BLAKEMORE, Dr John Stewart, Chief Executive and Principal (Innovation), Blakemore Consulting International; and National President, Manufacturing Society of Australia

CHAIR—Welcome. Is there anything you would like to add about the capacity in which you appear today?

Dr Blakemore—Yes. On this occasion, I am pleased to say that I can now say I also represent the Institution of Engineers.

CHAIR—Although the committee does not require you to give evidence on oath, I should advise you that these hearings are legal proceedings before the parliament and have the same standing as other proceedings of parliament. We have received a written submission to this inquiry from you. Do you wish to present any additional information?

Dr Blakemore—No.
CHAIR—Then I invite you to make an opening statement and we will follow it with

questions.

Dr Blakemore—Australia has a problem—a very serious problem, in my view. Our private liabilities are now running at about 60 per cent of GDP. The trade gap in manufactured goods is about $100 billion a year. The escalation in the value of commodities prices, due to very favourable terms of trade, has unfortunately almost decimated manufacturing in the last two to three years. In fact, over the last two to three years in particular, the decline has been absolutely enormous. I am sure you are aware of these things. But the real damage is going to come when we try and rescue manufacturing after the commodities boom or when the escalation in prices is over. Our manufacturing sector will then have to re-equip and, at that stage, the Australian dollar will be so weak that it will be even more difficult for them to re-equip. So I see it as a very serious issue.

The crux of this issue is related to a number of major illustrations that I can give, some based on past experience and some of which have been in the press fairly recently. Let me give you a quick example. I used to work for John Lysaght Australia, which became BlueScope, and we developed a product called Colorbond, which was world's best practice. With the increase in price of hot-strip because of the extra demand from China, we have seen that cost being passed on to the downstream customers. And now we have seen the electroplating line fail. So BlueScope have announced that they cannot any longer produce electroplated steel in Australia. I wonder what the next step is going to be. I suspect it will—horribly—be Coated Products, who made a loss last year for the same reason.

On top of that, all I see—and have seen since the beginning of my innovation company when it was set up in 1982, and even before—is the fact that we give away our intellectual property. We give it away continuously, and I have too. I usually get paid for an assignment, usually by an overseas company, and then of course that is quickly transferred overseas and never commercialised here. I see the same thing

again on the R&D board. And it upsets me greatly to see how the taxpayer funds R&D projects, and yet the very small percentage that reach the stage

of being successful and commercialised are not commercialised here. The money is not available; the venture capitalists won't invest; and they are invariably taken overseas and commercialised there. And there are numerous examples that I could give of that.

This sort of thing has to be arrested. We have a wonderful set of public institutions, like the CSIRO, that should be able to do reasonable manufacturing R&D. But, when I investigated even that, I found that their manufacturing R&D is in 50 areas of manufacturing, for their meagre total revenue and budget, and, of those 50, more than half are in areas where we do not have a comparative advantage. So where is the point? Why do we squander our meagre funds? Then, when you go even further into this, you find that the business sector does not contribute very much to R&D at all. And I think one of the contributing factors might be that most of those companies that should do that are overseas owned. And these decisions, about our future, are being made by boards that do not even sit in this country.

Some people do not think that is important. I have had said to me on many occasions by economists in particular that what is happening at the moment is not really a worry because it will self-correct. It will self-correct all right. I fear that the correction is going to be extremely painful. There is evidence of this already starting to happen in our community. For example, I went to a presentation yesterday by an academic who was talking about innovation. He told us in the second paragraph of his presentation that 48 per cent of our exports were manufactured goods. I thought to myself, 'That is not so.' It is about 14 per cent. How is it when the so-called experts from universities can get away with such statements and give a false impression of the true state of manufacturing in this country? It is not a very happy sight.

