

## Society – Technology– People

Theory-Interviews on the relationship between societal and technological change.

### *Interview with Prof. Bruno Latour, PhD*

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1 **Where do we find sources for technological change and social division of labour?**

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3 I have a theory that makes it hard to understand the question, separated from what could be called the  
4 rest of the society. So the prime is that people often see technology as one layer isolated from, I don't  
5 know, economics, politics, morals, life. But that's not the way it is for humans at least. I mean for  
6 thousands and hundreds of thousands of years the drivers have a connected what the society is made of  
7 and what the technology is doing in it. So it's very hard to isolate the drivers. They can come from  
8 many different sources. So if we want to work in this interview we have to make sure that you accept  
9 the possibility that basically society and technology are the two sides of the same coin. Greed, ambition,  
10 poverty, hunger, powers of course, ingenuity and thousands of things that could explain as well politics  
11 or art or economics and it's very difficult to isolate one little bit which would be the introduction of a  
12 non-human resources inside a situation. Social Division of Labor is just one of the many things which  
13 could explain the organization of what could be called techno-social or socio-technical assemblage. If you  
14 take a - of course there is a division of labor here, there is you, and the camera man, scientist and myself  
15 - but I'm not sure if this is a very strong driver. There is division of labor, there has been forever. The only  
16 thing which is typical of the technical as such is that when it is introduced into an organization it stays  
17 and it maintains the state of the organization for a slight while. So this is why, I don't know, this chair for  
18 example is sitting me, is holding me and is slightly longer lasting than me. Actually this could last for very  
19 long time. So that's what technic does to a organization. If not, an organization was a shifting, moving set  
20 of relations which have no durability. But if you add a little bit and pieces in it which are coming from  
21 what is called the non-human, usually material but it can be also legal, it lasts a little longer. It can be  
22 answered, this question, only by empirically cases. I don't think, and I've read many historians of  
23 technique and economies of technology, and you could make very interesting inquiries about the  
24 findings on the long term, range of innovation, the cycles of innovation on the long term period, a few  
25 decades etc.; but you will always have a very rough idea to answer your question. Because most of the  
26 time - precisely because technology is so much of the same thing as social, political and legal relation - it

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27 depends on so many factors that the sort of aggregated answer to this case studies never work very well.  
28 Many people have tried to find laws of innovation and subsidies these laws of innovation, create  
29 engineering parks and that sort of things and Germany has been very successful at that. But the price  
30 that - this is very rough -; I mean of course it is better to have, if you say a more open society, lots of  
31 engineers, lots of money to do the scaling up, lots of research, educated engineers, you can say this is  
32 good - I mean it's a good try - but if you wanted now to follow that on one specific innovation, you would  
33 be very surprised. Because suddenly you would realise things like, I don't know, the "Dieselgate"  
34 suddenly arriving there for reasons which are linked to the legal demand made to automakers by state  
35 institutions, and then engineers finding a clever solution, but the wrong sort of clever, so to speak. And  
36 you will have to go case by case and again when you are going case by case, you will visit a large part of  
37 Europe, of Germany or France. So this is why in order to get into technique you need to change the way  
38 you praise it and this is a very important aspect. The ways to praise a technique has itself to be adjusted  
39 to what i've said, which is when you study a technique and it's difficulty of it's innovation and the reason  
40 why it works or it doesn't work, you have to bring to the study of it special type of senses and special  
41 type of principals which are not the ones you would use easily for normal economical theories. The  
42 reason is that precisely when a technique arrives it just shifts the whole sort of set of attitudes and  
43 presuppositions that people have. It's made for that. It's disruptive, when you arrive with a technique -  
44 pffffff - all of the calculations of all of the people who were there and with a certain idea of what is the  
45 state of society are modified. Oh that's a much easier question. Because they differ radically by the fact  
46 that innovations since the Newcomen engine I would say all the way to the 1980s, that is, 19th and 20th  
47 century, were driven with this idea that Ulrich Beck, the German sociologist, has nicely called  
48 indifference to aftereffect. So it was much easier to innovate in the 19th and 20th century. Because  
49 basically you were finding new solutions to disrupt the state of the art at one given moment. You knew  
50 you had to take care of some of the aftereffect, but the big aftereffect, the long term aftereffect was  
51 completely out of your ecosystem. And now what's happening is that the aftereffects are all coming back  
52 to haunt every single piece of technology including this machine here, this lighting system there. We will  
53 be told soon that it is bad for the eyes, that it has the wrong wave length or that its made of material  
54 that is destroying a large part of Africa etc. #00:08:51-4#

