

In our Time Programme 56
Information Technology

Melvyn Bragg : Hello, there are now more than 200 people connected to the internet worldwide. The world's biggest ever merger has just seen Time-Warner united with the internet service provider, America Online and in the United States alone it's predicted that transactions conducted in cyberspace will account for 327 billion dollars worth of business by 2002. Some shattering statistics! Is this change going to alter our society radically, more importantly, empowering the individual and offering greater choice? Or will information technology lead us into a dark age for society that destroys democracy, the workplace and family life?

There are arguments on both sides, profound arguments, and with me are two leading players. Charles Leadbeater Demos Research Associate and author of the influential book "Living on Thin Air: The New Economy", and Ian Angel, Professor of Information Systems at LSE and author of a new book called "The New Barbarian Manifesto: How to survive the Information Age". Ian Angel you say in your book, that you think the future ages will brand this as a time of revolution, can you briefly say why you see it in such great terms.

Ian Angel : Well you've just mentioned the fact that the transactions are taking place in cyberspace, the problem is that in cyberspace transaction costs are much lower, and this is having an enormous effect on the institutions of our society, that are based on the way we used to do transactions during the industrial age.

Melvyn Bragg : But you used the word "revolution" is big, especially the way you use it, because you refer back to Topfler, now in 1980 he said there were three waves of revolution, the revolution that came in about 8000 years ago, where we... 8000 BC sorry when we became agricultural, and two or three centuries ago when we had the industrial revolution, and now the third one the information revolution, so your putting it...your pegging it high, can you justify that?

Ian Angel : Well it's better than evolution, because evolution makes whole species extinct. There are fundamental changes, look at jobs, jobs are being transferred to the Far East. Marks and Spencers just yesterday, are moving their clothing manufacturing, out-sourcing it to the Far East, this has the effect of making everyone feel insecure.

Melvyn Bragg : But is this enough to make it a revolution? I'm just trying to get this in listener's minds right. You claim hugely for it in your book, I want you to claim a little bit more hugely on air, than you've been doing so far.

Ian Angel : Well, the fact is, that there are now one billion workers world wide who are available. Now this is an enormous work force, what I'm saying is that labour has become a commodity, and that is a revolutionary idea.

Melvyn Bragg : So we can switch to Bangaloor, in Southern India, as tech....

Ian Angel : Bangaloor to China...

Melvyn Bragg : as Mex.... as a lot of American firms do, our student loan scheme goes to Sri Lanka....

Ian Angel : Sri Lanka yes.

Melvyn Bragg : ...runs it from there, and that is going to lead to.... ?

Ian Angel : And so now the first thing any business man does, is to say, "Let's look at the transaction costs, is the cost of doing it in the UK, greater than doing it somewhere else? And if it is we'll go somewhere else. "

Melvyn Bragg : So that's the basis of your revolution. Charles Leadbeater, do you agree with that? Is it as groundbreaking and as big as that?

Charles Leadbeater : I think there is a revolutionary change going on, I think it's the conjunction of a series of forces that have developed over a long time and are coming together now, and it's not just information, it is that basically value in our economy now, is generated out of thin air, it's generated out of ideas, knowledge, innovation and creativity.

If you look at the most powerful, largest companies in the world now, their value really lies in their ideas, their knowledge. It's not in things we dig out of the ground, we can't load them on trains, they don't sit in warehouses, they're not transported through ports, so there's a huge shift in the knowledge...in that the asset base of the economy, from the old assets of the industrial economy of land, labour, machinery to these new assets which are based on human capital, knowledge ideas and creativity.

Melvyn Bragg : But wasn't the industrial revolution to do with knowledge? To do with who got to know how to smelt steel first, and who got to... and I suppose the agricultural revolution, who got to know how to you know, plough the fields and scatter first and so on? Isn't that knowledge, just as much as this is knowledge?

Charles Leadbeater : It is knowledge, but what I'm saying is that knowledge has always been a key factor in production, but now it's taken on an entirely new significance.

Melvyn Bragg : What's the new significance?