The automotive industry is in even worse condition. The money that has been poured into General Motors Holden and Ford has not flowed on to their component manufacturers. We are seeing Ajax in trouble at the moment, and there will be more. The cars are not what Australian people want. Australian people are already buying Toyota Corollas and the new Honda Civic. In fact, I have seen the sales of the new Honda Civic. It is a brilliant little motor car that is probably made in Thailand or Japan. We are not even making the right products anymore. There is not much point in propping up those auto manufacturers, but our auto suppliers do have to be propped up and do have to join the global supply chain. That is an issue that has to be brought to bear very quickly. You might like to investigate why all that money the government has spent on the auto manufacturers has been wasted. I can give you some thoughts on that as well, but this is probably not the right forum for that.

CHAIR—We have asked them that question. We had Ford yesterday in Melbourne. Their argument is that the small car sector is a very competitive sector and that there is a large range of models available in Australia. They said they were occupying a

niche that was not as competitive and that they could also export and find some success with global arrangements.

Dr Blakemore—Could I respond to that?

CHAIR—Yes. That was their statement.

Dr Blakemore—To me, that shows how out of focus those people really are. Let me give an example. I have been privileged enough to visit some of the best manufacturers in the world. In particular, I am going to refer to Honda on this occasion. The last time I was there was,

admittedly, 1991, but I will be back there in about two months time. I am funding my own research in this area. I am not asking for a government grant.

Let me tell you how wrong that answer is. If you go into the Honda factory in Osaka, you will see that they can manufacture cars of different wheel bases, different lengths and different widths on the same robot at the same time. All that Ford have done is not kept up to date with the process innovation that is absolutely necessary to give you the variability and agility to manufacture a wide range of products. They continue to put a smokescreen in front of the government on this. I am sorry, but in my view they gave you the wrong answer. If you want to test that out, have a look at Honda if you can get in there. I have been privileged. I will be going back there in about a month's time and having another look. Their process innovation is second to none. So, I am sorry, I do not agree with that answer.

CHAIR—Fine.

Dr EMERSON—If we look at the history of manufacturing in Australia from the 1970s onwards, there have been periods of crisis. There was a green paper and then a white paper produced during the 1970s about the malaise in Australian manufacturing, yet it is still around. It has come and it has gone, and it has come and it has gone again.

Mr TANNER—It was the Jackson committee report, I think.

Dr EMERSON—It was the Jackson committee report. Is there any reason to believe that it cannot go and come again? I think a lot of this has been associated with commodity booms, and reducing tariffs has been a separate influence.

Dr Blakemore—There were substantial tariffs.

Dr EMERSON—It has almost become a fact of life since the 1970s that our manufacturing sector goes into decline and then comes out of decline. Should we as a committee be trying to prevent that? That is, should we be trying to intervene and say,

'No, we want a strong manufacturing sector and we are going to do something about it'?

Dr Blakemore—I would love to spend hours answering that question, because that is what the answer to that sort of question requires. In the 1970s there was significant tariff protection for Australian manufacturing. That has been gradually removed. Also, remember that in 1973 our dollar was $US1.14. Despite that high value of the Australian dollar, with the protective tariffs we were in fact able to compete for some length of time. Since 1970 the global manufacturing methodology has changed very significantly and we have not kept pace with that. We do not appear to be able to integrate our supply chains. I will give you a quick example. I think Sharon Grierson is from Newcastle. I am a Novocastrian. I sometimes travel up there.

Ms GRIERSON—Good, we are passionate about our manufacturing.
Dr Blakemore—I am always amazed to see 50 or 60 large tankers anchored off Newcastle

because they cannot get in to be loaded with coal.
Ms GRIERSON—You will not see more than 20 at the moment.

Dr Blakemore—The first time I did a productivity assignment in the Hunter Valley it was at Warkworth mine. I lifted their productivity in six months by 15 per cent, and found that we could not ship the coal out through the port so they did not want to go on with the program. Things have changed dramatically since 1970. We have not looked at integrated supply chains. We do not even know what they mean. Our agile manufacturing is very poor. We go down the path of what is called lean manufacturing, which is not the way to go. I will be very careful here because you can argue about what these terms mean. I have travelled quite extensively and I have studied lean manufacturing. I have been to Detroit and all of those places. The point I wish to make is that the American interpretation of the Japanese method is in error. That is one of the reasons why General Motors and Ford in the United States are in so much trouble. They did not understand the Japanese techniques.

