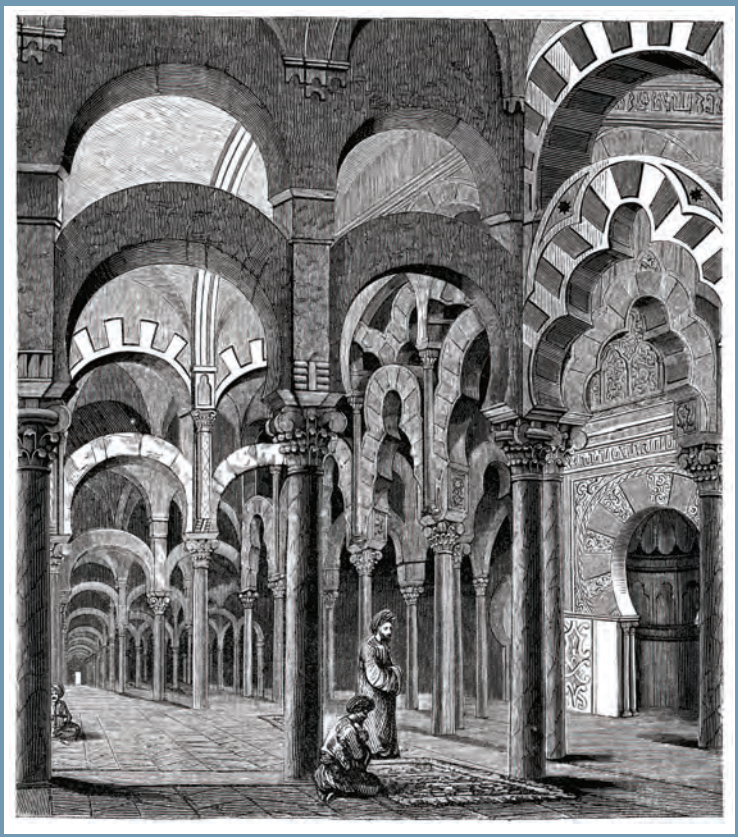
EUROPE & THE NEAR EAST

the PRESENCE & ABSENCE OF METALS

JACK GOODY



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CENTRE OF ISLAMIC STUDIES, UNIVERSITY OF CAMBRIDGE

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THE ASSOCIATION OF
MUSLIM SOCIAL
SCIENTISTS (UK)


CENTRE OF ISLAMIC STUDIES
UNIVERSITY OF CAMBRIDGE

JOINT PUBLICATION

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British Library Cataloguing-in-Publication Data.
A catalogue record for this book is available from the British Library.

ISBN 978-1-56564-589-9

Series Editors
Dr. Anas S. Al-Shaikh-Ali
Shiraz Khan

Layout and design Shiraz Khan
Printed in Malta by Gutenberg Press Ltd

Foreword

THIS PAPER IS THE TRANSCRIPT of a lecture presented by Professor Jack Goody at the University of Westminster, UK on 3rd June 2011. At the lecture, Professor Goody was presented with the AMSS (UK) Building Bridges Award 2011 in recognition of his outstanding scholarship as well as pioneering work to raise awareness of the contributions of other cultures, societies and civilizations to Europe and the world.

Professor Jack R. Goody KBE is an acclaimed social anthropologist, writer, Fellow of the British Academy, and Emeritus William Wyse Professor of Social Anthropology at St. John's College, University of Cambridge. He is also one of the world's pre-eminent social scientists. A prolific author he has published over 20 books on a number of diverse subjects including kinship, literacy, culture, and history.

The paper queries the assumption of the earlier advantage of the West in attaining industrialization. Professor Goody contends that the Near East (an area which includes the Middle East) started what archaeologists call civilization with the Bronze Age, developing its own renaissance and extension of trade influencing Europe. However, it was always handicapped by the absence of iron and coal. And it was the plentiful exploitation of these in Britain, with the help of German metallurgists, that made way for the industrial revolution in Europe, rather than any Protestant ethic which represents a Europeanist point of view.

