Who owns science?

Professor John Sulston
Chair of the Institute for Science, Ethics and innovation

This is a transcript of a public lecture held to mark the launch of the Institute for Science, Ethics and Innovation (iSEI) at The University of Manchester, on 5 July 2008.

For more information, contact:
Institute for Science, Ethics and Innovation | The University of Manchester | Williamson Building | Oxford Road | Manchester | M13 9PL | UK

tel : +44 (0)161 275 7074
email: isei@manchester.ac.uk
website : www.manchester.ac.uk/isei
Who owns science?

Professor John Sulston
Chair of the Institute for Science, Ethics and innovation

(Audience clapping)

So that was wonderful, thank you very much, of course you are a hard act to follow (laughs). And of course naturally because of the topic what I have to say will in places sort of overlap and so what I shall try to do is to weave my threads through in those places through the structure that Joe has laid out. So of course you have all stayed awake through his lecture so it will be a test at the end to see if you get the overlaps right.

I start from a slightly different place as a scientist. I note that science can be driven by either needs or curiosity, and if you look at the logo here you see we’ve portrayed it in our little pattern, often though by a combination of both and in order for it all to work it needs a substantial degree of openness with both informal and formal communication and trust among the players and we have the structures within science, the peer review publication in particular which lies at the heart of the assurance of accuracy and the attribution of credit for achievement. But irrespective of the motivation and the way it works, within science of course it frequently gives rise to goods and services that are novel and valuable and we call this process, nowadays, innovation.

Now half a century ago this innovation pipeline was divided really into research and development and the former, the research part would be financed from the public, or a charitable purse and as such able to explore freely and the development part was financed by investment and therefore goal orientated. Obviously I simplify but there has been a trend to alter this and the result is that this distinction has now become quite unfashionable. There are a couple of reasons I can think of for that, one is a very good reason and that is the undoubted fact that research and development co-exist even in the same person and are dependent on each other, so that for example without novel findings from research there would be no development and equally in the course of development novel ideas and discoveries turn up that don’t belong to the goal orientated process as such and then in turn the pace of research is often conditional upon technological progress and you see this represented by these arrows here and so, naturally, instrumentation for example is absolutely key and there are many cases, the human genome project once again is a good example, the pace of instrumentation in both computing and sequencing technology, absolutely conditioned the pace of the progress. So anyway all of this obviously mandates the abandonment of an unnecessary semantic distinction, so that sounds fine, let’s get rid of it, it is all just science. However the second reason why it has become unfashionable is much more debatable because in the last few decades there has been a trend to extend the investment funding of development back into the research part so that the picture that is emerging is one of increasing private ownership of the scientific process as a whole reaching back into the most basic elements, now of course this trend is welcomed by political leaders who are able to save taxpayers money and also by investors who thereby gain control of the direction of research. It sounds like a win-win situation and is often stated as such but of course the consequence is the funneling of science into financially profitable areas and the simultaneous loss of science, the appearance of neglected areas because where there is no profit there is little research and less development.
Now, like Joe I shall be talking quite a bit about global health and this is because I have had a lot to do with that in various areas, often alongside him, in terms of promoting areas and so this is where you’ll see the threads weaving around. As he has indicated this trend has a number of consequences but let me just give you three which I think are important. One is neglected disease, the inability of doing research for poorer people, but also in developed countries the production of unneeded drugs which are then sold by aggressive and unethical marketing practices, and then again there is the very high cost of treatment for minority diseases because a few people have to pay in effect the cost of research and development in that area. Now a caveat in talking about this of course is that we all know very well and we should always reiterate that the infrastructure of healthcare is actually the most important thing, I mean the reason why we are healthy here depends far more on the fact we have clean water, shelter and good food than the fact that we have antibiotics but then of course every now and again we need the antibiotics or the other drugs and they can be life saving, so both are important and we just must not neglect the infrastructure.