If you think the Japanese techniques are not important in integrating supply chains, there are three books that have been written about it recently. Certainly they have their limitations, but I suspect that everybody should read them. If I go along to listen to experts speak on innovation, like I did yesterday, I think they should have at least read these books—and they had not. These sorts of things are a great concern to me as a consultant. But I am lucky—I am 67 years of age now and I can speak out. My little company just yields me dividend and I will survive. It peeves me a little that you go through life and you give away all of your intellectual property because you have been paid for it by an overseas company and then they exploit it in the United States or elsewhere. So at some stage you say, 'I've got to draw the line on this.'

Dr EMERSON—My second question is one that Lindsay Tanner will probably pick up too— that is, we are starting to think that there are two models for the future of

Australian manufacturing. We have heard a lot of evidence from a lot of witnesses talking about niche market manufacturing, and we are talking about the international market here. Others talk about a supply chain model—finding a place for yourself as a country in the supply chain for some ultimately sophisticated manufactured good and being integral to that. Of those two models, do you think both have validity?

Dr Blakemore—Yes, they certainly do both have validity. You only have to look at Cochlear and ResMed, which are niche market players. They will always be the result of wonderful ideas generated by clever people, and then capitalising where they have a strategic advantage due to uniqueness and patent protection. They can be made anywhere in the world at a massive profit— as Cochlear and ResMed have done. So that niche part is still okay. But what we have not done is to take advantage of the tremendous resources and potential that we have. I will give you one example that is in my paper—and I am particularly concerned about the aluminium industry. For example, we have the most efficient alumina refinery in the world by a factor of two—just think about that for a moment—and then we have cheap energy available through coal, because we have coal. Aluminium is called 'solid electricity' because of the way it is manufactured. We have the smelters. When you look at any supply chain, you find that the profits are made the closer you get to the customer. The further away from the customer you are, the more you are at the minerals end, theoretically, taking most things into account over a long period of time, the less money you make and the less profit you make.

CHAIR—I do not know whether BHP's profits would necessarily reflect that.

Dr Blakemore—No, Mr Chair, I said, 'Over a long period of time.' I was very careful to say that. Because there is a sudden surge of demand—as Craig Emerson, an economist, would know—that is a special case. BHP is making a lot of money, but their downstream processing companies that they hived off under the Anderson plan are not making any money anymore: OneSteel and BlueScope. Have you thought about that? There are a lot of jobs at stake.

CHAIR—We had them speak to us this morning.
Dr EMERSON—But how does that fit with your proposition that the more sophisticated you

get the more profit there is?
Dr Blakemore—Let me give you an example—Microsoft.
Dr EMERSON—I was just thinking about BlueScope. They are getting up the value chain.

Dr Blakemore—BlueScope were making a lot of money. In fact, I had BlueScope shares up to about 18 months ago and I was making a fortune; I was doing well, thank you very much. But I hived them off. As soon as the raw material price went up, due to the Chinese boom, I got out—and thank heaven that I did. Now they are finding that the coated steel products division is making a loss and they have shut down their

electroplating line. The commodities boom has increased the price of one of the raw materials that they were using, which is hot strip.

Admittedly, you could argue that this is all going to even itself out, but I would like to come back to aluminium because that is the one that I chose as an example. Let me give you a quick example. I did a project with the de Havilland aircraft factory. Clever engineers in Sydney had innovated a new way of making wing sections for Boeing and it was a highly successful development. It was so successful that Boeing flew out their employment consultants and hired the engineers and shot them back to the United States. But when you look at that supply chain, the remarkable thing was that, although the aluminium was made here, we could not even remelt it and put an alloy in, so it had to be shipped back to Hoogevens and then shipped back to Australia. If there was ever a wonderful opportunity for an integrated supply chain in an area where we have a strategic advantage and where something like the CSIRO should be heavily involved, it is the aluminium industry. We have got it all; what we do not have is the downstream processing. Coming back to your earlier comment about profits being made—

CHAIR—As to downstream processing, we have got smelters in the country.
Dr Blakemore—But we have not got the diecast aluminium. The diecast aluminium industry

here is practically dead. We do not make some of the things like heads.