ASSOCIATION OF MUSLIM SOCIAL SCIENTISTS (AMSS UK)
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September 2012

Europe and the Near East

• *the* PRESENCE AND ABSENCE OF METALS •

I HAVE LONG BEEN INTERESTED in this general project, despite the fact that my education was at first very much concerned with only English literature and with only English history. Nevertheless at the time, as students we were much concerned with the world around us, especially India, which was at that time struggling for Independence. But also with the struggle against fascism, which involved the whole world geographically and eventually led to the Second World War.

But after the war some of us returned to Building Bridges, even with our old enemies. Moreover the war had helped in a way for I had been in the Near East and in Africa. I had the opportunity of learning something about its early civilizations, which the West had done nothing to civilize. There I was also taken up with the attempt of Palestinians to retain what they could of their land as well as of the plight of the Zionist Jews, who had had such a terrible fate under fascism. There needed to be some reconciliation. But my residence there also made me aware of what my earlier training did not, that is, of the historical role of the Near East in the development of urban society.

I want to open by saying what I am trying to do here, which has to do with the relationship between East and West and revises central aspects of world history. This enterprise has not been well served by the devaluation by historians of the rest of the world, especially the Near East, as not being able to modernise, to achieve 'capitalism'. But the Ancient Near East was the origin of what archaeologists call 'civilization'. It first produced the Bronze Age, the Age of Metals, which then spread to India, to China, eventually through Troy to the Cyclades, to Crete, to Mycenae on the mainland, and then to classical Greece and Rome. This development

was initially focussed on the river valleys of Mesopotamia and Egypt. That part of the world continued to trade with the east, with India and China, even when, after the decline and fall of Rome, western Europe was cut off in the Mediterranean, and suffered a drastic fall in her economy and much of her social life. The continent picked up again with the revival of Italian trade with the east, especially through Venice. How was it that this area so central to the rest of the Eurasian continent, came to fall behind in what we call the process of modernisation? My attempt here is to set aside most European historical explanations, especially those based on ideological factors formed at the height of European supremacy in the nineteenth century, by Marx with the idea of the growth of capitalism only in Europe or by Weber with his notion of the Protestant ethic, by Elias with his civilizing process beginning with the Italian Renaissance. In my view these approaches are unacceptable at the present day, and inimical to Building Bridges. I myself would place much more emphasis on the unity of the whole Eurasian continent beginning in the Age of Metals, and extending from the Near East to India and China, on the alternation between them, l'histoire pendeleuse. This different approach has important political and social implications.

The river valleys where this transformation in human life took place, with its invention of writing (and who can imagine 'civilization' without the written word and its consequences?), was a land without local metals, a Bronze Age without Bronze. So it had to search for the metals, which it needed both for war and for peace, among the dwellers in the hills who were technically 'barbarians', i.e. not city dwellers. In the case of the Near East these comprised the inhabitants of Persia and of Anatolia to the north, of the Levant to the west and of the Semitic-speaking Arabs to the south. The literate civilizations of the Near East lay in the heart of the Eurasian continent and were involved in the exchange, not only of goods, including metals, but also of information. For this purpose the grain, produced in the fertile valleys with the aid of the coming of the plough, was needed, both internally and externally, for exchange with others, and a reckoning was kept, leading to the development of writing, neolithic systems of tokens to register these transactions, to the enclosure of tokens in envelopes (bullae), to graphic signs on the clay envelopes giving the size of the contents, and hence to the writing of

numerals in what has been called 'an accountant's script'. That was around 3,100 BCE but writing only became 'language-functional' in the middle of the third millennium, gradually being adapted to the transcription of speech and of thought until we arrived at the alphabetic fluency of the Phoenicians and the Aramaians, and then of the Greeks and Romans, who exploited its full potential, leading to the development of libraries, which went hand in hand with metals.

