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Society – Technology – People

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

Interview with Prof. Dr. Yochai Benkler

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1 **Where do we find sources for technological change and social division of labour?**
2
3 Fundamentally I think focusing on technology alone as the object of analysis as opposed
4 to the interaction between technology, social relations or institutions, and ideology is a
5 mistake. So to ask this question separately: What brings technological change? And
6 what shapes technological change? One has to connect it with the social relations within
7 which it's embedded and the ideological framework within which it's embedded. We can
8 think of essentially three core structuring dimensions in any human society. First are the
9 institutions or the social relations. This can include both formal like law and in informal
10 like norms and these can include things that are explicit as well as habits and practices
11 that are implicit. And these essentially create the set of relations of power and
12 affordance among people that structure their relations. Then we can look at ideas or
13 ideology or meaning that structure how we understand the world. So, whether you're
14 talking about habitus, whether you're talking about ideology, whether you're talking
15 about frame analysis across many and diverse disciplines and approaches the core
16 understanding that the way we understand the world affects what we know, how we
17 know, how we interpret what we know, how we behave in response, how we define our
18 goals, is central. And the third major structuring dimension is this dimension of
19 congealed practical knowledge embodied in material culture. The things with which we
20 work in the world. These three dimensions interact with each other across the four core
21 domains of human life: Economy or how we produce things, polity or how me manage
22 violence, reproduction/kinship or how we manage reproduction and culture and meaning
23 how make meaning together in the world. And so, when you ask what shapes the rate
24 and direction of innovation or what causes technology, it always has to be understood
25 within the context of a particular set of institutions, of particular cultural meaning and it
26 may have different or somewhat different effects within these four basic domains of life.
27 If you look at the telecommunication system that emerges in early 20th century, whether

28 is privately owned as in the United States or publicly owned as it is everywhere else
29 similarly you have a highly centralized model that also results in a technical
30 infrastructure that is highly centralized with the switches and controlled very centrally
31 with the phones have a very narrow range of capabilities. And the technology both
32 implements the ideology and the social relations of structures of control and helps inform
33 them, so that by looking at the way the material world we build operates, allows us to
34 understand who we are and how we are. What we see essentially in the 70's and from
35 the 70's really until the great recession in 2008, is a dramatic break from the first two
36 thirds of the 20th century that again reflects itself in ideology, in social relations and in
37 technology, which feed in to each other. Both to shape our imagination about how we
38 can organize our relations and implement in material culture the social relations we
39 imagine for ourselves. To understand technology as the driving force would be a
40 mistake. To imagine that technology is epiphenomenal and wasn't actually centrally a
41 part of the story of changing how much labor was absorbed into the household, how
42 much freedom there was from the family, would also be a mistake. So, you really need
43 the continuous understanding across all three of these dimensions of technology, social
44 relations and ideology and across all four domains of action economy, polity, kinship and
45 culture, to get a decent grasp of what is going on and where it is going. So, one of the
46 critical things we've learned over the last 25 Years is that the rate of innovation but also
47 the direction of innovation are influenced by shifting from a property-based model to a
48 commons-based model in a way that needs to completely redefine how we understand
49 the relationship between the state, the market and innovation. And that in fact social
50 innovation around the commons becomes a central driver of innovation. #00:06:05-8#
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53 **Who is driving technological change and social division of labour?**
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55 One of the interesting things of the change in particularly the social science literature of
56 the last quarter century has been a recognition of the importance of the interaction
57 between non-market and market actors, between not only the state and market actors,
58 but also networks of socially motivated individuals. So, if you imagine a universe in
59 which in the mid 20th century you see large centralized organizations being the primary
60 driver of innovation - think Schumpeter and the idea of creative destruction, and the
61 major organizations that compete, create a new market and then control it. The classic
62 model there, that's Bell labs which has more nobel laureates in physics than any
63 university department in the mid-century, that's major investment in creation of federal
64 funding of science in the united states: That's the mid century model. The large
65 organizations, both state and market, are the primary drivers. Then you have the
66 emergence over the course of the the 70's and 80's of the idea that it is really about
67 entrepreneurial firms and it's constantly this idea of smaller entrepreneurial firms driven
68 by market competition with ever more perfect property rights. And that's what drives the
69 extreme growth in patents and the centrality of intellectual property rights to the world
70 trade organization and the TRIPS agreement and later on the bilateral agreements. It's a
71 shift from the idea of a very small number of firms that exercise control by market power
72 and don't need so much patents and government funding to these entrepreneurial
73 competitive firms. One of the things that has really developed in the last 25 years has
74 been an understanding that loose networks of individuals and social relations, academia

