

Conference Report: An International Comparison of War Machines

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Introduction

The History Department of the Graduate School of Economics organized a conference entitled “An International Comparison of War Machines,” which was held at Kyoto University’s Clock Tower Centennial Hall, Meeting Room III, on February 20, 2013. Professor David Edgerton (King’s College London) was the special guest invited to make a presentation; Pierre-Yve Donze (Kyoto University) moderated the conference, and Professor Takafumi Kurosawa (Kyoto University) commented on the presentations.

The speakers’ names and presentation titles, as well as the commentator questions and speaker responses, are provided below.

Takeshi Sakade (Kyoto University), *Warfare-state Britain and the Aircraft Industry*
David E.H. Edgerton (King’s College London), *Britain’s War Machine*

Tomoji Onozuka (University of Tokyo), *Labor, Technology and War: A Comparative Perspective*

Minoru Sawai (Osaka University), *The Wartime Planned Economy and the Private Sector*

Yuji Nisimuta (Kyoto University), *Military Motorization of Germany, U.S., U.K. and Japan: A Comparative Study*

1 Welcome Speech by Kazuo Hori (Kyoto University)

Good day, everyone. I am Kazuo Hori, and I am in charge of economic history at the Faculty of Economics of Kyoto University. I would like to welcome all of you on behalf of the Faculty of Economics.

For today's seminar, Professor David Edgerton came specially from King's College London. As we all know, Professor Edgerton is a prominent researcher in the field of economic history and the history of science. It is indeed an honor for the Faculty of Economics to have Professor Edgerton at this seminar.

We also have Professor Tomoji Onozuka of the University of Tokyo and Professor Minoru Sawai of Osaka University as speakers at this seminar. Their participation in today's seminar is indeed very valuable, so we would like to thank them from the bottom of our hearts.

The war age of Japan from 1937 to 1945 is the most interesting for researchers of Japanese economic history. Research on the Japanese economy during this period is conducted from a wartime mobilization viewpoint. By taking this research approach, new literary source materials are discovered and, as a result, various new theories are formulated. To identify the characteristics of the wartime regime of Japan from a world history viewpoint, it is indispensable to undertake a comparative study of the wartime regimes of various countries. It is from this viewpoint that we planned today's seminar, entitled "An International Comparison of War Machines." It goes without saying that the title is borrowed from Professor Edgerton's outstanding work, *Britain's War Machine*.

Although today's seminar may not have many participants, we expect this small seminar to stimulate further research in this field. We are looking forward to a lively discussion and an exchange of ideas. Thank you very much.

2 Takeshi Sakade (Kyoto University): Warfare-state Britain and the Aircraft Industry

David Edgerton attacks the stereotypical image of "welfare and industrial decline" in 20th-century Britain by concluding that Britain is a "warfare state," given its strong arms industry and its position as the second-largest military power in the West. Geoffrey Owen, an anti-declinist, insists that British industry has been revived through a shift from an "Empire market" to the European market. I claim, in contrast, that to evaluate the revival of Britain, we must look at the roles of the British aircraft industry—which is at the core of the British arms industry—and Anglo-American collaboration in Britain's successful reform. My report focuses on the policy of the Wilson Labour government vis-à-vis the aircraft industry and the role of scientists, especially Sir Solly Zuckerman.

The controversy over whether Britain's 20th-century economic history should be characterized as declinist or anti-declinist has been ongoing since the 1970s. Well-known books articulating the declinist view have been written by C.P. Snow, Martin J. Wiener, Anthony Sampson, and Correlli Barnett; the general view of these authors is that by clinging to the idea of "Empire" and distancing itself from the European Union, Britain's economy stagnated in the period just after World War II. One point of contention between the declinists and anti-declinists relates to cultural factors that constitute issues such as "the

decline of the industrial spirit and the entrepreneurial spirit,” and “the cultural attributes of the elite class.” We will instead focus on basic manufacturing and address the original point of the declinist controversy—that is, whether the British manufacturing sector has declined or recovered since World War II.

Among British declinists who describe Britain’s postwar economy in terms of domestic economic stagnation and decolonization, the postwar history of Britain’s aircraft industry has great symbolic significance. After World War II, it was felt that Britain’s aircraft industry would offer economic salvation. While the British possessed a very high technological ability—as evidenced by their development of the world’s first commercial jet airliner Comet and the supersonic jetliner Concorde—they were forced to concede commercial defeat to the Americans. This led to Britain’s aircraft industry being scaled back, and it is believed that this process caused the British economy to stagnate. In *The Lost Victory*, Correlli Barnett writes that Britain’s ability to retain its aircraft industry was nothing but a neo-Edwardian dream inextricably bound to Commonwealth politics and its struggling economy. David Edgerton takes a very different view when he contends that the aircraft industry played a central role in the industrial revitalization of postwar Britain. In his recent book, *The Warfare State: Britain, 1920–1970*, Edgerton shows that Britain was not only a welfare state but also a military state, and he highlights the role that the military sector played in the British economy and the historical image of 20th-century Britain in the postdeclinist debate era.

After taking office, the Wilson Labour government started to review the aircraft programs of the previous Conservative government. On October 25, 1964, George Brown, Minister of Economic Affairs, made the first economic statement of the new Labour government in the House when he said, “The government will carry out a strict review of all government expenditure.” Their objective was to relieve the strain on the balance of payments and release funds for more productive purposes, by cutting expenditures relating to items of low economic priority, such as “prestige projects.” By “prestige projects,” Brown and the Labour government were referring to the aircraft development programs that the Conservative government had earlier pursued.

Just after taking office, Denis Healey, Minister of Defence, proposed cancelling the TSR-2 fighter-bomber, P-1154 VTOL fighter, and HS-681STOL transport projects. The target of cutting GBP4 billion from the military budget was achieved by reducing military research and development expenditures. On February 1, the Cabinet approved the plan without difficulty, because development of the P-1154 and HS-681 was still in its early stages, and the projects had few supporters within the military services. On April 1, two lengthy cabinet sessions were held, in which the proposed cancellation of the TSR-2 project was discussed. The main obstacle to cancellation was the foreign exchange problem: to resolve this, Britain and the United States began negotiating, *quid pro quo*, how much British military hardware the United States would buy in return for the British purchase of American F-111 fighter aircraft. The Anglo-American V/STOL engine co-development project became a touchstone

by which the United States decided whether it was serious about cooperating with the British and serious about promoting British military sales within the United States. The British needed the United States to purchase British high-technology products; in return, the British would purchase U.S. F-4, C-130, and F-111 aircraft. If Britain and the United States were to cooperate in developing aero-engines—where Britain had the same level of technological knowledge as the United States—the British ability to develop advanced aircraft technologies would be recognized as valuable by the United States. However, British Minister of Aviation Roy Jenkins believed that the future of the British aircraft industry relied on cooperation with continental Europe, rather than the United States; Minister of Defence Denis Healey was equally skeptical about Anglo-American cooperation. The only British official who supported Anglo-American cooperation was Sir Solly Zuckerman, chief scientific advisor to the Ministry of Defence. Zuckerman believed that Rolls-Royce, the symbol of British industrial competitiveness, should work to break into the American aircraft market. Moreover, Zuckerman insisted, over Healey's objections, that the Ministry provide continued funding for the P-1127 Harrier V/STOL fighter.