Charles Leadbeater : Well, the new significance is that if you look at one of the leading companies of the world like Intel, it makes a physical thing, a chip, but actually the silicon is completely worthless, the material is completely worthless, the value lies in the logic that's inscribed upon it. If you look at Microsoft, it's the largest most powerful corporation in the world, look at its balance sheet, of course, it's got buildings, land, machinery on it, but actually its value is entirely an intangible thing, it's in sort of software and recipes. Now this is a completely different change. We're not trading physical commodities, we're trading ideas, information, images and other things, and that has very big implications.

Melvyn Bragg : Just before I turn away from being a.... try to prod this revolution idea a bit further, is it different in kind? Even from what you've said Charles, and then I'll come back to you Ian, from say Caxton's introducing the printing press at the end of the 15th century, and releasing (banging noises)-Oh God we've got the demon knocker in the next studio, nevermind....

Charles Leadbeater : It's the material economy coming down!

Melvyn Bragg : I'm sorry to be so blasphemous, nevermind...erm, the...Caxton releasing a printed material onto a huge market, is it different in kind from that?

Charles Leadbeater : I think it is different in kind, because I think it's global in reach, it's moving very fast, and we now systematically invest in change in our societies, this is one of the key things. In the 19th century change may have come about through accident. Harold Perkins, you know, discovered the chemical industry almost by accident in a laboratory at home. We now invest huge amounts in systematically generating new ideas and new knowledge, and information and communication technologies allows us to distribute that knowledge much more quickly world wide. That is a very, very big change in the nature of our societies. Change isn't accidental, it's systematic.

Melvyn Bragg : So what world do you see briefly, Ian Angel, this new revolutionary world, you could have said, before agriculture people hunted and scavenged, then agriculture, they settled down and they therefore created leisure, therefore created armies, therefore can build cities and so that happened. Industrial revolution brought in masses of people, you had uniformity, product, we can say that happened, changed society, so what is this revolution going to be?

Ian Angel : It's not just about being different, it's also about being the same. The...you mention Caxton, you know, what he did was introduce a new way of communicating, and either side of that idea became two totally different societies. Now we have another way of communicating, but it's a global communication, an instantaneous communication, and it's bringing into question, all forms of loyalty. So who can I communicate with? Who do I feel attached to? And because I am able to talk to anyone in the world instantaneously, it means that I am no longer committed to being forced to the main way of thinking that is orthodox in my particular society. I can choose to leave my society.

Melvyn Bragg : Can't you do that anyway by reading a book?

Ian Angel : But not in the same response. You don't get the instantaneous response, you don't have the contact and the immediate response and the feedback. There's a time lag with a book. It's instantaneous with new technology.

Melvyn Bragg : Charles Leadbeater, why has this global proliferation taken place on such a scale? Let's look at the computer, there are couple of hundred million.... er there *were* a couple of hundred million, two years ago, and in the snap of a finger, there's going to be five hundred million, why? The speed of this is astonishing, isn't it?

Charles Leadbeater : Well I think there are a number of reasons. One is the rapid advance of computing power, it's got a lot cheaper, it's got a lot smaller, it can be incorporated in a lot more objects. But secondly I think it's the arrival of all this new technology with the erosion of tariff barriers, the globalisation of trade, the collapse of the cold war, and communism has created an opportunity in which this technology can spread and migrate, and the most powerful reason is it's useful for people. People can do things with it. Not necessarily new things, but things they used to do more effectively. So when a technology allows people to do useful things and it's cheap and it's available, it spreads very rapidly, add to that that it's driven by software, and the thing about software is that it's like a recipe, if you come up with a perfect chocolate cake recipe, you can replicate it worldwide almost instantaneously. If you come up with a perfect chocolate cake, only you or I can eat it in this room. So if we're in a world of recipes, recipes can spread the world over very fast, and so the recipe of "Windows" is now a world recipe for software and that's allowed the product to spread much more quickly. When Ford created his Model T, he could only ship them in units of one. Bill Gates can spread Windows round the world like a virus.

Ian Angel : But there is a problem here, because computing deals with detail, and the moment the software is let loose in society, it creates a complexity, and that complexity....

Melvyn Bragg : Could you just open that up a bit?