75 and non-profits, civil society organizations and activists, interact with small firms and
76 large firms that even the large firms themselves are highly diverse in the extend of which
77 they are controlling as opposed to allowing for a flow of information. The critical shift to
78 understand, is that there is no single optimal organization or solution that is the primary
79 driver. It's not only government funding, although it is that too. It's not only big
80 companies, although it is that too. It's not only entrepreneurial firms, although it is that
81 too and even though I have spent so much of my time working on commons-based peer
82 production and distributed innovation in the network, it would be a mistake to imagine
83 that all innovation comes from there too. The critical thing is the interaction between
84 these and knowledge flows and innovation at the end, the individual users, the hacker
85 cultures - that's what's driving innovation interaction between these more than anything
86 else. One of the most surprising, possibly the most surprising fact of the development of
87 the internet in it's first fifteen years or so was the absolutely central role of commons-
88 based production for the creation of the internet. So, if you asked a room full of
89 practicing economists in 1995, that here are two groups of engineers. One is the biggest
90 software company in the world, seeing that their major strategic next step is to move to
91 the web and the other is an informal collection of engineers who have adopted a model
92 that let's anybody copy the software that they produced and exercises no exclusive
93 rights "Which of these two become the core infrastructure of the world wide web?" And
94 you would have said that it was the commons-based engineers you would have been
95 laughed out of the room. And yet the Apache-Webserver, Linux, MySQL, E-Mail, the
96 LAMP stack as a whole, scripting languages, statistics with r – a whole class of basic
97 infrastructure was developed on a model that was considered theoretically inadmissible
98 when in practice it worked. The same is true obviously for Wikipedia, but even the
99 internet engineering task force itself is a completely anarchic collection of voluntary
100 participants with no structures for formal decision making other than argument, humming
101 and implementation. So, there is a fundamental drive, that drove the internet in the
102 direction that it went, which was: highly resilient, continuously learning, not optimized for
103 anything, including not for prices, that emerged out of the way of organizing innovation.
104 That was practically inadmissible in the1990's. The second thing that comes out of that
105 recognition in terms of the rate of innovation, is the absolute centrality of homo socialis
106 relative to homo oeconomicus, that is to say the fact that we have about a quarter
107 century of work from evolutionary biology through experimental economics to political
108 sciene and sociology, that documents experimentally and theoretically that the model of
109 the self-interested rational actor acting under self-interest with guile is simply a poor
110 model of actual human behavior in the real world. Instead what we have are diverse
111 people, responding to diverse motivations and in particular affected by the particular
112 institutional framework within which they are in. So, if you build a framework that treats
113 people as self-interested they become more self-interested. If you treat them as one, like
114 Wikipedia's "Assume good faith", one that depends on trust, sometimes there will still be
115 people who will take advantage of that trust. You cannot exist in the second decade of
116 the 21st century without recognizing that there are the spammers, and the crackers and
117 the propagandists who will take advantage of open systems. It's not a utopia. But at the
118 same time some small majority of people nonetheless act as trusting human beings and
119 cooperative human beings as part of this model of innovation, but also of economic
120 organization. So, as you are trying to understand both the rate and direction of
121 innovation, understanding that our experience and the social-sciences have moved us

122 from thinking about self-interested individuals to socially motivated individuals with
123 diverse motivations.   #00:14:15-1#
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126 **Which consequences will arise from technological change?**
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128 I think that there are highly visible daily changes, the fact that ten years ago there was
129 no smartphone and now we can't imagine a life without and you have *Uber* that
130 completely depends and wouldn't exist without it. It makes us feel as though the rate of
131 change has dramatically increased and our dependence on machines has increased.
132 But I think that it's very hard to establish empirically and I think the fundamental change
133 is already at the beginning of industrialization and at the latest by the second quarter of
134 the 19th century where we see no generation really living with the same technology of
135 the generation that preceded it. And where the structures of economic production,
136 political participation and even family structure are continuously disrupted by a new
137 class of technological innovations. I would say: Yes, we are deeply dependent on the
138 interactions between our institutions and our technology, but I haven't seen the evidence
139 that the rate of change is increasing. Technology is not destiny. There is no determinant
140 consequence of any particular technological change. What there is, is a continuous
141 political, social, ideological struggle over how technology develops, how it is
142 implemented, what sort of social relations it underscores and naturalizes. And what we
143 are seeing as we have seen for several generations now is significant variation between
144 different countries at the same technological frontier. One thing that all, I would say,
145 democratic countries today face is a fundamental crisis of democratic theory and a
146 fundamental crisis of a sense of identity and   what it is to be together with each other.
147 There is a class of claims about this crisis that located in technology and the changes of
148 skills biased technical change, automation, creating insecurity about long term
149 unemployment, the idea that the app-economy will generalize precarity and precarious
150 existence and that technology is disrupting these institutions. There is an equally
151 powerful opposite: Technoutopianism, that imagines the technology will eliminate
152 scarcity, that technology will allow for more efficient government to know everything
153 that's going on, that we will be able through of the use of behavioural marketing in
154 updating apps to nudge people in the direction of living a better life. All of these are
155 possible and none of them are determinate. We could see a dystopia of the worst kind
156 where essentially a very small class of capital owners extract all of the value, manipulate
157 populations through propaganda that is instantiated and personalized through network
158 propaganda, measure and identify individually what we mobilize individuals to want this
159 or that, to buy this or that, to vote this or that and then create a surveillance based
160 system that individually manipulates every individual. We could also in principal see a
161 utopia in which through the use of very personalized and AI-driven adaptations gives
162 people the ability to optimize their own lives, to connect better with other people, to
163 monitor their governments and hold it to accountability better, to participate and self-
164 organise in democratic politics. Technology allows either one of these edges of utopia
165 and dystopia and there won't be one answer. Which of these will ultimately win, in which
166 countries and how or what mix of them will win, will largely determine the way in which
167 over the next fifty years will adopt to new technologies, whether in the end we will end
168 up with something that we still recognize as democracy or not, whether in the end we