To find the metals it needed, the societies of the Near East went increasingly not only to the nearby hills but also to the Mediterranean, going to Cyprus, to Crete, to the Mycenaeans from Greece, who also explored the western Mediterranean. The search involved the 'barbarians' in the hills of central Europe and also in the rich deposits of Southern Spain, carried out by the Levantine Phoenicians from Tyre in Lebanon, on the present Israeli border, and the provider of silver that helped finance Hannibal's attack on Rome as well as Carthage's noted library. It was little wonder that Greece and then Rome, whose military forces required so much metal, iron to equip it but silver and copper to finance it, should have laid envious eyes on the Spanish metals that had been regularly exported to the Near East. Indeed it has been claimed that the boundaries of the Roman Empire were even defined by their search for metals. In any case this concern eventually led to the 'barbarians' becoming skilled in their use and adopting iron for war (especially for swords) as well as for peace (for the plough). Which also led to the invasion of Britain partly for its metals. In the end the 'barbarians' overcame the Roman Empire, internally by becoming its soldiers and externally by becoming its enemies. The result was the collapse of its urban-based economy, which now became based on the country, on 'manors', that is, the feudal system. The result was the virtual disappearance of a large part of urban culture, except in Rome itself, which became the centre of the Christian Church, giving rise to problems as well as to the usually celebrated glories. There was still a trickle of trade to the east through the Vikings down the Russian rivers, even to Muslim Baghdad, but little by way of the Mediterranean which became a zone of conflict between the Christian West and the Arab East. But the Near East, though it did not continue much trade with the west (either in metals or in other goods), went on exchanging with India and even with China.

It was the knowledge accumulated in writing, anyhow of science, which the Arabs translated when they conquered Iraq and Persia and established, first, the Umayyad and then the Abbasid regimes between the seventh and the tenth centuries. This interest was partly stimulated by the rejection of classical science, deemed pagan, by the nearby Byzantine world of Constantinople. Together with the results of the efflorescence of Arab science and medicine (helped on both by Nestorian Christians, exiled from the West for heresy, and who had closer ideological links with Islam, and by the Jews, overwhelmingly resident in Arab lands), it was these translations and the additional contributions that were so important for the later Italian Renaissance by which Europe set so much store.

This development in the Bronze Age began what has been called the 'civilizing process'. That took place not in sixteenth century Europe, as many historians and sociologists, like Norbert Elias, have maintained, but, from the prehistorian's standpoint it had already begun with the use of metals, with the growth of specialist crafts (including writing), with the development of furnaces (originally for clay), and with the transformation of agriculture by the use of the plough, which led to a form of economic stratification, with some people working for others, some sitting back. Moreover, the production of much of what we often call 'culture' depended upon their surplus products.

In previous works I have tried to point to the fact that the Arabs too had their Renaissances. For all written societies can look back in this way, even to Greek and Roman texts, scientific ones at a time when Christianity was often rejecting the study of 'natural sciences'. Envoys were dispatched by the Abbasids, to Constantinople itself, to collect those texts which were then made available to the translation movement sponsored by their rulers before the Sunni crackdown took place. That knowledge provided the basis for the extensive work in science which was carried out by the Arabs, in astronomy, geography, medicine, mathematics and other fields.

But the influence came not only from the Arabs. From India came advances in mathematics and its so-called 'Arabic' numerals, which were so essential to the growth of the mathematically-based science of the post-Renaissance west. Who could see such achievement occurring

with clumsy Roman numerals? Or without the paper and printing from China (not the press) which permitted the development of a further phase of the information society. I like to recall the huge libraries of Baghdad, of Cairo and of Cordoba. In the latter case, there were some 800,000 'volumes', whereas the largest library in Christian Europe, that of the monastery of St. Gall in Switzerland, had but 400, and these mostly religious. The ones in the Islamic world contained these Arabic translations of Greek and Roman science made on paper in Baghdad, whereas in Europe they were confined to heavy parchment or to ephemeral wax tablets. The former material meant using the skins of say thirteen sheep to produce one book. So the circulation of information was markedly less.

The Near East and the Levant, then, continued to develop, to trade, to manufacture, to calculate, to communicate with India and China, while the west declined from its peak in Antiquity, partly due to military factors, partly due to religious ones, partly to economic. But the east kept going the urban civilization that it had inherited from Bronze Age times. As we have seen it had its own Renaissance in the form of the translation movement, which stimulated local science throughout the Islamic world. Trade and industry also flourished and the economic historian of the Near East, Ashtor, speaks of the development of manufacture, in paper, glass, cloth of various kinds, in pottery (majolica and enamelling) together with the growth of an urban bourgeoisie, as in Italy, which even took over the running of certain Syrian towns and employed so-called 'noble' warriors as condottieri. But the Near East always continued to be short of metals, especially of the iron which had become so important in Western Europe for military, for commercial and for industrial purposes, and it was this lack of iron, as well as of the power, either of water or later of wood for charcoal, and coal, which made further development so difficult and which led to all those industries I have mentioned being taken over by the west by 1500. For the west could run them more cheaply, especially for textiles and paper.