Ian Angel : . well the idea.... computers deal with specific problems, it's a black box: inputs, outputs, well defined. But the problem is that once it moves into society, they are misused, abused, use in different ways. People misunderstand, misinterpret the data. People take the data as being "truth", they take the data as though it's information. Not realising that there's an interpretation going on. What the machine does is just generate text and numbers, but the complexity of the interpretation, the misinterpretation, the misinformation the disinformation is what causes complexity in society.

Melvyn Bragg : So what are you saying there, where does that lead to?

Ian Angel : It means that it's extremely difficult to have any sense of control. It's...the idea that computers are controllable, is naive.

Melvyn Bragg : Oh I see. I see. This business of the globalisation which we've touched on before and said industries, huge American industries are moving to Southern India, to Bangaloor, one of the fastest growing technical centres in the world at the moment, with American industries.

Ian Angel : Yes, but it's not just the big companies....

Melvyn Bragg : No?

Ian Angel : you see small companies are doing it as well.

Melvyn Bragg : Fine, but is this...*again*, is this very different? I mean Benjamin Franklyn, whom you quote in your book said, "Merchants have no country, the mere spot where they stand does not constitute so strong an attachment as that from which they draw their gain". So again are we talking about something...?

Ian Angel : We're talking about people. Politicians talk about "British Industry". Whereas Franklyn is saying

there's no such thing as British industry, traders will go where they see their gain. They become not multinational, they're transnational, they are beyond nationality.

Melvyn Bragg : What consequences does this have, this...what you call, in your book, Charles Leadbeater, the "knowledge based economy", what role does information technology having in these developments?

Charles Leadbeater : Well I think it's a key driver of that, and the driver is to go back to this question of globalisation, if we live in a world where, basically you can make any product anywhere in the world and ship it to any market, then it's entirely rational for manufacturers for instance to make China the world's factory, the place where all the physical products are made, or South East Asia more generally. But that means that if you live and work in an economy like this, then you can't base your competitiveness...

Melvyn Bragg : Like ours, you mean?

Charles Leadbeater : yeah.

Melvyn Bragg : Yeah.

Charles Leadbeater : ...that you can't base your competitiveness and earn your living on the basis of your access to raw materials, or cheap labour, or what have you, you have to generate some distinctive competitive advantage.

Ian Angel : You just.... you said "like ours", of course, that's the problem. What is ours? What is "us"? And that is the difficulty. New technology is actually creating a class, and elite class that is actually separating itself from...from nationality.

Melvyn Bragg : This is rather heady stuff, I'd just like to be a bit more concrete. Let's talk about social change. How do...? Starting with, as it were, the bottom rung, Ian Angel to you first. How do you think this going to affect the nature of work, and normal life, shopping, getting round the place, all that?

Ian Angel : Well what is work, that's a problem. Work, we use the word as if we understand what it is. In the age of the factory we knew exactly what it meant, but now, it's much more complex, because a factory is basically run by machines with a few security guards. What do people do? And that is a huge problem. There are six billion plus, people on the planet, if most of the physical skilled.... semiskilled and unskilled work is done by machines, what do those six billion people do?

Melvyn Bragg : What do they do Charles Leadbeater?

Charles Leadbeater : Well I think that work becomes increasingly differentiated and in many ways unequal, I think that there is....

Melvyn Bragg : People still have to build buildings, they still have to clean buildings, they still have to...stuff like that.

Charles Leadbeater : They will indeed do stuff like that, although even if you look at buildings, I mean that's a knowledge revolution. We now enclose space with fewer materials, much more quickly, with intelligent materials. I mean the buildings of today are much more intelligent and clever than the buildings of 100 years ago.

Melvyn Bragg : In what sense? A lot of people are reaching for their telephones and their pens as you say that, thinking the buildings of 100 years ago are a lot more intelligent than buildings now! (laughs)

Charles Leadbeater : Well, we enclose.... if buildings enclose space, if you look at them in purely utilitarian terms, which is a very narrow perspective, and look at the buildings being put up in the city of London, we enclose space much more quickly, with materials which are lighter, less energy intensive, having technology embedded in them, and that sense, the whole..you know, erection of a building is a much more knowledge

intensive process than it used to be.