CHAIR—John, are you sure of your statement? I believe that the significant part of what was Alcoa but is now Alumina Australia—

Dr Blakemore—QAL?

CHAIR—No, it is the Alcoa version of it—the aluminium plants in Western Australia and the smelter in Victoria. If you have a look at those, I think you will find that the significant part of the profits of the company, which has got both of them, comes from alumina.

Dr Blakemore—Yes, but what does that mean?
CHAIR—The closer you get to the customer the greater the profit. **Dr Blakemore**—That is right.

CHAIR—What I am saying is that I do not think you are right as to your basic premise. Firstly, we have got BHP with the largest ever corporate profits. Secondly, I believe that the biggest profit is in alumina, not in the aluminium extrusion part of it—because they did have downstream processing in terms of that. The other thing is this. Look at Esso, who, together with BHP, produce Bass Strait oil and have got rid of downstream processing. They are out of it.

Dr Blakemore—Yes, I know that. Let me take those issues one at a time. I am talking about the QAL refinery in Queensland. I am not talking about anything in Western Australia. The one up in Gladstone is the one that I was talking about. It is the most efficient in the world.

CHAIR—The Queensland one? But it is small compared to the Western Australian operations.

Dr Blakemore—I do not think so. Well, I cannot comment on that. All I can say is that when I investigated QAL it was the biggest in the world. It may not be now. But I do not want to destroy the tenor of the argument. If you come back to what I said before, it is like talking about individuals and averages. My comment should be taken as this: that you look at all industries in total and you look at where the profits usually are made taken over little individual time frames. BHP is on a roll at the moment—there is no question about that—but BlueScope was on a roll too two years ago. In fact, BlueScope's profits were quite significant, but they are not now. So there have always been these lumps and bumps. But, if you take the overall situation, the innovation of the future is at the customer end. You get paid for uniqueness and innovation. Anybody can dig a hole; not everybody can make a Nokia phone. That is what I am trying to say, but whether or not I have used the right words—

CHAIR—Don't assume we are not onside. This is what this inquiry is all about.

Dr Blakemore—Take Microsoft. Up until recently they were making 35 per cent net profit on sales with a gross margin of 90 per cent. Admittedly, competitors have come along. Let us take Cochlear, although that is probably not a good example now because they are starting to face a bit of competition. But if you can be first in the marketplace with a new product you have a wonderful opportunity of making big profits and churning that back into R&D.

The same argument does not apply at the early end of the supply chain. You make alumina— how many different sorts of alumina are there? You make coal—how many different sorts of coal are there? There is no product development in mining coal. There is no product development in alumina. If you are going to simply sell smelter from a Boyne smelter, it is just aluminium. The real innovation comes at the other end. That is what I am trying to say there.

Ms GRIERSON—I would just like to ask a question, and I have to correct the record about those coal ships. Twenty is about the maximum now; under 12, we are worried; 12 is about right.

Dr Blakemore—It has been up to 40, Sharon.

Ms GRIERSON—It has been up to 50.

Dr Blakemore—Up to 50, yes.

Ms GRIERSON—Yes, but that was not in the last 12 months, fortunately, since the changes made.

Dr Blakemore—It is still a lot.

Ms GRIERSON—No, 12 is optimum, so 20 is not bad—and of course the expansion has been very good. You make a point about a national database of expertise. In my own region I have found that there are no capacity statements that are real and industry focused, so we have got a grant to write a real industry capacity statement. People will do skills audits and they will do all sorts of things, but there are no real capacity statements for industry around the country. You will get economic development corporations and local regional development corporations who will write the number of industries, the number of factories or the number in certain sectors, but there are no real skill capacity or research capacity statements for regions or basically for Australia.

Dr Blakemore—I do not know what you mean. What do you mean by a capacity statement?

