S|S|S

COMMENT

ABSTRACT *In social studies of technology, as in many other scientific disciplines, highly persuasive similes are at work: pious stories, seemingly reaped from research, suggesting certain general theoretical insights. Variously adapted, they are handed down: in the process, they acquire almost doctrinal unassailability. One such parable, which has been retold in technology and urban studies for a long time, is the story of Robert Moses' low bridges, preventing the poor and the black of New York from gaining access to Long Island resorts and beaches. The story turns out to be counterfactual, but even if a small myth is disenchanted, it serves a purpose: to resituate positions in the old debate about the control of social processes via buildings and other technical artifacts - or, more generally, about material form and social content.*

Do Politics Have Artefacts?

Bernward Joerges

A few years ago, a former student assistant of mine proudly published, in the foremost German sociology journal, his first article.[1] It was all about the social nature of technical norms and, to underline his central argument, he cited at the end a story from Langdon Winner's paper, 'Do Artifacts Have Politics?':[2]

> Winner tells us about the *Autobahn* bridges over the highways leading from New York City to the beaches of Long Island. Robert Moses, a famous New York architect, had designed these bridges in the thirties and in doing so had made certain that the New Yorkers had no other possibilities of reaching the beaches but on just these highways. Winner noticed that these bridges are built very low, and that only automobiles could pass under them. Public buses, on the other hand, cannot pass. Having grown suspicious, Winner took a closer interest in Moses and his bridges. The situation was soon cleared up: Moses had intentionally had his bridges built so low to keep typical users of public transport, at that time the poorer strata of the population and especially blacks, away from the beaches and to reserve these for the white middle classes. Decades after Moses' death, the resentments of a singular person are then incorporated in his bridges as an ongoing social injustice ...[3]

Readers of this journal may have heard this story (or a similar one) before: towards the end of this Comment, they will see that it can be told differently.

Winner's Version

In 'Do Artifacts have Politics?', Winner answers the question as to whether material technical artifacts are intrinsically political with a resounding: 'Yes, they are!'. His basic thesis is as follows: tangible artifacts, including the built environment and other

---

[1] Gerald Wagner, 'Vertrauen in Technik' (Trust in Technology), Zeitschrift für Soziologie, Vol. 23, No. 1 (April 1994), 145-57 [trans. BJ].

[2] Langdon Winner, 'Do Artifacts Have Politics?', *Daedalus*, Vol. 109, No. 1 (Winter 1980), 121-36.

[3] Wagner, op. cit. note 1, 155.

material-spatial arrangements, embody „social' (that is, 'power') relations. If this is so, the problem arises of how to build 'material' (in the sense of 'causally explicable') processes into action (and other social) theories. And a moral issue also arises: what kind of material objects should one make and accept? Because in deciding to have (or, as Winner says, 'live in') specific material artifacts, we *ipso facto* take a political decision. For example, we cannot decide to have nuclear plants and at the same time preserve democratic social forms. Winner uses the philosopher's 'we' here, of course, which includes the author, then his readers, and then the rest of humankind as represented by him. His argument is, as he repeatedly says, about the 'larger questions about technology and the human condition'.

This is Winner's programme, or doctrine. Carefully distinguishing several versions, he initially focuses on one particular variant, which I will call the 'strong' or *design-version* of 'artifacts-have-politics'.[4] In the design-version, someone wills a specific social state, and then suitably transfers this intention into an artifact. Architects, for instance, may want people to communicate, and can then design their office buildings accordingly. The people who use them will then communicate all the time, an enduring social relationship has been built into the artifact. The only immediately plausible empirical case Winner adduces for this strong, design-version are *the low bridges of Robert Moses*.

Robert Moses: legendary political entrepreneur, who has shaped the physical form of New York in this century and beyond as no other person, and on the way has become the big bogey man of urban studies. Winner introduces the bridge example with the observation that certain details of form in bridges, streets and roads are habitually taken to be meaningless, and yet...