By purchasing the F-111, Rolls-Royce was able to sell its Spey engine to the U.S. Department of Defense and make successful inroads into the huge U.S. military market. Cancellation of the TSR-2 project by the Wilson government in 1965 was thus a major turning point in the history of British aircraft development. The United States helped Britain offset the cost of the F-111s it was buying by participating in cooperative aircraft sales to Saudi Arabia; thus, the United States enabled the British Aircraft Corporation to penetrate the Middle East military market, which until then had been dominated by the United States. Moreover, by purchasing the F-111, Rolls-Royce could compete on the same terms as United States manufacturers. The U.S. Marines then purchased 30 British Harrier aircraft by fiscal year 1971 and continued to purchase Harriers until fiscal year 1974. Following the British government's cancellation of airframe orders, Rolls-Royce obtained an order for U.S. military airframes; it thus broke into the huge U.S. military aircraft market. Therefore, although the Wilson Labour government had cancelled the most sophisticated British aviation projects, the British aircraft industry managed to survive as an engine supplier to U.S. projects, thus maintaining its superiority in the field of V/STOL fighters. Recently, BAE Systems became a major supplier for the U.S. Department of Defense.

My analysis of Britain's defense industrial base leads me to conclude that the industry rehabilitated during the postwar period through its entry into a global market that was dominated by the United States, as well as through cooperation with the Europeans—an alternative market that stood as an option when even Anglo-American collaboration failed. (Written by Takeshi Sakade)

Commentator's (Professor Kurosawa's) Question to Professor Sakade (1): Professor Sakade's paper argues that the British aircraft industry was not oriented to Europe, and I am unsure of his position on the concept of "Empire"; he

argues, however, that that industry was geared toward the United States. How generally applicable is this assertion to the aircraft industry overall?

Professor Sakade's Response: My answer is dependent on the time frame at hand—that is, whether you are talking about a point in time prior to or after 1967, the year in which Britain relinquished control of its interests in the East of Suez. Following the end of the rule of the British Empire, Britain hoped to “ride two horses,” implying integration with both the United States and Europe.

Commentator's (Professor Kurosawa's) Question to Professor Sakade (2): What was the impact of the war on other sectors?

Professor Sakade's Response: With the exception of the aircraft industry, I agree with Geoffrey Owen's argument in *From Empire to European Market: The Decline and Revival of British Industry since the Second World War*. British governments had issued special privileges to the aircraft industry for the purpose of national security. Even after the end of the British Empire, British governments supported the aircraft industry by sacrificing other industries. This is one of the characteristics of the 20th-century British warfare state.

3 David E.H. Edgerton (King's College London): Britain's War Machine

Ladies and Gentlemen, it's a very great pleasure indeed and it's a very great honor to be here. I would like to thank Dr. Sakade and the Faculty of Economics of the University of Kyoto for inviting me here. I particularly appreciate the honor that all of you do to me by speaking in English. I have a second language myself, Spanish, and I appreciate very much indeed that it is a very different matter, conversing in an academic sense in a second language; so, I do genuinely appreciate your speaking in English today. Thank you.

Flying here, I was recalling a great British economic historian who specialized in the history of war, Alan Milward, who published a book for which I think he is not sufficiently appreciated today: *War Economy and Society* (1977). I think he would very much appreciate the revived interest that there has been in war economies in recent years. Today I want to talk about my book *Britain's War Machine*; given that we are economic historians, I will focus particularly on some numbers.

First, let me start with a very brief introduction. What I have been trying to do in the last 20 years or so is to write postdeclinist and postwelfarist histories of Britain. I really want to say something about the historiography of the British war economy and how Britain changed over time; I'll then talk a little bit about Anglo-German comparisons, and not least because such comparisons are central to discussions of Britain's war economy. I will then talk about the vital importance of foreigners to the British war effort.

Let me start with an advertisement for my first book, *England and the Aeroplane*, which is to be republished in April of this year. In that book, I argue that Britain's wars were in relative decline; however, this does not mean that its involvement in wars was declining absolutely or failing. I think one of the key conflations in the historiography of 20th-century Britain has been, quite precisely, the conflation of the reality of the relative decline with the notion of failure. Of course, the vast majority of the relative decline of Britain's wars was not owing to British failure, but to the success of other countries. This very straightforward point needs to be insisted upon. The second point I make in this book is that the British state was certainly developing as a welfare state, but that it was also a warfare state. Many people in Britain have wanted to have me say that the British state was not a welfare state, but that is not my position: my position is that it was both. However, historians have tended to interpret the state—the British state—as if it were nothing but a welfare state. So even the historiography of Britain in World War II emphasizes the welfare side of the state, rather than the military side of the state; this is something that is quite extraordinary from my perspective, but it has not been surprising at all to most historians. In the 1960s—particularly in works such as Angus Calder's *The People's War*, but also quite generally—wartime Britain was seen as a singularly successful period in British history. It was an economic success, a scientific and technological success, and a social success too. It was here that the welfare state was expanded; there were, further more, plans for future expansion, and all this was seen as central to wartime politics. One of the most consistent features of this historiography has been the insistence that Britain was uniquely successful amongst all the belligerents in World War II at mobilizing itself. It had the highest proportion of population either fighting or producing for the armed services. The implication of this was that Britain had a uniquely successful planning system and a uniquely powerful commitment to making that planning system work. The counter to that optimistic and positive view of Britain at war comes from the works of Corelli Barnett, in the 1970s and especially in the 1980s. The key book was only partially about World War II, but was nonetheless called *Audit of War*. Within it, the central argument is that war, particularly in 1940, exposed a fundamental weakness in the British economy and British industry, and in British science and technology, revealing that Britain was weak in comparison to Germany. Britain was only saved by becoming a kind of province, satellite, or pensioner of the United States in 1940. This view has proved to be incredibly influential on both the left and right. The idea that Britain was in an exceptionally weak position in 1940, and that Germany was altogether stronger and more successful, became a standard point in much historical writing.

If we look at the 1990s and the early part of this century, we will see a notable move amongst historians away from the economic and—indeed, to some extent—social dimensions of this issue. This is reflected in studies on World War II that have a very strong focus on cultural and ideological perspectives. This particular feature of the war has been highlighted, and it is summed up by

the phrase “national identity.” A particular aspect of British national identity relating to 1940 is British nationalism; this was the moment when the Empire became a nation, and when the nation became strong and its fate central to politics. Historians have been interested in this, because they see that intense nationalism dating from 1940 as being problematic today, in that Britain refuses to deal in a “grown up” way with other countries, particularly with the European Union, and that this behavior strengthens racialist politics. So, “something bad” happened on the way to the welfare state, and it happened in 1940, during this moment of inward-looking nationalism.