Ms GRIERSON—You want to know what capacity is there in an industry, in manufacturing. Just what capacity is there? What sort of capital equipment and what sorts of skills are available? What sorts of processes are there? You want to know what they can do, basically. You do not just want to know that there are 24 manufacturers who do this sort of work; you want a little bit more detail than that, and those sorts of statements do not exist around the country. We are starting to do one for a specific project that the region is putting in for. You will not find a capacity statement for what education provisions are in certain places—what sort of training. You will go to a TAFE document. You will go to this or that document. There is no sort of 'regional capacity in education' document. What do you mean by a national database of expertise?

Dr Blakemore—The way I see the future is that if we try to be all things to all men in manufacturing we are not going to do very well at all. Whereas, if we can look at areas where we do have a comparative advantage, capitalise on those advantages and then operate through networks—and part of that network would be the way the Japanese do it, for example, through a cooperative research centre which is run by businesspeople not by academics—then we would be able to do, say, what Sony and Panasonic did when they developed videotape prior to 1985. It always came as a shock to me when I visited Japan about that time and found that here we had two rivals, Sony and Panasonic, working side by side in the one research centre. So the database has to enable people who are in the areas of comparative advantage to tap into that expertise. I tried to do this myself twice through various groups. I think MacKellar was the first guy I tried with. You might remember him.

CHAIR—You are going a long way back, John.

Dr Blakemore—Anyway, that is how long I have been involved with this industry. It was Michael MacKellar, wasn't it—the minister for science?

CHAIR—Yes.

Dr Blakemore—My idea was to use some of the capacity that was available at Lucas Heights, where in fact I had worked, to tap into some of the problems that I saw in Sydney manufacturing. So I approached ANSTO, the Australian Nuclear Science and Technology Organisation, of which I used to be a part—as you know, I am a qualified nuclear engineer—and I said, 'Look, why can't we use this capacity to solve problems?' The people there were not very receptive. I approached Michael MacKellar at the time—it is a long while ago, I know, and I apologise for that, but my memory just does not change—and he said: 'No, that's not a good idea. We can't get CSIRO and ANSTO people on the shop floor in industry; it wouldn't work.' Bronwyn Bishop was in the chair that day and she said: 'Look, the debate's not going to go anywhere, so we'll just forget about it.' So that is what happened. The idea of the database was to give people access to where the experts are in the various disciplines, because the game now is no longer simple. We need that expertise. We need people to be able to work as a network to tackle some of the global manufacturing problems that are presented to us.

Mr TANNER—You mentioned CSIRO having 50 or so different manufacturing research—

Dr Blakemore—Actually it is 46; I made a mistake when I counted them up.

Mr TANNER—I was taking it as an approximation. You were arguing that some were in areas where Australia has no natural comparative advantage. Could you elaborate on that argument?

Dr Blakemore—If you had a projector I could throw the data up on the screen. I have brought my computer with all the data on it, but there is nowhere to project it to.

Mr TANNER—Some illustrations of where it is right and where it is wrong would be helpful.

Dr Blakemore—One example which might illustrate it is: how much work are they doing in aluminium, for example? Very little. They have tried; they are not doing very much. I cannot give you the specifics without putting the information up on the screen but I do know that Rod Hill, when he presented his paper at the manufacturing summit in Victoria last year, presented this data and it came as a tremendous shock to me, knowing what dire straits the manufacturing industry is in, especially over the last two years. I thought: what a waste of resources—why would you work in an area where we are not going to achieve anything anyway? I put that proposition to him and he invited me out to the CSIRO and we had a long chat.

Mr TANNER—Did he agree with your assessment?
Dr Blakemore—Yes, but he has a few problems coming out publicly and saying that. You

would have to go and talk to Rod Hill.

Mr TANNER—You talked about the ACIS program of assistance to the automotive manufacturing sector. Given where we are now, what in your view should be done to reform that program?

Dr Blakemore—You will not like the advice I am going to give.

CHAIR—Try us.

Dr Blakemore—First of all, a priority has to be given to the component manufacturers, particularly in those areas where people are manufacturing components with a comparative advantage in the marketplace, for example, aluminium—if there are any left. These people have to be given a special incentive to join a global supply chain into the Northern Hemisphere and supply some of the big and successful automotive manufacturers—not just the ones that are locally manufactured.