169 still end up with something that we would call autonomy or whether we would become
170 automatons controlled either by a benevolent state or by marketing companies remains
171 to be seen. I think the most important currently observable agglomeration of
172 technologies that has at a bare minimum the highest risk to the possibility of more or
173 less autonomous individuals and a more or less democratic society is the cluster that
174 allows both companies and governments to measure us at a very individual level. The
175 ubiquity of sensors to observe our responses to different interventions so as to
176 experiment on a population scale, to process that data into highly refined individualized
177 models – which is to say of what we think of as *big data,* or more recently machine
178 learning and AI – that together create the possibility of a small number of actors,
179 whether state or market, that can through experimental validation recognize and
180 manipulate what we know about the world, our beliefs, what we want, our preferences
181 and what are the actions that are available to us and the outcomes available to us. That
182 to me is the greatest threat.   #00:21:00-3#
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185 **How are drivers and consequences of technological change connected?**
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187 We have seen three fundamental changes over the last 25 years in core theoretical
188 understandings that are relevant to technological change and it's relation to social
189 structure. The first is a shift in the nature of rationality from the idea of self-interested
190 rational actors, whose rationality is prior to the context in which they interact, to a model
191 of reasonable and embedded individuals who are not optimizers but are rather satisfiers
192 and who's motivations and view of rationality is embedded within the interaction. We
193 have seen a shift in the model form self-interested rational actors to socially motivated
194 individuals with diverse motivations. We have seen a shift from a uniform focus on
195 property and contract to the interaction between property and commons and we have
196 seen a shift from the idea of motivations being completely disconnected from context to
197 understanding that motivations are dependent. So if you treat people as self interested
198 actors they become more, they behave more in self interested way and they treat each
199 other as strangers. If you treat them more as connected they cooperate more. Moving
200 from the abstract to the particular there are fields of work where we have seen
201 technology being regulated in ways that reflect one or another of these frameworks and
202 there are very particular institutional implementations. So you look at spectrum policy,
203 you move from the idea of fully regulated spectrum, to markets in spectrum and now to
204 spectrum commons. And as a empirical matter most of the innovation at the edges – if
205 you are talking today about internet of things, if you are talking today about high, high,
206 high capacity data in a very local level - none of that can happen over proprietary
207 spectrum. It's all being driven by spectrum commons. If you are looking at software, the
208 whole path of going to software patents was a fundamental error that we today
209 understand, they become more about rent extraction than about innovation. And rather
210 what we have seen is free and open-source software, a commons based model being
211 adopted by a lager number of firms and providing some of the very basic infrastructure.
212 So, these are very concrete things. You can look at the shift from individual invention to
213 knowledge flows, that has been absolutely central - and has the same analytic structure
214 - absolutely central to understanding regional development and the shift from the idea
215 that I need strong patents or that I need strong trade secrets to the idea that what you