In recent years, there have been new accounts of the economics of British militarism, not only in my own work but in that of George Peden of the University of Stirling. Also hugely important has been a new account of Germany and in particular of the German war economy by Adam Tooze of Yale University, in a book called *Wages of Destruction*. This book makes the fundamental point that the German economy of that time needs to be understood as being relatively poor and that this had profound consequences on how the Germans could fight World War II. Tooze’s book and my book *Britain’s War Machine* powerfully complement each other, not least in that both are very much against the grain of elite understanding in Britain and indeed the United States on the history of World War II. (See the discussion in the *Daily Beast* online newspaper.) Britain’s wartime performance is not merely of academic interest; it still has deep ideological significance.

Many British nationalists—even British hyper-nationalists and militarists—who think such things have existed are peculiar people, in that after World War II, they have not celebrated British strength; they have instead insisted on the weakness of Britain. Weakness in 1940–41 has become a key part of their world view.

In contrast, my argument is that Britain was a great power indeed in 1940 and 1941; it was in some respects the greatest power on earth at that moment. That strength, I argue, came not from inside the nation—as nationalists and militarists assume—but from Britain’s very particular linkages with the rest of the world. Now, in recent years, numerous historians have brought the British Empire back into the story of Britain, but I want to go further and say that it is not just about the Empire: it is also Britain’s interaction with nearly the whole world that gave and gives it strength. As the classic liberal argument suggests, extensive trade gave Britain strength. I think the nationalists were and are wrong to see British strength at its strongest when the nation looked to itself, and when extensive linkages with the rest of the world were weakened. Access to the world was hugely important in wartime.

The second crucial point is that Britain was exceptionally rich. It had the highest GDP per capita of all the major countries in Europe, certainly higher than that of Germany. As British economists in the late 1930s and during the war insisted, this allowed Britain to mobilize a greater proportion of its resources than Germany or indeed any other continental European power could. It was regarded as a hugely significant advantage simply to have higher per-capita

income. However, this insight into war economics—which was in the public domain in the 1930s and the early part of the war—has rather disappeared from the literature on the economics of war, but I’m glad to say it’s coming back.

Interconnection with the world has been interpreted as dependence, and particularly as dependence on the United States. I want to argue that there was some dependence on the United States as well as the rest of world in 1940 and 1941, but it was nothing compared to the dependence seen during the latter part of the war. Indeed, my position is that historians have overestimated Britain’s dependence on the United States in 1940, and seriously underestimated its dependence during the latter part of the war. In other words, during World War II, under Winston Churchill, Britain suffered an extraordinary and rapid relative decline. The time under Winston Churchill saw the most rapid relative decline of any part of the 20th century, I think.

To compare the output of weapons in Britain and Germany from the beginning of the war up to May 1940, let’s start with the perhaps obvious case: rifles. In the last four months of 1939, Germany produced 279,000 rifles. As you would expect, the country had an army of many millions. In contrast, Britain was producing 80,000 or 90,000 rifles. If you go to 1940, the numbers are very similar; so, for rifle production and indeed stocks of rifles in 1940, there is an obvious British deficiency. This is reflected in popular stories of the home guard having to drill with broomsticks because there were no rifles available, until they were imported from the United States. However, that image cannot stand for the British military as a whole; indeed, my assertion is that the whole point of the British military effort was to avoid the creation of a large army, and instead, to focus on ships, aircraft, and tanks. The underproduction of rifles was in line with British military industrial policy. Today, British people find it extremely difficult to believe that even in the field of aircraft, Britain was out-producing Germany in 1940, although specialists know very well that it was. What is much more surprising to the specialist is that British tank production was comparable to that of Germany in the last months of 1939: Germany was producing 247 tanks, and Britain was producing 314, the latter for an army that was meant to be much, much smaller than that of Germany. If you look at the first four months of 1940, the number of tanks produced in each country is essentially identical; if you look at September to December 1939, Germany produced 355 medium tanks to Britain’s 104, so there was German superiority in that sense. This changes by 1941, when Britain produced 4,800 medium tanks to Germany’s 3,300. Even in 1940, we see that German medium-tank production was only marginally ahead of Britain’s. The whole story about Germany’s super-massive superiority in tanks, even over the British army, simply does not hold. Put another way, the British army was the most tank-intensive army throughout World War II; indeed, it was tank-intensive to an extraordinary degree.

The standard perception with regard to war supplies from abroad is that the economy was blockaded, and that what is often called a “lifeline” pro-

vided only a trickle of essential imports. In fact, throughout the war, Britain maintained imports at an extraordinarily high level. Indeed, if you look at imports in terms of constant value, taking 1938 as 100, that value goes down to 70 in 1942. There is something strange about those figures, in that they exclude something of crucial importance: munitions. Many economic statistics in Britain exclude munitions. If one includes armaments in this picture—particularly armaments from the United States—extraordinarily enough, the value of imports into Britain is greater in World War II than in peacetime. Britain imported more manufactured goods during the war than before the war. Essentially what Britain faced during World War II was not a crisis in shipping, but a problem in shipping space; however, in the context of the later war years at least, there was a no-balance-of-payments constraint on imports. A consequence of this constraint was that Britain's trade shifted systematically and across the board from the importation of bulky, low-value imports to the importation of concentrated, high-value imports. If we look at the case of wheat—and the fact that Britain was the largest importer of wheat in the world in the 1930s, as well as long before that—we see a peak import of 5.8 million tons of wheat in 1940, which fell by 1944 to 2.8 million tons. Britain replaced imported wheat with potatoes and with wheat grown at home. The story of the plowing up of British pasture to grow wheat is absolutely at the center of the histories of the British food supply and British agriculture. It is a plain instance of the nationalization of the British economy during the war, which is seen as being profoundly important and profoundly successful. The story of maize is even more spectacular: 3 million tons of maize were imported before the war, but reduced to nothing during the war. Here, we have a central clue to the overall picture: maize was animal food, and a great bulk of the fall in British food imports was in food for animals, not food for humans. What Britain did was replace the importation of food for animals with the increased importation of meat and other animal products. British meat and cheese supplies internationalized during the war, in two senses. One, the absolute quantity of imported meat increased from 1.5 million tons before the war to 1.8 million tons in 1944. In the case of cheese, there was a doubling of imports during the war. That's one side of internationalization; the other side is a decrease in the domestic production of meat. The point is that while some food production shifted towards Britain, that of wheat, vegetables, and other produce (e.g., meat and cheese) was internationalized even more. This story is essentially the story of Britain's interconnection with the world.

The increase in imports is in some cases absolutely spectacular. Britain was already in the late 1930s the largest importer of oil products in the world, without question. Remarkably, in the course of the war, the total amount of petroleum products coming into the British Isles nearly doubled, from 11 million tons to 20 million tons. This is just imports into the British Isles; it is not imports to the British Empire, nor those to supply British forces operating outside of the United Kingdom—just to the island itself.