CHAIR—Are you talking about a government subsidy?

Dr Blakemore—Toyota were given a massive government subsidy to start them on the way. Toyota are probably now the number one—I do not have the facts in front of me—automotive manufacturer in the world. I can give you the figures: they made $11.4 billion net profit last year, and even if you try to put a positive capitalisation on General Motors and Ford they could have bought them with one year's profit.

CHAIR—It is still less than BHP.
Mr TANNER—We just handed a big additional subsidy to Ford, so I do not think we need to

be totally hung up about the question of whether any of these things involve subsidies.

Dr Blakemore—You have to get these guys into the global supply chain for survival. I am not talking about Ford and General Motors; I am talking about all the auto suppliers who have been, unfortunately, not very well treated by the big manufacturers.

Mr TANNER—In other words, the right approach with ACIS would be to refocus on components manufacturing?

Dr Blakemore—Yes; refocus, definitely.
Mr TANNER—With the aim of identifying particular components where there is a realistic

chance that we could be major exporters of those kinds of components.

Dr Blakemore—Yes. Otherwise, you perpetuate a problem. Ford and General Motors at the moment are making the wrong car at the wrong time—it is too big and too thirsty—they have the wrong process innovation and they are not flexible. By pouring money into them you are just going to do more of the same. The answer you gave me earlier, Bruce, when you said you had someone from Ford and what they said about cars shows really how out of touch they are with global manufacturing in the Northern Hemisphere. That is serious.

CHAIR—What about LPG?

Dr Blakemore—There is a big opportunity there—a massive opportunity. I have not looked at all the stats on that, but methane is a good energy source. That might give a little bit more life to Ford in particular, because I think they make ex-factory cars with LPG.

Mr TANNER—I go now to your point about aluminium and the fact that we as a nation do not go very far down the value chain in processing activities. One of the things that stand out to me in this example and countless other equivalent examples is the fact that we are a small market and we are a long way from large markets. Typically the pattern is that the latter end of the value chain tends to occur close to the ultimate consumer markets. My question is: aren't we therefore, to a fair degree, prisoners of both distance and scale? Even though we might have the world's best, cheapest aluminium, given that most of it ends up in products that are purchased by people on the other side of the world, isn't it unrealistic to expect that we are going to become major and powerful world fabricators of aluminium window frames or something like that simply because we have the bauxite to start with?

Dr Blakemore—I think that is a reasonable statement and I understand what your concern is. I was thinking more along these lines: whether people believe this or not, Australians are very clever innovators—they are very good at the ideas end of the transmission process but very bad at the other end, the commercialisation. I was imagining what happened at de Havilland aircraft factory when I was there could be perpetuated in a whole set of new ways. For example, we were making Boeing wing sections and the aluminium had to go through a value chain that involved shipping aluminium from Australia to Europe and back to Australia. It is absolutely crazy, and yet we were still able to do it competitively against world competition, and land the wing sections in Boeing in the United States. I thought we could do that. The shipment and the logistical part of it at the moment cannot be that absolutely damaging if you can put a lot of value in. As you know, the higher the value of the product the less the logistics and time frame become important. But what you say is a real concern; the closer you get to the end market the more you would like to put the value in at that market end. That gets around the working capital in your balance sheet problem. That is true.

Mr TANNER—I am a bit of a sceptic on the commercialisation argument. I do not dispute your description of the facts; what I am sceptical of is to what extent this reflects badly on us as a nation. We overlook the fact that we are about 0.3 per cent of

the world's population or some very tiny figure. To put it in more manageable concepts, Australia is to the world as Dubbo is to New South Wales. The reality is that not much of the dominant high-powered economic activity that is state or nationally oriented is based in Dubbo. It is here in Sydney. There is an iron law of economics involved here, I would have thought. We are part of the world's backblocks because of our size. We can push against that a bit because of both a high level of wealth and skill and certain natural attractions, but ultimately that size will always make it very hard for us to commercialise things in Australia.