The west itself had declined after the Roman empire when Britain may even have lapsed into illiteracy. It did not really begin to revive until the Italian states, especially Venice, but also Genoa, Amalfi, Florence and others too, started to trade again in the Mediterranean, making

effective contact with Alexandria, Aleppo and with Constantinople, later Istanbul. These contacts with the east were important not only for trade but for the exchange of information and techniques, including those from India and China, the manufacture of silk and cotton (and paper) on which the Industrial Revolution largely depended. Significantly that trade also involved sending metals to the Near East, not only the precious ones but copper and even iron for machinery and mechanisation. This was carried out through Venice, who had an effective monopoly on much of this European trade to the Levant, for it possessed mines in the Tyrol and exported copper, iron and precious metals from Germany in return for the spices, cloth etc. from the east. South Germany sent metals for shipment there; indeed the term ghetto seems first to have been used for the smithying quarter of Venice where the metal was processed and which was subsequently occupied by Jewish settlers from Ancona and Dubrovnik who had earlier been forbidden residence. Meanwhile the German merchants had a special 'inn' at Venice called the Fondaco dei Tedeschi where they could stay and conduct their business. Those who came there included Jacob Fugger, the famous early 'capitalist', and the equally famous painter, Dürer. Metal came down and spices and 'culture' went back; the first example of the Renaissance style in the north was at the Fuggers' town of Augsburg, a centre of the mining industry. At the same time Venice had a similar inn for the Levantine merchants, namely the Fondaco dei Turchi which included a mosque and a hamam, thus emphasising the nature of the exchange and of her role as middle-man. It was this connection with the east that helped give the Republic such wealth, such independence (from the Pope) and such artistic achievement; the goods involved in this exchange came partly from wool, finished in Florence but originating in Britain or in Flanders, but mainly in metals coming from Germany and from Central Europe.

This part of Europe had long been the centre of its metal industry. Trojan merchants from the Levant had probably visited during the Bronze Age to get copper. It became especially well-known in the Iron Age. The Romans and Greeks had traded or invaded up that way and the very first iron age in Britain and in Western Europe is known as the Hallstadt culture, named after the locality in Austria where Celts and Teutons produced the metal. This was one of the 'barbarian' areas that

mined it for the 'civilized' powers, but who also used it themselves for their own swords and ploughs, which they adapted and improved. In that area Noricum became an important centre for the Romans who used immense quantities of wrought iron for the armour, the spears and short swords of the legionaries. They encouraged the production of iron for military (and for civilian) purposes and eventually employed many of the 'barbarians' who worked it to guard their frontiers, using up large amounts of precious metal to pay them for their services. The 'barbarians' profited from this, so that they eventually overran the Roman empire and that led in turn to the collapse of trade with the east, which was only reinstated by Venice very much later.

During the period of decline in Europe the Germans continued to be the great iron workers, expanding to eastern Europe, even to the Mongol and the Russian territories, as well as to the west where their expertise was always useful. The expansion was largely of an artisanal kind, not so much in terms of science, because written work in this field was not encouraged by the hegemonic Abrahamistic religions which regarded God and the Bible as having said all that was to be said on the matter of nature. So they did not promote enquiry in that field, nor did they promote the artistic reproduction of nature either.

That is to say, the hegemonic monotheism did not encourage enquiry until the Italian Renaissance when the German, Georg Bauer, who wrote under the name of Agricola, produced his outstanding, *De Re Metallica*, effectively one of the first extensive literary treatise on the subject since the classical period. And he had been trained in science at Padua, the University of Venice, somewhat independent of the Pope, and with some close ties with the University of Salerno, much influenced by Islamic learning. Agricola came from the metal-producing region of southern Germany where expertise had been developed since early times. And this expertise included that of the gun-smith, whose name indicates its closeness to the metal-smith. Gunpowder, essential both for developments in warfare and in mining, had come from China, probably by way of the Mongols who had invaded as far as the Baltic. The powder needed a metal container to make it useful for hand guns or for cannon. This the German smiths made, including for the Mongols themselves. But they also served others for example the Turks, to establish their important

arsenal which so influenced warfare throughout the Near East, as well as in western Europe.