During World War II, the civilian use of petrol was rationed and therefore declined. However, overall consumption increased to a great degree. In other words, rationing does not imply overall shortages, even if within the literature it generally does. However, rationing is a way of essentially providing a guaranteed supply of imported commodities that are relatively expensive. Rationing was confined to such things as meat, sugar, tea, fats, and petrol; it did not apply to home-produced goods, nor did it apply to things available sporadically, like fish. Hence, rationing was a guarantee of supply of certain goods at relatively high levels, and of course a way of ensuring fair distribution. The story of the British war effort is one of the massive availability of materials, certainly compared to that seen in Germany. The differences in availability of petrol and aviation spirit are key examples. We come back to comparisons of German and British production. With the histories of Britain in World War II, Britain is seen through a very nationalistic frame: we take account only of production within the borders of the United Kingdom. Let me make a comparison of the production of military aircraft in United Kingdom—these figures here—with production, wherever it happened, for the German armed services in Europe. Essentially, the figures are not too different—that is to say, if you take the total weight of aircraft produced in 1944, Germans were producing 174 million pounds to Britain's 200 million pounds. The British were producing fewer aircraft, because they were producing bombers; mean while, the Germans were producing relatively low-quality fighters by the end of the war. That's the basic story. We need to do two things to these stories. One is to note that the German economy was much larger than Britain's and that its population was something like 30–40% greater than that of the United Kingdom. Furthermore, some aircraft produced outside Germany were included in its total. On the other side, British war production represented only a portion of war production for the British forces; in other words, we need to take into account production undertaken elsewhere. We need to add something like 5,000 aircraft to this total, to account for production in the rest of the British Empire. On top of that, we need to add even larger supplies that came from the United States.

I mentioned that in 1940, British tank production on alike-for-like basis was briefly similar to that of Germany, but that in 1940, Britain's army was much smaller, and therefore its "tank intensity" was greater. As the war proceeded, that basic story remained the same, except that British tank production absolutely exceeded that of Germany. On top of that, Britain received massive numbers of tanks from the United States. In 1942, Britain produced 8,000 tanks; it also received 9,000 tanks from overseas (mostly the United States), and so, the total supply to British forces in 1942 was 17,000 tanks. The supplies to the German army forces in 1942 consisted of 6,000 domestically produced tanks. The British army was still considerably smaller than the German army, and yet it had nearly three times the tank supply. Indeed, put another way, in 1942, Britain *received* more tanks from overseas than the German army had in its entire supply. Britain did in fact produce rifles on a very large scale during

World War II, producing them in Britain, but also in Canada, India, Australia, and indeed the United States as well. More standard British rifles were produced outside the United Kingdom than inside it.

An aspect of this, of course, is very, very well known; it is known as “Lend Lease,” and it was a system by which the United States provided its allies, free of charge, with articles of defense. Interestingly, the extent of Lend Lease in the latter part of the war has been under estimated, and its importance at the beginning of the war has been overestimated. The Lend Lease Act was signed in March 1941, before the United States entered the war. Britain was still buying weapons from the United States with U.S. dollars, up to the end of 1941. Lend Lease didn’t really come into operation until 1942, when the United States entered the war; up until that time, U.S. dollars were a critical resource, and Britain used them to buy rifles, tanks, aircraft, and much else. It was through Britain’s use of U.S. dollars that the Liberty ship industry was created. The Liberty ship was a British design, not an American design, and British shipbuilding missions went to the United States in 1940 with U.S. dollars, essentially creating shipyards for the manufacture of the Liberty ships. Britain not only mobilized its own industry to produce weapons, but also mobilized the industry in the United States.

By the end of the war, the story was very different. British GDP was GBP9 billion, and in 1944 the amount of Lend Lease was GBP2.5 billion pounds; in other words, Lend Lease represented a 20% addition to GDP. This is really quite something. Lend Lease has been underestimated because people haven’t appreciated its particular nature; it wasn’t a quantity of money that had been given to the Britain to finance imports. It was equipment that remained in the ownership of the United States, and it therefore never entered British national accounts. It was simply weaponry whose use was made available, free of charge. World War II was the moment when national accounts were supposed to become central to national economic management, and yet 20% of GDP was not even accounted for, in the national accounts! So, there is a kind of global division of labor between the United States and Britain that is very important, and it implies radical dependence on the United States for particular commodities—oil in particular.

Let me bring us to a close by returning to the theme of the exceptional mobilization of the British economy during the war, for it did indeed happen. However, British historians, I think, are quite wrong to reattribute Britain’s success to the superiority of national planning or to the particularity of the political position in Britain during World War II. This assertion follows from two different factors. First, the relative wealth of Britain, a rich country, could more easily mobilize a higher proportion of this national income for defense purposes. Second, there is its dependence and interdependence with the rest of the world, and Lend Lease itself. Lend Lease was indeed designed precisely to mobilize Britain, more so than any belligerent. It’s a question not just of Empire, but also a question of nonimperial territories over which Britain had

great power. If you were a meat supplier or a wheat supplier in the southern hemisphere, during World War II, you had now here else to sell your meat or wheat, other than Britain: the navy made very sure that the continent of Europe was cut off from world trade, and so, you could not sell goods to Germany, Greece, or Italy. Britain could not send exports in return—only promises of future payment. However, that was better than nothing. Britain absolutely has economic strength that allows it to extract resources from the world in an extraordinary way.

After the war, Britain had a much more national economy than before or during the war. We have thus far written of the history of the war economy from this national and nationalist perspective; we need, however, to understand the surprising particularities of Britain's wartime political economy.

Commentator's (Professor Kurosawa's) Question to Professor Edgerton: To begin with, I would like to ask Professor Edgerton for clarification. To what extent does Professor Sakade's view on the dominance of private companies hold true? I believe that networks of multinational enterprises with a global hinterland played a key role in supplying goods to the United Kingdom during the war. Or do you think the agreements among governments were more important?

Professor Edgerton's Response: Yes. All British companies played a very important role, but so did others. Much of the meat supply came from British- or American-owned "meat packers," a term commonly used in the United States. However, the meat packers' goods were bought directly by the Ministry of Food; hence, you see an interesting combination of the role played by private individuals and the British state. Further, the food distribution system was initially in private hands, such as those of enterprises, but it essentially became a branch of the government.

Commentator's (Professor Kurosawa's) Comment on Professor Edgerton's Response: Do you mean a type of industry-military complex?

Professor Edgerton's Response: Let me explain in another way. I feel that the United States achieved the same level of military progress as Britain. Can I make a point about the development of the private industry? With regard to the warfare state, in particular, modern war is driven by civilian industry and civilian values. This is why I strongly specify the differences between military and civilian industries. Typically, during a war, the arms industry grows larger. However, this is concealed by the notion of the civil industry being converted into a military industry. Now, in the case of the production of guns, poisonous gases, or explosives, it is obvious that these are specialized industries, and I think the same point applies to aircraft engines. There

is a radical difference between an aircraft engine and a car engine: a 1,000 horsepower engine is very different from a 20-horsepower one. This is a very important distinction, between an engine for a tank and that for a tractor, for example. Hence, we are talking about a specialized capacity that needs to be built extremely quickly. This is what distinguishes a war economy from a peacetime economy.