Ian Angel : And the cost of maintenance is lower, therefore there is less work, to maintain the building.

Charles Leadbeater : But the key question...

Melvyn Bragg : Come back to this working thing, yeah.

Charles Leadbeater : Well the key...I think there are a series of criss-crossing and different impacts that play in ways I think work will become more creative for some people, because they'll be more liberated by it. More people will be able to work at home. The cost of entering into self employment will fall. There'll be new working patterns within corporations.

But at the same time, I think there'll be ways in which, you know, there'll be the "cool centre" culture, in which people are under more pressure. This technology will be used to supervise people more, and there's also I think, an absolutely huge problem of social exclusion. If you go to some of the places which were heavily dependent on the old economy, the Preston Park estate in Hull, which was built around chemicals and engineering, those people there have absolutely no stake in this new economy whatsoever. And that is a social consequence which we can't bear for long without having some major cost in the future.

Melvyn Bragg : You find that all over Britain don't you?

Charles Leadbeater : You do.

Melvyn Bragg : Places built around industries, which for one reason or another, we needn't go into that at the moment, for good...for reasons which can be understood and reasons which defy belief have been wiped out in the last 15 years.

Charles Leadbeater : Yeah, and the inequality in the old economy will translate itself, this is the danger, into even greater inequality in the new economy, because those places lack the social and human and intellectual and knowledge capital that are needed to give people a chance in the new economy.

Melvyn Bragg : So the revolutionary future you see, you don't see it through rosy.... ? The social impact you see as being more destructive than er...?

Charles Leadbeater : No not necessarily.... as I said I think they cross...the social impact depends on our social creativity. The thing that stands out for me about the Victorians as radicals and revolutionaries was their ability to combine science and technology with social and political innovation.

Melvyn Bragg : Philanthropy, insurance...

Charles Leadbeater : Not just philanthropy...

Melvyn Bragg : Insurance schemes, yeah.

Charles Leadbeater : but you know, a lot of the institutions that we currently live with, local government, research universities, trade unions, welfare societies, building societies, and so on and so forth, come from radical Victorian social innovation, and what stands out for me about our era, is that we are radicals in science technology and commerce, but conservative and timid in our social institutions and our political institutions and how we adapt to this change, and that is why the people on the Preston Park estate in Hull, don't have a chance, it's because we're social conservatives and timid, where we should be radical, imaginative and bold. These top percentile "geeks" provide the means to the very foundation of modern society, and yet they are despised, perhaps because they are capable, educated, people that others are jealous of, and find themselves unable to operate in the complex society that such people create. The kind of "sour grapes" attitude that pervades seems to drive the apathy and despising of technology that seems to be many people's attitude. They feel they are drowning in a sea of complexity not of their own making, and do not see why they should learn to swim in a sea they did not create.

Melvyn Bragg : We can send trade whizzing round the world, Bangaloor and all points East, but we can't solve the present....

Charles Leadbeater : The City of London finds it easy to transfer billions of dollars a day round the world, why can't we get five thousand pounds to a social entrepreneur in a Preston Park estate in Hull? That we find difficult to do, but complex tasks we find easy. This is a paradox.

Melvyn Bragg : Yes. The tone of what you say, despite you're claiming this is not necessarily pessimistic does strike me as pessimistic. Do you agree with that Ian? You go rather further, I mean you see it...the future as a great, if I can just quote you, as "a great threat to humanity", your guru Topfler, in 1980, talks about this third wave this third revolution, which we started the programme with, "tearing families apart, rocking the economy", I'm quoting, "rocking the economy, paralysing our political systems", and I can't read my own writing, for the rest...oh "leading to great violence", something like that, I mean you seem to be of that camp.

Ian Angel : Yeah but... but let's come back to what Charles has just said, he said "We can't get five thousand pounds to Preston, but we can send trillions of dollars around the world", assuming.... sending trillions of dollars is more complex, than sending five thousand pounds to Preston. That's the whole point. It is *more* complex to get five thousand to Preston than to send large amounts of money around the world.

Melvyn Bragg : That's an assertion, how would you prove that?