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57 **Which consequences will arise from technological change?**

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59 Well the first thing is that progress is gone as a concept. Because progress was precisely a 19th and 20th  
60 century idea of technical access to resources through inventions disrupting older patterns of use of the  
61 earth. And whose aftereffect could be ignored. But all of that has disappeared. So now every time you  
62 talk about progress you have to remember what consequences aftereffect has to be reintroduced into  
63 the definition of a technique. If you take now an electric car which is supposed to be the great solution,  
64 but if you reintroduce the question of battery and the material necessary for battery suddenly you have  
65 a hesitation on is it progressive or is it regressive? So the very notion of progressive or regressive is now  
66 completely blurred. For a Frenchman, abandoning nuclear energy by the Germans could be called  
67 regressive. The great country of engineering and technology, Germany, is abandoning this technique,  
68 which still might be progress. Again it means that the way we evaluate techniques, the way we judge  
69 development and innovation is completely wrong because precisely we cannot sort them out by their  
70 profitability or efficacy without taking the aftereffect into account, which modifies every calculation of  
71 interest. Well I think its fair to say that there is a line, which we could call hypermodernism which would  
72 be the connections that is robotic, AI, DNA-manipulation, a whole sort of iconic technological hype  
73 associated for the public – to take one example – with Musk which is continuing the dream of

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74 technological innovation as it was made in the modernist period, with one small but essential difference  
75 is that it is not for the many. Its not for the masses, its not the whole world. Its just the very small  
76 segment of very wealthy sort of Californian tycoons. Which is for me embedded in the word of Musk  
77 when he sent his rocket into space which was a publicity for his car. And when he said this is fun and  
78 silly. Whatever you say about technology of the 20th century – it was not fun and silly. It was engaged  
79 into a prospect of modernizing which was serious. Sometimes dangerous, but serious. That's the one line  
80 you see in the press. The mass of stuff on AI and robotics and are we going to be overpassed by robots?  
81 And the other direction of course is completely different and exactly the opposite which is: Now every  
82 single technology has to be redistributed and rethought in the line of – lets say, to take one element of it,  
83 decarbonized economy – and again the case of German shift from nuclear to redistributed energy  
84 pattern is a good example of how fast this could be going. So there is one line which is the innovability of  
85 hypermodernism, which is the hype that people try to sell us. And that fascinates journalists usually. And  
86 then there is another much more distributed, completely different definition of what is innovation and  
87 not innovation. So we have people who consider that permaculture is a progress – so its progressive  
88 compared to other forms of modernist agriculture, which themselves are considered as archaic now. The  
89 whole system of technology is going to change. And anyway it will change very fast. When it will be  
90 pushed by the extraordinary quick expansion of the ecological catastrophe. So if engineers, schools,  
91 companies and citizens are not able to absorb that shift the consequences will be harsh. You cannot  
92 answer this question of the ethics of techniques or morality of techniques without being able to describe  
93 and define a selection mechanism which allows you to see if it is good or bad. Before – in the 19th and  
94 20th [century's] imaginary of a technique basically good meant progressive and bad meant regressive, so  
95 that you could actually order the techniques by this sort of positioning. So the value system was very  
96 easy. If it was modern and modernizing and in the line with the modernizing front it was good. And when  
97 it was not then it was bad or archaic or has to be transformed or nice to look at but obsolete. But right  
98 now it's very different and the problem that we still have this tasting system which doesn't work  
99 anymore because modernism is no longer a key to decide if this is good or this is bad. Especially in  
100 agriculture it goes all over the board. We don't have a taste for the definition of techniques going in one  
101 direction or the other one. It is very difficult now to decide the direction of any piece of technic. So  
102 sometimes there are more general rules like: Is it going towards the decarbonization or not? Is it  
103 renewable or sustainable or circular? I mean this is a sort of general judgement made on techniques. But  
104 this is very rough. Because also it is very weak compared to the power of industry or the power of hype.  
105 So I think right now we are in a time when what could be called the technical culture, the culture of  
106 people to taste or test technique, is so poor, that it is very difficult to answer your question. In most of  
107 the time if you ask people to talk about Moliere or a painting by Degas the people would have a taste.  
108 But for technique they will be just, like a five year old kid, impressed by the hype. And that's very  
109 problematic because now we have to shift our whole cultural affect and cultural feel for very detailed  
110 apprehension of techniques. #00:17:35-1#