Professor Watanabe (Kyoto University): Thank you very much for a very interesting presentation. My question: I wonder about inter-industry relations—starting, for example, with tank production.

Professor Edgerton: The first key point is that Lend Lease is free of charge. It is a very peculiar thing. I have encountered some confusion in the British literature about this, with some suggestions that the Lend Lease had been “paid off.” This thinking came about because, with the end of the war against Japan, Lend Leases were rigidly cut off; this meant that Britain was going to be short of supplies very, very quickly, and so, a loan was arranged to pay for the continued use of some Lend Lease goods. That loan was paid off, but it was trivial in scale, compared to the actual value of the Lend Lease itself. Supplies from the rest of the world are a very different matter. The “sterling balances” in London amounted to something like GBP3 billion by the end of the war. This was owed to India, Egypt, Argentina, Uruguay, Australia, New Zealand, and some other places. As a result, after the war, the pound sterling was the currency not of a nation but of an entire trading area. On the other hand, you see intense nationalism in propaganda films, for example, where there is no differentiation between the imperial and the nonimperial food supplies. It’s a strange mix. What I derive are very powerful emphases in the literature on postwar restrictions of imports and the promotion of prewar exports—emphases I would not have been thought possible.

4 Tomoji Onozuka (University of Tokyo): Labor, Technology, and War: A Comparative Perspective

More than 30 years ago, in reading a book on British history in the 20th-century, I became deeply impressed by Britain’s strong wartime performance, in both of the World Wars. I feel that Britain’s wartime organization has some tones that distinguish it from Britain’s image as it generally known in Japan (i.e., a parliamentary democracy with liberalism, individualism, private property, a strong tradition of trade unionism, etc.). Why was Britain so good at war? Britain seemed much more effective, and more eager to triumph, in wartime than in peacetime. In this paper, I will offer some considerations with respect to this question, while focusing in particular on labor and technology.

4.1 Comparisons of Labor

4.1.1 Fundamental Requirements for Wartime Organization

If a machine is to work smoothly, it must be free from possible internal conflicts and contradictions, such as a rod scrabbling at a hull, a piston seizing up, or parts bumping together. So should be a war machine, if it is indeed a “machine.”

Many factors could cause conflicts and contradictions within a war machine; however, an inevitable and the biggest consideration for any industrial nation is its labor: industrial relations, labor management, and labor policy. Besides many issues that relate to the allotment of material, fiscal, and human resources, a wartime organization must be free of labor problems, in what is known generally as a “domestic truce” or *Burgfrieden*.

There are two types of domestic industrial truce in wartime. One is a truce that is attained by preventing industrial stoppage, driven by the assumption of a variety of interests; the other is attained by subsuming everyone under the principle of “a single community,” with the accompanying negation of any difference in interests.

4.1.2 Wartime Labor in Britain

The basic framework of Britain’s wartime organization originated as far back as one week before German troops invaded Poland. On August 24, 1939, British Parliament passed the Emergency Powers (Defence) Act 1939 (2 & 3 Geo.6, c.62), which entrusted the King with the power to issue Statutory Rules and Orders (SRO) “by and with the advice of His Majesty’s Privy Council” for territorial defense, the maintenance of the public order, and the effective execution of war. This power was enlarged by the 1940 Act (3 & 4 Geo.6, c.20) to make people and their services and properties at the King’s disposal, by virtue of SROs. These arrangements proved quite efficient in wartime, as lengthy discussions within the Cabinet and Parliament were precluded.

Within an efficient legal framework, Britain’s wartime labor policy was deliberately made to facilitate consultation among the government, trade unions, and employers’ associations, using the National Joint Advisory Council (established in October 1939) and the Joint Consultative Committee (established in May 1940) as the central organs vis-à-vis labor policy. Ernest Bevin, the leader of the Transportation General Workers’ Union, took the central role as the State Secretary for Labour in crafting this consultative labor policy.

Britain’s wartime labor policy was endowed with very strong weapons by which to control labor markets, industrial relations, trade unions, and unofficial actions. (i) To regulate the employment and dismissal of labor and workers moving among firms, Britain was equipped with the Control of Employment Act 1939 (2 & 3 Geo.6, c.104) in September 1939, the Undertakings (Restriction on Engagement) Order (S.R. & O. 1940, No. 877), the Essential Work

(General Provisions) Order 1941 (S.R. & O. 1941, No. 302), and many other Orders by which to control the labor market. This controlling policy had an underwriting effect with respect to existing industrial relations. Labor conditions in essential work as designated by the Ministry of Labour could not fall under “the recognized terms and conditions of employment” set out by collective agreements and/or arbitrations in the same or kindred trade of the same district. Under this Act and these Orders, workers could not be dismissed in the absence of their serious misconduct. (ii) Industrial disputes, if not settled by the two parties, would be dealt by compulsory arbitration in the newly established National Arbitration Court, and industrial actions that could lead to stoppage of factory and transport were substantially prohibited by the Conditions of Employment and National Arbitration Order (S.R. & O. 1940, No. 1305). Furthermore, the simple acts of talking about or discussing strikes or lockouts among persons engaging in essential services were strictly prohibited by virtue of the notorious clause 1 AA of the Defence (General) Regulations (S.R. & O. 1944, No. 927). (iii) Even under such a strict and powerful regulating regime, collective agreements between trade unions and employers’ associations were paid due respect. The Conditions of Employment and National Arbitration Order and the several Orders that followed made it possible to regulate labor conditions through the use of collective agreements and to deliberately preclude the government’s direct control over wage and labor conditions. Therefore, official actions by trade unions were not prohibited by virtue of the 1 AA clause, and, rather, moderate and orderly trade unionism—quite distinct from unofficial actions and wildcat strikes—were promoted during this regime.

4.1.3 Comparisons with World War I

Britain’s wartime organization could be characterized by its efficient legal framework, tripartite consultative manner, and quite-strong coercive means, all of which enabled the war leaders to suppress any unofficial industrial action, impose various restrictions on human physical civic and property rights, and possess powerful organizing means.

If I might call it the “difference in interests” model of wartime organization, how could such an organization be attained so promptly during the war? In this section, I make a brief and diachronic comparison with Britain’s wartime experience in World War I.