In areas like the Parkville medical precinct in my electorate there are institutions producing great innovations, like the Walter and Eliza Hall Institute, the Howard Florey Institute and so on, but the companies that actually commercialise those innovations are world-scale pharmaceutical companies that are bigger than BHP and have an economic capacity that enables them to bet billions of dollars on particular processes or innovations, do all the clinical trials and all those kinds of things and take on a magnitude of risk that is simply too big for the Australian economy

to digest. It seems to me that there are some natural limits there that we have to live with whether we like it or not.

Dr Blakemore—Yes, there are, but if you adopt that attitude now you would shut down the whole of automobile manufacturing and their suppliers in Australia right now. You would shut down General Motors Holden, Ford, Mitsubishi and all the automotive components manufacturing, because that argument applies to all those companies.

Mr TANNER—Not necessarily; I was talking about the commercialisation of ideas that occurs in Australia.

Dr Blakemore—Lindsay, we are doing that extremely badly. That is one of our biggest weaknesses. Let me give you some examples: photovoltaics at the University of New South Wales and Memtech at the University of New South Wales. They are two that come to mind immediately. Let us take the photovoltaics. We are world leaders in the efficiency of photovoltaic cells. Talk to Richard Corkish at the University of New South Wales and he will give you the facts and figures. Do you know the story? One of his students has taken the idea to China. He has now floated it on the stock market in the US. He is one of the wealthiest men in China. Why didn't we capitalise on that? That is a high value added component which could have been made here. We could have taken it to the world.

Mr TANNER—My answer is because we are 0.3 per cent of the world's population.

Dr Blakemore—But we can still do it.

Mr TANNER—That is a bit like asking why if somebody works out a brilliant idea in the back blocks of Idaho it is not commercialised in Idaho. The answer is because

the action in the US is on the West Coast and the East Coast and centres with large capital, a lot of expertise and large marketing capability. In a sense, we are a slightly larger version of Idaho.

Dr Blakemore—But we can still control the IP from here, and we did not even bother to do that.

Mr TANNER—That is a separate question.
Dr Blakemore—It is the same question, because if you control the IP, you control the company.

Dr EMERSON—But the benefits of IP are presumably more in the licensing arrangements. You get the wealth out of the idea, but we seem to have this obsession in Australia that you are not getting any wealth unless and until you are manufacturing a final product out of the idea. We could be very good producers and exporters of ideas.

Dr Blakemore—That is right. The photovoltaic cell is an example. There is no reason why we could not have capitalised on that.

Dr EMERSON—But we do not necessarily have to produce them.

Dr Blakemore—But we could have controlled the IP. I have six universal global manufacturing models. That is one of them—where the IP that is developed here is controlled from here. The manufacturing may take place at the end of the value chain in the market where you want it. The capital might have been raised in New York or London or elsewhere. But the control of the IP remains here. We have not even been smart enough to do that.

Mr TANNER—In that example, was that simply sold to somebody?

Dr Blakemore—I do not know the full details of that. All I know is that a gentleman in China who used to be a student in Richard Corkish's department has capitalised it. He is now a billionaire. The money was raised on the stock market. The Northern Hemisphere sees it as a way forward in partially solving the greenhouse effect. And we were not even smart enough to do that. If there was ever an opportunity for commercial ready R&D to come in and support it, that was one. I sit on the R&D committee and I see examples of this from time to time.

CHAIR—We have two minutes left. Would you like to give a two-minute summary of what as we move forward you would like to see in government policy towards the manufacturing sector?

Dr Blakemore—I would like to see a recognition that manufacturing is important enough that we must inject capital to assist in the complete re-equipping of areas of

manufacture where we do have some sort of strategic advantage. That means also putting together into a network those people who can assist in building a whole base of areas of manufacture and joining that to global supply chains. That requires a change in thinking. It means that we have to start backing winners rather than looking at the whole of the manufacturing base and trying to back every one of them, as we do with commercial ready programs. They are not working and in my view they will never work. We have to start using a more focused approach in the way that we run this country.

CHAIR—Thank you very much. We really appreciate your coming today. It was good to see you again. We will send you a copy of the *Hansard*. If you have further input that you would like to see us use, please send that to the secretariat.