216 want is to assure circulation and flow of people. It's more about people, bringing people
217 and allowing them to have conversations in regions, that has allowed region to emerge. I
218 would say that the critical underlying mechanism is ideology or the shared conception
219 within a society of how things fit together, what works with what, what's reasonable or
220 plausible to do in interaction with each other, what things mean, what to prefer. So, there
221 is a fundamental driver which is an aspect of culture, a Zeitgeist of a certain kind that
222 allows people – not only allows – forces people to understand the possibilities and what
223 to do with something in a way that is enormously constraining in terms of how to use
224 things. And when you are looking from period to period over the last hundred and so
225 years, about how technology was deployed, how it was implemented, which
226 technologies where emphasized and which where are abandoned. Repeatedly what you
227 see is that there is, at a bare minimum, an elite shared sense, and by elite I mean a
228 small set within society that controls outsize power over organizational and institutional
229 frameworks, that sees the world in a certain way and then interprets what it sees to fit
230 that mental model and implements the systems. So, Taylorism and Fordism and
231 Managerialism was a certain way of looking at the world and then you saw technologies
232 and institutions fitting it. Then suddenly Privatization and Deregulation became a way to
233 look at administrative ways and then suddenly if you're looking at Environmental
234 Regulation then you have tradable permits, if you are looking at spectrum you have
235 auctions and so forth. You see a change, a fundamental change. Or, in the US in
236 particular, to some extend in the UK as well, you see a shift from the idea of managers
237 as stewards of stakeholders to the idea of superstars. And with that you see a
238 fundamental reorientation of how technologies get implemented in organizations to allow
239 a stable financialized small elite to create much more precarious work for workers. So,
240 that's one major driving force. The institutions of our societies, the basic rules by which
241 people see themselves as bound to each other, similarly are constraining to how far
242 things can go, and how far you get shaped.   #00:27:44-3#
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245 **What measures can be taken to steer technological change?**
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247 The primary threat of failing to steer comes from the hope or believe of finding an
248 optimal intervention point. So, we absolutely need increased state capacity to counter
249 the increased power of firms, particularly multi-nationals, that are now shaping the
250 technological and social infrastructure around their capabilities. So, the place that we
251 see it most directly is in - we think of it as privacy, but really fundamentally it's about
252 forcing companies to maintain a narrower range of information collection and use
253 practices than they want to or can. Because one of the fundamental challenges to the
254 possibility of democratic and liberal society and market society is the fact that we have
255 become programmable. Enough data is collected about us individually and enough of
256 our interaction with the world is now manipulable in real time and individualized that
257 behavioral psychology and economics now makes it possible for governments and
258 companies to measure us, experiment on us and nudge us in a direction of developing
259 preferences and practices that fit their project, not ours. So, we need a fundamental
260 concerted effort to harness politics to prevent that emergence. The state itself is a
261 complex agglomeration of bureaucratic and politically accountable and judicial
262 structures, so you need a nation specific strategic plan for intervention to contain the

263 state's use of the ability to surveil and manipulate its population while at the same time
264 harnessing its unique power over violence to constrain the companies that are doing the
265 same thing. Both of which also need to see the fact that in the social distributed model
266 there is enough abuse and enough of a mob or risk of a mob structure of various forms,
267 left, right - you name it, that also needs to be controlled. And we are seeing it now when
268 we are looking at *Fake-News* and abuse online, we are seeing it now when we are
269 looking at so called *sharing economy or platform economy* in cities. You are seeing this
270 effort to mix and match between these very fallible but necessary components, market,
271 state based organizations and social distributed network practices, as a continuous
272 effort to diagnose where there is a risk, diagnose who is the best ally today and then act
273 morally and politically to get there. The fact that we continue to have highly
274 decentralized capabilities in our hand to form networks to communicate with each other,
275 to self organize, offers a real alternative to a more participatory economy, and a more
276 participatory society. As long as you have these negative features of centralized
277 manipulation contained. So, to me that is one class: Both of these technologies - highly
278 distributed computation and highly distributed sensors with a high degree of capability of
279 processing data at a very high level - can implement both a fundamental undermining of
280 both markets. If you can manipulate preferences then markets have no meaning,
281 because markets simply satisfy preferences and democracy has no meaning, because
282 democracy clears peoples political preferences. Both democracy and markets cannot
283 survive when preferences are themselves the object of manipulation. That needs to be
284 stopped. But the same technologies can also produce very distributed and highly
285 participatorial models. So, that is one class of interventions. The second obviously at a
286 planetary level is the question of distributed energy generation from natural and
287 renewable resources. That's a fundamental question of how we get reorganized and in
288 principle you can certainly see radically decentralized energy production changing the
289 extent to which we have decentralized collaborative production as opposed to
290 centralized. Similarly, though we have been saying it for a while, the question of
291 distributed fabrication, what we would today think of this *fablab's* or 3d-printing. The
292 extent to which you can actually live in a world in which most of the daily necessities can
293 be fabricated at least at a local level, possibly individual level, could again radically
294 transform production and consumption. Those are deeply disruptive but very near-term
295 plausible frameworks both in a positive and in a negative way.
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