Labor policy adopted in World War II could be described as a more dexterous and revised version of that in World War I. Many characteristics succeeded from the experience in World War I, albeit improved and refined. First, as shown in the following table, the number of work stoppages during World War II was much larger than that in World War I, but the number of work days lost owing to industrial disputes was much lower. This means that Britain could control more efficaciously the official and large-scale industrial disputes in World War II by means of a tripartite consultative manner and the

considerations of its collective agreements system. However, there doubtlessly remained several unofficial or wildcat actions that went unchecked, even during the time of the deliberate wartime scheme. Most of those unofficial actions were led by communist and anarchist groups at the shop-floor level, and these actions were understood as grassroots criticism of wartime suppression and restrictions. Industrial relations and trade unionism were nonetheless effectively integrated into the war footing in World War II (see Table 1).

Second, the relatively peaceful industrial truce in World War II could be explained at least in part by the fact that real-wage earnings had slightly increased, especially in comparison to the wage reductions seen during World War I; this was a result of both industrial relations policy and distribution control (i.e., rationing system).

Third, there were a number of noteworthy improvements following World War II: feasible postwar plans—such as those pertaining to full employment, social insurance, and the continuation of rationing—were presented to the people, to persuade them that they could endure wartime loss, pain, and toil in return for a happier postwar life.

4.1.4 Comparisons with Other Countries

How does Britain's World War II experience compare to those of other countries? The experience of the United States during that war might be understood in terms of a “light” version of the “difference in interests” model. France had lost the opportunity to achieve a similar state of wartime organization through the formation of the People's Front Government, which sought to cope with a crisis other than war, the Great Depression. Compared to wartime Britain, they were found to be not very good at organizing a variety of interests and planning; after it was annexed by Germany, however, they were very passionate about resisting and sabotaging the occupation.

Synchronic comparisons with Germany present more interesting points. At first, Germany lacked a proper wartime organization that was comparable to Britain or the United States; that was because it had remained, between 1933 and 1945, in an “emergent situation” during the National Socialist regime; the notorious President's Emergency Order for the Protection of the Nation and the State (*Verordnung des Reichspräsidentenzum Schutz von Volk und Staat*) was issued on February 8, 1933, just one day after the fire in the Diet building (*Reichstagsbrand*). On that morning, the people of Germany found themselves organized in terms of semi-wartime suppressions and restrictions. In every aspect—legal, political, economic, fiscal, and social—in industrial relations, there could be found in Germany little discontinuation between prewar and wartime situations. The main characteristics of the National Socialist everlasting “emergency” was the denial of the existence of a variety of interests. Political parties other than the National Socialist party were prohibited and dissolved completely; trade unions were similarly dissolved, and workers were organized into a single community, the German Workers' Front (*Deutsche*

Arbeitersfront or DAF). In the National Socialist regime, the official stance was that there were neither classes nor a class struggle, but, rather, that both employers and workers were “agent[s] and guardian[s] of the National Community.” We can easily find the predecessor of this principle in the notion of the “National Socialism of the People’s Community” e (*Verordnung des Reichspräsidenten zum Schutz von Volk und Staat*) and the idea of the “War Socialism (Kriegssozialismus)” advocated by the German Socialists (*Kathedersozialisten*) during World War I.

Of course, even in Germany, with such notion of “community” there were actually conflicts among interests and various dissatisfactions among the people; Germany was forced to observe, check, and “correct” every form of discontent among the people through the deployment of an overstretched police structure that was tasked with watching, informing, and betraying the citizenry. To be sure, Germany maintained high levels of wartime economic and social order just prior to its defeat, but they were won at a huge cost, in the form of such a police structure. I cannot say easily which of Germany or Britain performed best, or if Britain paid a huge cost in maintaining a consultative manner and trade unions even in wartime. However, in inducing the people to co-operate voluntarily with the execution of the war effort, and in offering its populace the dream of a strong postwar society, Britain’s wartime costs appear to have derived better results than those of Germany, apart from the outcomes of the war.

Italy was also understood in terms of the “single community” model, but interestingly, Italy could never completely annihilate the idea that there was a variety of interests. Italy had pursued policy by which to make its people into a single community. In Italian labor policy, employers’ associations and trade unions were reorganized into a corporation that served as one of the organs of the fascist state. However, employers’ and workers’ interests were in reality recognized within that corporation, and the collective agreement and arbitration systems were preferably promoted under the fascist government. We can therefore understand that it was natural that in Italy there remained trade union movements, political movements other than fascist-oriented ones, and at last widespread resistance groups opposed to fascism and German occupation that could successfully liberate themselves from fascist/German suppression. Italy is an imperfect example of the “single community” or hybrid model.

It would be quite unwise of me not to speak of the Japanese wartime experience and compare it to those of the aforementioned countries; in any case, it would not be a serious mistake to say that Japan stands as an imperfect and unsuccessful example of the “community model.” However, Japan lacked both strong trade unionism and political counterforces, and its society was underpinned by a kind of familialistic notion of the state and firms; as a result, the cost Japan incurred inconstructing a wartime organization was relatively low, otherwise Japan might have paid another kind of cost for the war regime, which I cannot definitively estimate.

4.2 Technology

In this section, I have a little time to talk about technology. I would like to attribute the relatively moderate technological attitude of the British engineers in wartime to the nature of the “difference in interests” model, in which even engineers must take into consideration the need for peaceful and smooth-running industrial relations in the work place. Britain seemed to avoid technological risk, choosing instead to keep a wise policy of developing two kinds of each type of weapon, such as the Spitfire and the Hurricane as single-seat fighters in the early stage of World War II. German engineers and strategists, meanwhile, had a weaker tendency to take into consideration industrial stoppages and discontent among workers—partially because there the German war effort saw plenty of almost-unsuccessful “new weapons” and “secret technology.”

Conclusion

In conclusion, let us attempt to answer the questions posed at the beginning of this paper: why was Britain so good at war, and why did Britain seem so much more effective and eager to triumph in wartime than in peace time?

As shown above, through the war experience, British workers grew accustomed to wage growth (not only in the nominal wage rate, but in real-wage earnings), full employment, a collective agreement system, and the practices of industrial consultation at the workshop level; they were also given a feasible postwar dream of full employment and a secure welfare state. All these plans and dreams promised to the people by the government might have exacted a very heavy burden on both business management and economic policy. In addition, established but rather old-fashioned trade societies and an industrial relations system remained, unscathed, in the postwar new situation. All these factors that had made Britain a powerful war machine would become disadvantageous for Britain under postwar conditions, and it became distressed by inflation, wage drift, restrictive practices, and an inflexible industrial relations system that was accompanied by unofficial actions.

Unlike in Britain, postwar Germany had none of these factors; in other countries (e.g., France, Italy, and Japan), these factors were not as heavy a burden on postwar politics, economics, and industrial relations as was the case in Britain.