So these things that I am listing, Joe has talked about, are failures in the equitable distribution of the goods of science but of course the matter isn’t straight forward to resolve, we can’t just say ‘well everybody is going to be equal, we are not going to have any sort of changes from one to an other’ because we should then block progress by sort of dull insistence on equality, it is a low temperature death for humankind. On the other hand, as Joe said, both ethical and practical reasons mandate a regard for equitable treatment for everybody. So we have a dilemma. Now consider the backdrop of this, globalisation is something that is much talked about to the extent that some people are accused of being anti-globalisation, I am not sure that anybody is exactly but they certainly are against the inequalities that have arisen which as great I think as the world has never seen, people are mutually dependent as never before around the globe, but mutual respect is little better than it was a century ago. We have moved on from Victorian times and the idea of a scientific hierarchy of races but travelling to the Galapagos recently I was reading as we went around The Voyage of the Beagle for the first time and among my huge delight in following Darwin’s thoughts I was quite shocked to realise how he regarded different bits of people, of humankind, as really at very, very different levels and one realises how much progress in the sense of looking for equality has taken place in the last 150 years since then and for some indeed at that time there was a feeling that humans were not even all in the same species, but despite of course the modernist realisation that we are one species with equal rights in principle, globalisation has not changed the economic imbalances that are characteristic really of imperialism and trading rules are set by the rich for the benefit of the rich just as much as ever. And there are other things, because of the mobility of the richest quartile there was a continued practice in health tourism and does this matter, do we care that poor people are sometimes persuaded or duped into selling a kidney to those who can afford to pay and analogously differing regulations provide opportunities for scientists to travel to do work that wouldn’t be permitted in their own country, I think we might refer to this practice as research tourism although I haven’t heard the term so far, maybe it will become fashionable. Now is this a valuable freedom in a world that would otherwise be too uniform or do we need to move to a more harmonious situation. Well I think clearly the latter, if globalisation continues then we shall want to do that and if we don’t then of course we, without some agreement of minimal principles it is just a race to the bottom in ethical terms, no ethical improvement is possible. So it does seem that we have got to try to harmonise and regulate to a sufficient extent to globalise justice without enmeshing everybody in a cocoon of red tape. Obviously the judgement of the optimal balance is difficult, it can only be decided by progressive debate but at present I think we are so
far from the balance point that at least we know which way to go in terms of the globalisation of justice. We should also acknowledge with all of this that we shall never achieve that globalisation of justice without a concomitant levelling of wealth so that the people are somewhat more on a level playing field and so I think an important part of thinking about science and the ownership of science is the need in my view for science to contribute to that levelling and that is what I want to talk about for a bit now.