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113 **How are drivers and consequences of technological change connected?**

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115 Well I'm from a school, which we called "Actor-Network Theory", where we define society not by  
116 linkages which are social but by linkages which are coming from all sorts of sources. So that social not  
117 means a certain type of connector but the assemblage, the gathering so to speak, of lots of connectors.  
118 So in our theory law is one, for instance: The linkages which are established by law are very durable,  
119 even though there are no techniques to hold them but the association which explains the dynamics of  
120 social order. So is religion, so is art and technique is just one of them. In every single innovation, in every

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121 single object that you see around here there are enormous amount of legal aspects in the definition of  
122 their shape. It's clear from the glass of this window here to every single element – even your glasses,  
123 shoes etc. – so the legal aspect and the technical aspect and the religious aspect are three of the many  
124 ways in which society itself exists. The mistake is to take them as successive layers; all separated  
125 domains. So I'm from a school which is interested precisely in the heterogeneity and the pluralism of  
126 those connectors. So if you follow any innovation you might have one segment which is due to a legal  
127 dimension, because you have a standard to obey; the next segment might come from organizational  
128 questions, the way the head of the team behaves; the next segment might be a difficulty in the way that  
129 the atoms are resisting to the trial, I as an engineer try to find a way to do it. So the whole trajectory of a  
130 technology would be segmented in our reconstruction of society by those different types of association.  
131 And we call society - and sociology for us is not the science of social connection - society is a study of  
132 association. And association is a much larger set. And – to come back to your question – the other whole  
133 dynamic of those association are not driven by technique – in the strict sense of the word. They are  
134 driven by technique plus law plus organization plus economic decision plus very often values and cultural  
135 sort of patterns, sometimes religion. The set of connection which moves in one direction. #00:21:31-8#  
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138 **What measures can be taken to steer technological change?**

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140 Well I'll preach from my own parish which is: We should be able to describe techniques in their  
141 ecosystems and not isolated in many ways. Which also means teaching of engineers – I've been doing  
142 this since 25 years in my school not far from here – but also technical museums, in general education  
143 might be the best answer. But there is also for government completely different ways which is to not  
144 exactly steer – cause techniques are difficult to steer – but at least build an environment which is  
145 captured by the notion of alternative technique which is quite funny because in the old days – when I  
146 was young – alternative technology was for the underdeveloped countries. Developing countries: India  
147 or China. And now the term is what qualifies what we should do here. Because we have to shift the  
148 whole infrastructures of our technique. I mean not only the carbon-economy but everything else. I mean  
149 agriculture, architectures, transportation, food – I mean everything has to be transformed. So it's very  
150 interesting to see that people are interested now in technique but they still frame it in the traditional  
151 model when we should look more towards alternative technique. All the things we tried to get sold to  
152 the poor countries in the past -we should learn it for us now. How do you relearn to build? How do you  
153 relearn to transport people? And what are the technical infrastructures which have to be build on this  
154 new imperative which is no longer the hype and modernizing imperative but is what I've been called a  
155 down to earth – imperative.