It seems apparent that Britain was a war-competent nation, but the answers to our questions cannot be found solely in national characteristics; we need to look also at the cause-and-effect relationship between the country’s wartime organization and its postwar performance. This is, in fact, my tentative answer to the original question. (Written by Tomoji Onozuka)

Professor Edgerton’s Comments on Professor Onozuka’s Presentation: This was an interesting paper. One point that particularly struck me was the statistics on

the number of strikes held during the 1930s and World War II, which greatly outnumbered those during World War I; those in the 1920s were a different matter. However, you failed to mention the political situation during World War II—that is, there was a coalition government at the time, which was a source of potential difficulty on the shop floor. On the other hand, in 1941, the Communist party was not committed to the war effort; hence, the political situation was a very special one, and it was perhaps more important than the legal and institutional nature of industrial relations. Some questions I need to ask are how important was the structure of industrial relations compared to market forces, and how were they used? You mentioned that Britain could afford to get people into the munitions industry by paying better and higher wages. Perhaps this is a critical issue that can be researched in the future.

Professor Onozuka's Response: With regard to the first comment, I fundamentally agree with you. However, regarding the second point, the increased wages and labor force were extremely important during World War II. I would like to point out the relevance of this in the distribution and rationing systems and price control. The steps by which to maintain relatively low prices on daily products were very important in ensuring people's cooperation during wartime.

Professor Watanabe's Comments on Professor Onozuka's Presentation: I would like to clarify your idea. Can you present an analogy for Germany's experience during World War I? The Japanese scholar Eichi Kato called Germany's reconstruction of the world republic the "peace inside the castle." Do you think Britain had a similar experience with the construction of the warfare state after World War II?

Professor Onozuka's Response: I am unable to present such an analogy; nonetheless, you do raise a very good point. In the 1930s, Britain experienced political turmoil. Moreover, in 1926, Britain experienced a very severe general strike. In the 1930s, Britain experienced a political confrontation between the left wing (the communists, Trotskyists, and so on) and the right wing (the British Union of Fascists). However, after Britain's experience in World War II, the British government and British political rulers promised "corporatism" and introduced a full-employment policy and welfare state. Although it appears as so, I had not intended to stress this point.

5 Minoru Sawai (Osaka University): The Wartime Planned Economy and the Private Sector

In comparing real personal consumption trends in Germany and Japan, the biggest "losers" of World War II, an impressive difference can be confirmed.

In both countries, real personal consumption declined continuously following the outbreak of the war. In Nazi Germany, however, although the 1944 figure had fallen to a level that was 73% of that in 1939, it was still at least 20% greater than that during the Great Depression. In contrast, real personal consumption in Japan in 1944 had declined to 61% of the 1937 level, and as early as in 1940, it was even *below* the level seen during the Great Depression.

State legitimacy in wartime Japan, which was based on the Emperor system, was not openly criticized or challenged, and a movement to overthrow the Hideki Tojo Cabinet in 1944 was limited to the sphere of the political elite. It seems that most ordinary people working in the private sector—from managers and white-collar professionals to engineers, laborers, and farmers—obediently followed the government initiatives.

Needless to say, however, it would have been impossible to execute the wartime planned economy without any regard at all for private sector trends, even in the absence of political presence.

We first examine the process by which wartime economic controls were introduced and intensified, as well as the response of the private sector, specifically taking up the case of the machine tool industry and a controversy concerning state control over electric power provisioning. Next, we discuss the concept of the “New Economic Order,” which was expected to play a primary role in breaking the impasse of the wartime economy, as well as the transformation process with respect to competition among private firms. Finally, the malfunctioning of the wartime planned economy is considered, along with the role of government in encouraging private firms to expand their production; we do so while focusing primarily on the Pacific War period.

Until the halt to economic relationships with the Allied powers in 1941, Japan, long since fighting with China, needed to maintain normal international trade in order to carry on with its war effort. In this sense, the wartime planned economy was firmly supported by the peacetime economy, and this underpinned the curious coexistence of “self-governing controls” by the private sector and “bureaucratic controls” by the government. When this style of national-economy management came to an impasse, a plan for a “New Economic Order” emerged, which sought to reorganize the Japanese economy by means of “truly autonomous controls as a new system having evolved beyond self-governing controls and bureaucratic controls” (Hirosi Yamanaka, *Watashi no Senji Zaikai Nisshi [My Diary on the Wartime Business Circles]*, 1990, p. 154).

As soon as the Japanese economy shifted to a closed economy because of the outbreak of the Pacific War, the number of domains regulated by “self-governing controls” was quickly reduced. Resources transported from the “Co-prosperity Sphere of Greater East Asia” to Japan proper, as well as the available shipping capacity to ferry them, came to be dominant factors that influenced the performance of the Japanese economy. Although industrial mobilization based on control associations led by “principles of leadership”

was looked to as the key to resolving the overall economic dead-end, such activity was gradually undermined by the hoarding of ever-shrinking resources by the military, as well as by the expanded industrial associations directly affiliated with the military itself. As a result, the co-existence of the “scarcity” and “surplus” of resources became palpable throughout the Japanese economy, dis-ordering the wartime “planned” economy from the inside.

The reintroduction of economic incentives was then attempted so as to more effectively mobilize the private sector. Under these conditions, private companies hotly competed with each other to acquire designations and upgrade their ratings, in order to maintain their business; they also sought to mitigate risk related to overexpansion vis-à-vis plant facilities and equipment. Even during the last stage of the Pacific War, economic principles dominated the behavior of the private companies, albeit in a somewhat concealed fashion.

6 Yuji Nisimuta (Kyoto University): Military Motorization of Germany, U.S., U.K. and Japan: A Comparative Study

The Problem at Hand

One of the most important elements of military strength in World War II was “military motorization,” which refers to the application of internal combustion motors to various armaments on the ground, in the sky, and on and under the sea. See, for example, the proportions of the total cost of armament production among various departments in Germany in 1942: tanks, 3.8%; motor vehicles, 5.4%; tractors, 2.1%; aircraft, 46.1%; warships (including submarine), 9.3%; ammunition (bullets, bombs, etc.), 23.1%; weapons (cannons, machine guns, etc.), 7.0%; and powder, 3.2%. These first five categories—accounting for just over 65% of the total cost of armament production—are related to military motorization. Similar situations existed in the United States, United Kingdom, and Japan. Indeed, the phenomenon of military motorization has borne substantial importance in wartime, worldwide.

On the other hand, the suppliers of internal combustion motors within each country have mainly been automobile companies. As a result, the sophistication of the automobile industry at a given time within each country considerably affects each country’s level of military motorization, especially with regard to two particular points: (1) products and (2) production systems. We can see the level of so-called motorization in general in various countries by examining the population per automobile at that time. There were slightly different situations among those countries. The United States had about five people to one automobile in 1928: they had already reached the “one car per family” ratio, as it were, in the 1920s. Other countries reached comparable levels in the 1960s or 1970s. This particular characteristic of the United States was naturally brought to bear on its motorization in the wartime period. The United Kingdom and France had

38 and 44 people to one automobile in 1928, respectively; in 1938, those numbers changed to 16.5 and 18.8 people. Germany was quite behind in this respect, but it very rapidly developed a high level of motorization in the days leading up to World War II: it had 134 people to one automobile in 1928, and 38.8 persons to one automobile in 1938. I have no data of this sort for Japan, but I believe that Japan was also very much behind in this respect in those days.