Now the current system is of course underpinned by the machinery of intellectual property and I don’t need to say much more about that but I would just like to make a couple of points here. One is it has become quite ideological in some quarters, for example my experience in Geneva talking to the organisation that you referred to WIPO one gets the most incredibly abusive system, abusive comments from the International Federation of Pharmaceutical Manufacturers who really regard any sort of weakening of the as they call it the suggestions of improvements they see as a weakening of the intellectual property system and in a sort of *ex cathedra* manner these people are the representatives of intellectual property on earth evidently so we don’t have to sweep everything away as you have heard, of course not, it is just the system which is a good servant should not be elevated to this theistic level where it is basically making moral decisions for us which is what is being allowed to happen in the global world today. Just as one example of the mingling, the mis-mingling of two things by these speakers, the counterfeiting is tremendously much on the lips today, there are meetings and treaties, there is actually a rather secret treaty I understand being conducted in the G8, rather behind closed doors to try and stop counterfeiting. Now we are all against counterfeiting, obviously nobody wants to buy a drug or a product of any kind that is a fake and doesn’t work, however there is a tremendous trend to link counterfeiting exactly to intellectual property and the fact of the matter is that they have very little to do with each other. I mean in fact one can argue that the strong patents driving up the prices or allowing high prices to be maintained are exactly the reason for counterfeiting because if drugs for example were produced at the cost of production or just above then the counterfeiters would have much less room to play with, it is when something is very expensive that they open the raincoat and offer you one at half price, okay, so really you can regard the IP system as a cause of counterfeiting and not the solution as these guys would have us believe. The second thing that I want to refer to is that for good policy making in a highly technological society and again this is a view I know which is extremely unfashionable today, I consider that we need as much ever, more than ever, non-aligned experts and this idea that you know you can declare your interests and some how, you know by signing a book at the door saying this that and the other and then come in and give an unbiased view, this is nonsense, if you have interests you can not easily leave them at the door, now I am not saying that people are dishonest or rogues, I am sure that most people do their best but the fact of the matter is if you have conflicts of interests you have conflict of interests, signing books doesn’t help and so I think that allowing or sort of the university structures allowing everybody to get more and more involved with this that and the other commercial interests is actually extremely dangerous to the openness of society and of good policy making. Now, as Joe has indicated, there are various ways of tinkering with the present structure and I think what I really just want to move on and indicate that the robust solution to the market inefficiencies in these areas of science is to separate research from production, to in a way reassert the old ways, to pay for the two separately, not to regard them as the same thing. And then rather than protecting the product with exclusive rights patents and charging whatever the market will bear, the R and D is paid for from a separate pot which is not linked to profit in the same way. Now in addition to equitable delivery this removes the burden from the product of marketing and profit which at present account for more than half of pharmaceutical revenue.
But very importantly, and I am going to put my own bit in here is the advantage that the R and D can then be openly accessible and this is both equitable and of benefit to science itself, we are back to the point that without pre-communication and the trust that goes with that, that is bound up with it, that science itself is much impoverished. But we must remember that this only works once again if everybody is on a reasonable level playing field, for example, Indonesia recently quite rightly objected to providing its Avian Flu samples to the World Health Organisation until there were safeguards in place for the country to share in the vaccines that might be derived from them. We must ensure that there are benefits sharing if we expect people to do the sharing of science. And Indonesia had observed that earlier samples had just disappeared and subsequently used to market products both in the US and Australia. One further aspect of this relates back to our own consumer society which is part of access to knowledge because I think a bad part of having R and D linked to product price is that people will promote their products as much as they can, the fact that twice as much is being spent on marketing this area than on R and D leads to an excess of advertising and lobbying and the consumer finds it very hard to find a trusted source of information that will allow them to really judge and there is no question that the advertising that you see and of course in the US it is a more severe thing because you have advertising of medical products directly to the consumer whereas in Europe that is so far not allowed although people are trying hard to get it in, and any adverse effects tend to get brushed aside and we are just told what a wonderful new drug this is and the company Myriad that was mentioned earlier is has many examples of this. So how do we move forward? Well for the moment the separation is being achieved to some degree by setting up public/private partnerships and by other means, other structures, but the important thing is that the funding for the R and D has to come from Government or charity, at the moment it comes basically from a single charity, the Gates Foundation. Now this is working splendidly and some people are saying ‘oh problem solved, it is all done’, what this is doing, marvellous as it is, that Gates is putting his money and his colleague Warren Buffet has doubled the size of the foundation, are putting their money freely and philanthropically into doing good and that is a wonderful thing, but we are in fact winding the clock back 150 years or so to the time of Darwin to a time when public heath was dependant on the largess of the private philanthropist. Some people feel this is good, I think a majority of us think that surely things have moved on since then. This was a time when society was very, very unequal, women didn’t have the vote and in fact nobody who wasn’t a substantial property owner had the vote, I mean this was not the society as we know it today so for people from Margaret Thatcher onwards to say that this is the cure to all our ills and we are still hearing it from the present Government that philanthropy will somehow get us through, this is terrible nonsense, we had a better way and it has been pulled back from us, so I think we need to look, not to patronage, although it is fine in a small scale but definitely not in a more complex world, to finance the whole thing in a Victorian-style way. It is a terrible lack of solidarity apart from anything else, not taking collective responsibility. Now then there are longer range proposals and I think some of these have been mentioned already, there is the idea of binding by a medical treaty, which has the disadvantage to modern ears of central control but interestingly the Gates Foundation is adopting this approach in some areas and the prize system actually, I was hoping we might get some more views on that, it is a very interesting thing and I think you are absolutely right that having prizes, I agree with you and Jamie Love that this would be an interesting way forward. I am not convinced that on the larger scale it is going to work and I will tell you why, it is this thing about the space flight prize, it is just a question of what you define, now it works for relatively small things where you can have one person or a small company that puts this thing up, but what has been achieved with the space flight prize, it is not space flight, if you want serious space flight you go to either NASA or the European Space Agency or the Russians,
well you used to go, no the Russians are still doing it but not so much, but I would say NASA and ESA, especially NASA are doing the exciting stuff. Now in principle this could be done I suppose by private people competing for a prize but it would be a much bigger scale, and I would really like afterwards we should get onto this and see whether this could be applied on this huge scale because this is what is being proposed is that really large chunks, if not all, of bio-medical research gets put into this prize structure. However, it can obviously be done piecemeal and we heard a good example in the talks this afternoon about how that might be. Now one other thing here is that the, we need overall co-ordination and I am still very much on the thought of global health on this point and I think this is or it should be provided by the World Health Organisation. It is under funded and it is heavily lobbied by vested interests including the commercial ones but also including Governments, US, EU, and other Governments that are lobbied in turn by these interests, but nevertheless despite these difficulties it has achieved a great deal, not least the elimination of small pox and close to the elimination of polio, and in fact the problem with the polio is not the World Health Organisation’s fault but religious issues in a certain area of Africa that has allowed the thing to escape again and it is now being gradually pushed back in it’s box. But this kind of, once again you can see I am a kind of central controller but I am not really a Bolshevik, even though I look like one (audience laughs), I think for the really biggest most exciting things we have got to co-ordinate you know you just can’t have all these little companies competing against each other for the same thing, it just doesn’t work, when you want to do something really big like going to the Moon or Mars or eliminating small pox we have all just got to get it together and we can argue as much as we like about the detailed mechanisms, it is very important that we do so and that is exactly what we are going to do in this Institute but we have got to do it in that sort of way I think, of coming together.