Ian Angel : Well the fact is that there are institutions worldwide that have been set up, that will actually allow this to happen. The problem, as Charles said, the social institutions are not in place, the social innovation is not in place to make that five thousand pounds available. It's already.... I'm just saying what Charles has just said.

Melvyn Bragg : Do you see any signs.... ? I think that the distinction made is crucial, and is very, very clear and good, that we're radical in technology and conservative institutions, this seems to me a fair old recipe for disaster isn't it?

Charles Leadbeater : Er, it's either a recipe for disaster or it's a recipe for some really radical politics, and some really radical redesign of our institutions.

Melvyn Bragg : What sort of really radical politics would meet the occasion?

Charles Leadbeater : Eer, well I think a radical, completely radical rethink of education, when it starts, how it's delivered, how it's funded, where it takes place, so on and so forth.

We've only started scratching the surface, at the moment. I mean the current government's agenda which I support on standards and all the rest of it, is about correcting past failure, it's not about creating an education system of the future yet. So for instance, give you an example, two examples. Education, growth industry, huge demand for it, why should it be difficult to set up a school? We should have schools being set up all over the country by new people, why should the state completely control that?

Second example, education's going to be a global industry, well what's the future of a university in a global market place? Shouldn't universities be freed from state control and be privately funded and run?

So we've got to embrace a much more radical agenda around education and welfare and these other areas, if we're going to give people who don't have lot's of personal resources a chance in the new economy.

Melvyn Bragg : You.... can I come back to your sense of...I mean your book "The New Barbarian Manifesto", it's not a cosy read. You do see the future in the hands of the knowledge holders, who seem to me to be just as elitist and just as in command as any elite we can look back on for the last three or four thousand years. With the added thing, that they...and I'm going to bring this in as well for both of you to talk about...the added thing that they control the money, and since they've got the money, they always have, there's nothing different there.

But I'll just finish, and then you two can go on, that they can move that money anywhere, so they need not be taxed anywhere, therefore the income to the old states is in...under serious threat, and this isn't only the super rich, this is lots and lots and lots of people who've been shifted now between.... all over the place and evade VAT, and then it can become part of what they do.

Ian Angel : The super rich have always avoided taxation...

Melvyn Bragg : Sure.

Ian Angel : ...but now what's happened is there's a new group of people, who are international businessmen, who are not earning huge sums of money, but increasingly they are available...they are capable of bypassing taxation. But you know, you say that Topfler's my guru, Nietzsche is my guru, and it's "Human, All Too Human", you've obviously not enjoyed it like I did. The idea is that it is humanity we're talking about, and the use of the word "our", "us", "we", these are problems, because we are using them as we understand what they mean, the whole point of a revolution, is it's actually changing the nature...what group do I choose to belong to?It's no longer a geographical accident of birth. Now I can actually choose to go somewhere else. I belong somewhere else.

Melvyn Bragg : From what you say in your book, and from what you say, it seems to me that what you're saying is, "Watch out, we're heading for a society where the knowledge holders, those who really know, are going to be so far ahead of the rest, and so independent that they're just going to walk the world, and then the, I'm quoting you back you say "The rest will, resort to racism, socialism..."

Ian Angel : Socialism yes, socialism.

Melvyn Bragg : ...fundamentalism", and something else (Ian laughs), I mean...all. You're saying much the same, you're sort of qualifying it, and you're putting in shards of optimism, not very convincingly.

Charles Leadbeater : Oh well let me be a bit more optimistic then, because I think there are these tendencies is at work, but I think that this technology is enormously enabling. I mean my kids will not have to work in a factory or work down a mine, or hew from the ground or be farmers, they will work with their brains, and that will be true of most of our kids, and this is a huge social change. Technology's migrating towards people, and it will enable, I think, an unfolding of a much more democratic approach to life.

Melvyn Bragg : But can I ask you two things? One is, how many people is it migrating to, and B...two, will those people, be prepared to support what Ian thinks of as, I don't know whether you use the word rump, and it's a rude word, the rest, who are not going to be up to speed, who are going to be left to pay whatever taxes are left to be paid and so on, is the...how they're going to stop this?