So, my research questions are these:

How and when did a system of military motorization begin and progress in each country, before and during World War II?

What particular military motorization characteristics did each country have?

From a historical perspective, how did military motorization change the societies of various countries?

I would like to examine these issues with respect to the United Kingdom, Germany, the United States, and Japan.

6.1 United Kingdom

The United Kingdom was the pioneer of military motorization in World War I. In 1917 and 1918, there emerged the first tank attacks by the British Army; they constituted one of the decisive elements that led to the end of World War I. About the 1920s and 1930s there are plenty of things to say, but we need to jump ahead, to 1939.

According to Professor Edgerton (David Edgerton, *Britain's War Machine*, 2011, p. 220), U.K. tank production and German tank production were at almost the same levels in 1939–1944. The output of military aircraft in the United Kingdom and Germany were also in a similar situation (*Britain's War Machine*, p. 209).

So what were the differences between the two countries, in terms of military motorization at this time? Let us look at the case of Germany, as a point of comparison.

6.2 Germany

I think one of the characteristics of military motorization in Germany at that time was that the country had established a systematic strategy for military motorization. In 1929, Heinz Guderian, a German military officer of the time, wrote this description: "...tanks working on their own or in conjunction with infantry [i.e., soldiers who fight on foot] could never achieve decisive importance. ... Tanks would never be able to produce their full effect until the other weapons on whose support they must inevitably rely were brought up to their standard of speed" (Major K. J. Macksey, M.C., *Panzer division the mailed fist*, New York 1968 p. 10). The results of this strategy were the Panzer

Division, the Motorized Infantry Division, and the Air Division, all of which were integrated by radio communication. Therefore, differences between the United Kingdom and Germany derived from the ways in which they employed machines, I think. In Germany, automobile companies had been systematically utilized to advance military motorization; in Germany, this resulted in the smooth conversion from peacetime automobile production to wartime armaments production.

6.3 United States

Subsidiaries of U.S. automobile companies in Europe had considerable experience with advancing military motorization in Europe, before the U.S. entry into World War II (e.g., Ford Manchester, UK, and Adam Opel=GM in Russelsheim and Brandenburg, Germany). To date, these elements have often been omitted from historical narratives, but I would like to emphasize their importance. I would also like to emphasize the importance of the appointment in May 1940 of William S. Knudsen (the president of GM) as the president of the National Defense Advisory Committee (the predecessor of the Office of Production Management and War Production Board—the U.S. organization that headed up wartime industrial mobilization). The U.S. automobile companies' mass production methodologies were fully leveraged in support of military motorization, and for this reason, automobile companies won the main armaments contracts in 1940–44. (In this respect, GM ranked first, and Ford ranked third)

6.4 Japan

In Japan, automobile industries were underdeveloped at the beginning of World War II. Instead, aircraft industries there developed very rapidly during World War II, and so, the aircraft—parts industries flourished. After World War II, these aircraft and aircraft—parts industries, including their engineers, went to work for the automobile industry in Japan.

Conclusion

I would like to emphasize (1) the importance of civilian industries being transformed into armaments industries, and (2) the importance of every kind of international relationship during wartime. (Written by Yuji Nisimuta)

Commentator's (Professor Kurosawa's) Comment on the Presentations: First, in our discussions thus far, we have not distinguished the concepts of "warfare state" and "war economy." Perhaps we should discuss this matter later.

Second, I think we must be careful in our use of the term “wartime,” because Japan had already been long at war when World War II broke out in Europe. In Europe, for example, in the case of Germany, the start of the rearmament policy of the Nazi regime should be considered the starting point, rather than the actual outbreak of war. Since 1936, Germans had begun rebuilding themselves from scratch, and had managed to become the world’s greatest military power within a very short timeframe. Its relatively limited expansion during the war could have been an outcome of this rapid expansion beforehand.

Third, there are some points of argument relating to war economies; with respect to any given war economy, one popular dispute is whether it is a command economy or a market mechanism-based economy. When measuring performance, I’d like to focus on the asymmetrical geographical scope between the Allied powers and the Axis. Half a year after the outbreak of war in Europe, Nazi Germany engulfed most of the continent and practically mobilized the entire economic resources of the continent by sacrificing the living standards of some parts of its occupied territory. (Norway is a most eminent example.) However, this sphere of influence of “New Economic Order” was besieged by the rest of the world, namely the Allied sphere, which enjoyed a far larger pool of any economic resources during the war. In this sense, comparisons of performance in the war economy based on national boundaries have limited meaning.

Professor Nisimuta’s Response: Thank you very much for your comment. Since I concentrated on Europe and the United States in this presentation, I did not examine the situation in Japan; my intention was to present how the Japanese aircraft industry developed relatively independent of the Japanese automobile industry. In Germany, the United Kingdom, and the United States, the aircraft and automobile industries were very closely linked, but this was not the case in Japan.

Professor Nisimuta’s Additional Response: I forgot to point out one simple distinction: “occupied/not occupied,” “occupied during the war,” and “occupied after the war” are three separate categories.

Professor Nishikawa’s Question on Professor Nisimuta’s Presentation: What do you think would have been the situation in Japan, had the development of the automobile industry preceded that of the aircraft industry?

Professor Nisimuta’s Response: Japan’s wartime aircraft industry was rather large compared to its automobile industry, which was not overly big. Therefore, I feel that, in Japan, the aircraft industry did develop first. Further, the Japanese automobile industry survived, owing to large investments in the automobile industry after World War II.

7 Closing Remark by Tomoji Onozuka (University of Tokyo)

Let me begin by expressing my sincere thanks to Professor David Edgerton for giving us a number of inspiring books and for his very interesting presentation today.

I would like to thank the professors at Kyoto University: Professor Sakade, Professor Hori, Professor Nisimuta, Professor Kurosawa, Professor Watanabe, and Professor Donze. Moreover, I would like to thank Professor Sawai, Nishikawa Sensei, Ono San, and all the participants for giving us the opportunity to have this academic exchange. Today's presentations touched upon war machines, war economy, and war organization. What we learned today should not be considered mere history, but also indicative of the present state of war economies and war mobilization. First, as Professor Kurosawa pointed out, wartime is not limited to a single time frame; there is no clear demarcation between wartime and peacetime, as peacetime gradually progresses out of war. As you know, the Japanese government encouraged technological collaboration with Britain in terms of military technology, particularly in the helicopter industry. This year, the Japanese government initiated a technological exchange with the United States, particularly in the development of F-35 fighter jets. Yes, this is the present-day story. From another perspective, in 2015, we will have organized the World Economic History Congress in Kyoto in the first week of August, 70 years after the bombings of Hiroshima and Nagasaki. We had a substantial academic exchange today, and I expect that our experiences will develop into another series of panel discussions or symposia in advance of the 2015 World Economic History Congress. In this sense, our war economy is not "history," *per se*, and I would expect our understanding of it to develop further in the future.

Thank you very much!