Now the exciting thing that has happened in the World Health Organisation, it is somewhat analogous to the developments in WIPO, with the developments agenda is the CIPH report, the report on IP and health for the World Health Organisation, chaired by Ruth Dreiffuss, who used to be the President in Switzerland, who did an amazing job in bringing together very conflicting interests and it has led now to the sitting of an inter-governmental working group, so called because they, and you can imagine the acronyms, Geneva is such an amazing place, which is trying to implement some of these, and there is no question the US and the EU are pushing these things off the table all the time, saying ‘we know how to do it, we have got companies that do this, we don’t want a biomedical treaty’ and people are going round the back door all the time and that is exactly what is happening because as soon as we get some sort of coherent thinking about this, which is what has been happening thanks to Ruth Dreiffuss and this group we are beginning to move towards a treaty and what happens we find that the US and the EU are going round to the back door and making these so called free trade areas, these bi-lateral agreements in which the arms of poorer countries are twisted to get them to sign up for so called TRIPS-plus agreements that stop them implementing the flexibilities of TRIPS, that is the Trade-Related Intellectual Property rights agreement and you know you can twist somebody’s arm to anything if you have economic imbalance then you can negotiate them into a position. And so the mantra is free trade which to a limited degree it is but fair trade it most certainly is not, what is coming out of these agreements, and I viewed with amazement and shame the way that Thailand has been dumped on recently for implementing it’s rights under these agreements as you may have read, the implementing of compulsory licences to import drugs, generic drugs, cheaper drugs, from India and they have been subject to abuse from both the EU, Peter Mandelson wrote to them, against the wishes of the European Parliament by the way, and the American Trade Commissioner and this is all completely legal what
they are doing, but because they are not such a rich country pressure can be put on them and threats made not to inwardly invest and all the rest of it. Thailand is in fact capable of standing on it’s own to some degree having got to a certain point of development where it is actually got a much stronger trading position than it used to have. Now one other interesting thing in all of this is the role of NGOs and I have been somewhat involved with these people, the various organisations and I think, I am quite interested, I think, I don’t know when it started but I have sort of seen bubbling up the use of the term civil society, it seems to be the fashionable name for this grouping, the people who are not governments, who are not for-profit organisations but run things, it is the collective if NGOs and I’ve realised that this is an enormously important part of world government today. The thing is you see of course the things that we have been talking about, the big organisations are trans-national, the companies are trans-national as are of course things like the World Health Organisation, are trans-national, and basically national governments have very little leverage on these guys because they can move capital around, we know for a fact that British companies have on occasion threatened the government with decamping to another place and I refer to people threatening Thailand, they have threatened India, Novartis have threatened India in the same way, they just say ‘well you know if you don’t give us easy trading rules then we will go somewhere else’ and so they, the national governments are not as powerful so what we have to have is trans-national civil society and this is what the big NGOs are providing and Joe has been instrumental in fathering more than one of these organisations through his students. So when you hear for example that drug prices have been reduced in a certain company and free drugs are provided then what you find is it is actually not an act of corporate responsibility, which is a term I regard as an oxymoron (audience laughs) in the sense that it is certainly corporate but it is not responsible, it is just paying attention to a bit of PR, it is part of the public relations really, because otherwise you wouldn’t as a company spend the money but no it is what, the reason for this is pressure from the NGOs. And we saw this for example in South Africa where a number of pharmaceuticals got together to try to stop South Africa importing generic drugs or making generic drugs and were eventually seen off by a concerted NGO group.