That German expertise led them to be called to Russia, where Peter the Great used them to construct the huge iron works behind the Urals which, ironically, were so important in enabling the Soviet Union to build the tanks and other weapons that defeated Hitler's forces in the Second World War. But much before that, German mine workers had been called in by the Tudors in England to improve their production of metals and the weaponry they were used for. This had already been done by Henry Tudor and when Queen Elizabeth became concerned about her supply of metals, she summoned Saxon miners and started a special company, largely German, to modernize the English mines. She was worried about having enough metal for the weaponry needed to fight the Spaniards, her rivals in the Atlantic trade. It was with German help that she was able to make cast-iron cannons (no longer wrought), which were much cheaper than bronze ones, so the ships could be equipped more generously and this gave the English fleet a certain competitive advantage over all others.

The mines were modernized, iron was produced, but it was still mainly wrought, worked by hammering. Cast iron had of course been made early in China, about the fifth century CE, because earlier in the Neolithic it had the furnaces that could produce the necessary heat. The west did not. China had the furnaces which already produced stoneware and porcelain, a material which the west had tried to copy but could not produce until the eighteenth century at Meissen in Germany, at the works of Spode and Wedgwood in England, where its advent has been proclaimed by British historians as a Consumer Revolution. Porcelain, china, was oven-hardened pottery which was traded all over and helped make China the greatest exporter in the world up to the end of that century. Her present predominance in exports is nothing new. Earlier the rest of the world had to make do with earthenware of various kinds. Only China could produce glossy porcelain and then cast-iron through its development of pyrotechnology.

With German help, Elizabethan England made more effective weaponry, with handguns too coming largely from German inventions, the hackbut. As we have noted gunpowder required some kind of metal

container in order to confine its explosion and eject a projectile, a development which inevitably changed the course of war and empowered the European states who initially employed them. And spread the technology, selectively, as well. This wasn't the beginning of the modern export trade in armaments but nevertheless that saw an important growth. Iron was but one aspect of the process which produced not only weapons but knives and many machines, so important for modern industry. The other element was fuel to heat the furnaces and kilns; initially that was wood, again in short supply in the Near East. But even in well-wooded Europe, the heating of furnaces produced a dearth of trees in the southern parts, so that charcoal became scarce. In its place, coal had been used in China and became employed here too for other purposes. But largely because of its friability, and its sulphur, it was not used for melting iron until this could be turned out in the form of coke which only happened with Abraham Derby in the early eighteenth century. In this development, Britain was singularly well placed because it had many extensive deposits of iron and coal lying near together and was therefore in a position to develop the cheap use of iron for the many purposes needed in the Industrial Age.

That involved firstly switching from charcoal to coal, from the use of timber to that of fossil fuel. This fuel together with the improvement of furnaces, as blast furnaces, produced the heat necessary to bake porcelain (beginning the dominant Willow Pattern, not the indigenous Chinese) and it meant that you could now melt iron to produce the cast variety and therefore make many copies of the same thing, rather than having to beat out individual examples. Who can imagine the Railway Age, which Britain exported so widely, without being able to make exact copies of the rails themselves, not to speak of the steam engine.

Both the steam engine and the railway were invented by mining engineers, Watt in the first place, and Stephenson in the second – and of course by a host of others who were concerned with the removal of water (in the first case) and the movement of heavy objects underground as well later as overground. It was the invention that led to, one might say created, the Industrial Revolution, which produced a market for iron goods, hoes, machetes, railroads, machines, tinned goods, eventually cars, ships and aeroplanes throughout the world. These were produced

on the basis of Europe's rich holdings of metal and fuel, together with the water power earlier used to drive machinery, all features which the Near East lacked. So despite its earlier exchange activity with east and west, so well illustrated in the Geniza archives of Old Cairo, and despite its many advances in science (connected with the translation movement) and the existence of a lively middle class who promoted the exchange economy as well as the arts – early capitalism – you did not see the development of modern industrial activity.