Charles Leadbeater : A. I think it's migrating to a lot of people, that I think especially there's a huge generational change going on, and I think amongst younger people, it's an absolutely kind of reflex action, this technology and this way of thinking. Second, Ian is absolutely right, it does raise these huge political questions about loyalty belonging and attachment. But that's down to politics. I mean it depends on our ability, and our political institutions to devise new senses of collectivity and social contract, and that means, you know embracing this technology to strengthen democracy, to find new ways of connecting people, and I think actually, people, quite strongly, do need forms of connection, and they will use this technology partly to create that. So I don't think it's an entirely fragmentary individualising, destructive force. Actually new forms of collectivity will emerge out of this, to solve social problems.

Melvyn Bragg : But you see democracy as an error now, you think democracy will be seen to have been an "error". I'm quoting you.

Ian Angel : Democracy was an experiment that came out of the industrial age, it was a natural form, because the mass of people within society, had power, because they were needed to be part of the factory, they were needed for the military, they were needed to be the market. But as the nature of production changes, in societies that are right sized, where there is sufficient wealth, then forms of democracy may continue, but I'm convinced, where

societies are wrong sized, where there's not enough wealth generators in society, then the rich will not support the poor, by paying all of their wealth just to keep society going, they will run away, it tells them where to go. They have already got contacts, because they have networks all around the world. Their ability to generate wealth will be known, and country states will say "Come on in". The Americans are doing it already.

Melvyn Bragg : We're doing it with German industry aren't we?

Charles Leadbeater : I think, yeah.

Ian Angel : Yes.

Melvyn Bragg : Sorry, German business...

Ian Angel : And what's happened... Germany, which most people think of as the most loyal of countries and yet they have police cars on the borders, intercepting people with bags full of money. Now these are not the super rich, these are school teachers, hair dressers, getting the money out of the country in case they will be taxed on it. Well they will be taxed on it, and that's causing problems.

Melvyn Bragg : Yes well you're getting a head of steam which is more like your book, it took you a long time to warm up (Ian laughs), because your book is a bit like that, and it's taken you 25 minutes to get there! Charles Leadbeater.

Charles Leadbeater : I think Ian's over stressing how mobile, and global this world will be. I mean in some ways it will be, but people will still need to work in places, and actually tacit knowledge located in particular places arguably become more important, and so the social problems of how you generate tacit knowledge in particular places like Silicon Valley or Cambridge, or wherever, will press on these people, and they will need social solutions which are geographically located, and secondly, of course, it depends on your ingenuity over things like tax and what have you, we can devise new ways of binding people into tax contracts and all that.

Ian Angel : But also, how much does the individual, is the individual allowed to keep? That is the big issue.

Charles Leadbeater : Yeah, well, but Ian, the other problem is that I think there's a huge democratic impetus in this change that's actually empowering with information, education and choice, and that's the democratic impulse...

Ian Angel : I must be a Marxist then because to me technology is about alienation.

Melvyn Bragg : Just a second, one at a time.

Charles Leadbeater : ...the particular form..the particular form that democracy took out of the 19th century in a representative form, I think is indeed passing, but actuality our societies, I think will become far *more* democratic as a result of this, because the citizen and the consumer, will be empowered with more choice and freedom.

Ian Angel : I agree with you that it will become more democratic, and also it will become more vicious, because it will be the majority intimidating the minority. I can see the end of representative democracy, and so what you'll have, will be the majority bullying minorities.

Charles Leadbeater : I think that entirely.

Ian Angel : And using the sheer bulk of numbers as the justification as the morality for intimidation.

Charles Leadbeater : I think that entirely depends on the nature of politics and social institutions. That maybe a future for America, and if we're not careful it maybe a future for the UK, but it's not a future for France, it's not a future for Sweden, Holland, or Germany.

Melvyn Bragg : I've got to call...blow the whistle now, I'm sorry about that. You can take a choice between Charles Leadbeater's "Living on Thin Air" or Ian Angel's "The New Barbarian Manifesto". I'll be back next week with Martin Amis and Cora Kaplan, talking about images of men, or masculinity, thanks for listening.