So in one way or another, and for all these different reasons it is very important that the trend I think of privatisation of science is reversed and I don’t mean by that eliminated, but the trend is reversed. Let me make that clear, just drifting down a certain road, I just want to drift back some of the way if you like or even better steer back to a logical position. And that science is thought of and behaves as a commonwealth as it should be and that the globalisation of trade is complimented by the globalisation of justice and that we avoid the tragedy of the nations, the tragedy that the hyper-competition between nations which is leading to some of these excesses is also reversed. I mean our own politicians here in this country for example are very fond of saying ‘oh gosh you scientists you have got to work harder, you have got to produce more goods because look at China and look at the Indians’. Blair was very fond of going to Bangalore and coming back and telling us that in India it was going much faster than here and that we better get on with it. Now that is fine, people should work hard I suppose (audience laughs) more or less, and obviously it is terribly good to work hard if you are doing good for people but the idea that we can somehow compete our way out of the international dilemmas you know, this is just absurd because we know very well that we are running out of resource and so forth, right so just calling it the knowledge society and all the rest of it doesn’t help at all. What we have got to do is to recognise that we are lemming-like running over the cliff, the whole of humanity if it just continues down this route. Now this is just to state the problems and not to give a solution but just as one side issue of this which is very important, I was recently talking to the graduate students over in the Faculty of Life
Sciences about scientific integrity because they were having a day long course on this and they asked me to go and chat a bit and I have been involved, I have been hearing about this from various quarters, scientific integrity, and it seems to be very clear that when you start talking about plagiarism and falsification of data and so on you certainly should castigate the individual if they behave badly but you should also castigate their boss, especially if the boss happens to be publishing 100 papers a year and clearly has not read all of those because nobody could read 100 papers a year with any attention, so I personally think that there should be a limit on the number of papers a professor can publish, my goodness (audience laughs) and also at the tertiary level the institute is to blame so I think when somebody gets done for scientific plagiarism or particularly falsification their boss should be castigated and their university should because it is the hyper competition that is leading people to do this, right, they are so scared of failure that they will go round and take this bad measure. So watch it, watch the tragedy of the nations and the tragedy of the universities hyper competing with one another.

Now in the last five minutes, so I have focused, we have both focused on the job of science to do good, now as is hugely significant and it is extremely important but many perceive this as the sole purpose, but actually science has another role which is much more important because science is a cultural driver in it’s own right, and indeed one could say with much justice I think that it is the major cultural driver over the last few centuries or for longer. Now it is not to attribute and magic character to science it is simply to point out that science is constantly changing our perception of the human condition, of the universe around us and the result is that we really are changed by it, our culture is changed, and without this continuous exploration by whatever means, science or other, life would be dull and indeed I would think not worth living, you would have no meaning. So science I would say rather it is the exploration perhaps which is the important thing but science is the modern way of exploring in one way or another and I mean science in the broadest sense. And in fact the scientific process is familiar to everybody and practised by everybody, whether they actually name it as such or not. Now this process is rightly described as being driven by curiosity but of course the product is worth vastly more than is expressed in the term mere curiosity, that downgrades it, it should not be downgraded, this is the most important thing we do. Like the muddled process of evolution that has generated our species, the muddled process of science is for the moment the future of humanity. Now we have no idea how far we can go on with this exploration and there are often voices calling into question the merit of even trying to go any further, they often say ‘you will never understand X, you will never understand the brain, you will never understand this, that or the other’, well that may be so or it may not but unless you go on down the road and look you will never know. And if you look back down the road already travelled and then look clear eyed at the vast unknowns ahead what excitement and what a justification for living. So with this project we have no need of myths, we have no need of dogma, for the time being we really should concentrate on just two things. One is very important and basic and we are facing it a number of different ways and that is the survival and the thriving of humanity, or whatever descendents humanity has, and the exploration of life and the universe and everything, and the outcome, successful or otherwise, depends of course to a great extent on who owns science.

Thank you.

(audience clapping)