Let me return specifically to the theme of the Near East, later the Islamic Near East, and Europe. What does all this have to do with Building Bridges? It is essential for us to forget the kind of history we adopted in the heyday of British achievements with iron and coal.

Firstly we have to recognize the unity of Eurasia in relation to the development of civilization, the culture of cities, that emerged in the Bronze Age, especially in pyrotechnology.

That means acknowledging the similar possibilities that exist in these written societies of the Bronze Age, whatever differences, often temporary, that have occurred since then. That applies not only to the near East but also to India and China. In the case of the Near East, we must understand the continuation of urban civilization after the Roman period, and then of the exchange economy leading to the growth of a bourgeois, merchant, society, and the advent of an increasingly complex manufacturing economy. This manufacture like that of the Chinese porcelain and of cast iron eventually moved to the west, after 1500 in the first case and after 1800 in the second. European industry benefitted from advantages in iron, coal and in water power which enabled it to 'modernise'. But in other respects, in terms of ideology, of Protestant ethic or inventive capability, Eurasia was very much the same throughout. European societies came from the same cloth as others and it is their historians who have invented a great divide.

(2) But the civilized societies of the Bronze Age were in river valleys and had no bronze or other metals, though these were present in the hill country nearby (especially in the wider Near East in what later became Turkey).

(3) This meant they had to go outside, to the barbarians, to find metals and in doing so they changed the way of life of those barbarians,

who were soon able to use these weapons to attack the urban societies themselves, as in the case of Rome.

(4) The Near East, although having few metals and little wood, water, or coal, became the great focus of exchange, not only of metals but of other goods and information, thus spreading civilization.

(5) The trade with western Europe was interrupted after the Roman period possibly for political and economic reasons, partly because of the fighting between Christians and Muslims, leading to a collapse of its urban activity and to the consequent focus on the rural sector, the manor and the feudal system.

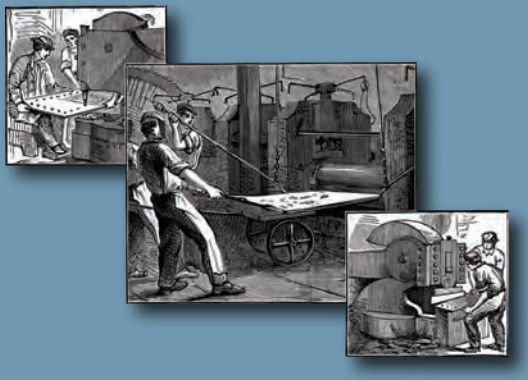
(6) But in the Near East, urbanization and exchange with the East continued.

(7) In time, there was a revival of exchange with the Near East, partly in metals (which it always lacked), partly in other goods and information. This recovery was led by the Italian towns, Genoa, Amalfi, and especially Venice that brought metals down from Germany.

(8) Germany had long been important in the production of metals in western Europe. It was the Hallstadt culture that took iron to Britain; it was Noricum that was the great Roman centre of iron production. They continued their activity in this field, especially when gunpowder came from China and was stuffed into metal containers.

(9) It was this expertise that the Tudors used to update their mines and their technological achievements. That led to their development of cheaper cannon for their ships and cheaper iron for the Industrial Revolution, given their possession of conveniently placed coal and iron, and water, and of the ingenuity of their engines.

Access to metals was thus a key to the differential development of Europe and the Near East in the Age of Metals, not differences in the Protestant Ethic and other attributes of Europe alone. The differences were nearer the surface, as deep as Europeans have imagined, for the various areas were much more closely in touch. The bridges were already there.



Europe and the Near East: The Presence and Absence of Metals queries the assumption of the earlier advantage of the West in attaining industrialization. Professor Goody contends that the Near East (an area which includes the Middle East) started what archaeologists call civilization with the Bronze Age, developing its own renaissance and extension of trade influencing Europe. However, it was always handicapped by the absence of iron and coal. And it was the plentiful exploitation of these in Britain, with the help of German metallurgists, that made way for the industrial revolution in Europe, rather than any Protestant ethic which represents a Europeanist point of view.

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