> ... it turns out ... that some two hundred or so low-hanging overpasses on Long Island are there for a reason. They were deliberately designed and built the way by someone who wanted to achieve a particular social effect. Robert Moses, the master builder of roads, parks, bridges, and other public works of the 1920s to the 1970s in New York, built his overpasses according to specifications that would discourage the presence of buses on his parkways.[5]

Moses, Winner argues, was a racially prejudiced member of the upper classes who incorporated his politics in those parkway overpasses. His artifacts are meant to discriminate the poor and the black population of New York: bridge-building is social engineering, because power relations can literally be built into and perpetuated through stone.

---

[4] Later on, Winner discusses at length technological modes beyond the design mode, where specific technologies require social forms: 'inherently political technologies' (op. cit. note 2, 128) are graded along the two axes of 'strict requirement *versus* strong compatibility' with social relations and conditions 'internal *versus* external' to the workings of a given technology. The combination of 'strictly required' and 'internally located' social relations produces inherently powerful artifacts, as in nuclear energy.

[5] Winner, op. cit. note 2, 123. And he continues, generalizing to the construction of relationships of social inclusion/exclusion at large: 'Many of Moses' monumental structures of concrete and steel embody a systematic social inequality, a way of engineering relations among people that, after a time, becomes just another part of the landscape'.

Besides the Moses example for the strong, design-version, Winner offers many other plausible examples for softer versions of the power of artifacts to fixate social relationships. And indeed, a soft technological determinism somehow accords better with common sense. The fact that one must build a wall if one wants to prevent others from passing through does not tend to excite important controversies in any sociology of technology and architecture. Objectors would just come away with a bleeding head.

Or is it so simple? Readers might reflect on the potential interpretive flexibility of a proverbial figure of speech involving the notion of a 'building' (a 'wall'), before we go on to discuss the interpretive flexibility of the bridge parable. Let the statement 'with your head through a wall' go through your head, and you may indeed find it less plausible. What should count as a wall? What if one is armed with a tank? What is one to do with less literal meanings of the statement? And so on... There is plenty of interpretive flexibility as to deterministic and indeterministic treatments of the relations between head and wall.[6]

But Winner has not much use for such semantic games. In his paper 'Upon Opening the Black Box and Finding it Empty', he clearly states that he finds them quite frivolous, in the face of an historical situation where technological systems inexorably grow more precarious and life-threatening.[7] In a serious stance, he engages the political and moral implications of modern technology. No playing around, with this author, with the poetic aspect of atomic reactors, or the usefulness of roses as deadly weapons, as demonstrated by Keith Grint and Steve Woolgar.[8] Winner seems not to be concerned, to borrow a famous title, 'how to do things with words'. He seems concerned with 'how to do things with things'.

Chinese Whispers

'Do Artifacts have Politics?' was published in 1980 in *Daedalus*, in an issue dedicated to the state-of-the-art in social studies of technology. The paper had - and, as one can see, continues to have - considerable success. The bridge-example, in particular, has been cited innumerable times. I say 'innumerable', because the count offered by the *Social Science Citation Index* is quite meaningless. Searching the *SSCI* for the article (and the book in which it was reprinted),[9] in 1998, produced a count of 151 citations. Everyone who knows his or her own count will agree that this is quite impressive.

---

[6] In German, head and wall (*Kopf und Wand*) rhymes nicely with the venerable metaphor of *Kopf und Hand* (head and hand).

[7] Langdon Winner, 'Upon Opening the Black Box and Finding it Empty: Social Constructivism and the Philosophy of Technology'. *Science, Technology, & Human Values*, Vol. 18, No. 3 (Summer 1993), 362-78.

[8] See Keith Grint and Steve Woolgar, 'Computers, Guns and Roses: What's Social about Being Shot?', *Science, Technology, & Human Values,* Vol. 17, No. 3 (Summer 1992), 366-80. Steve Woolgar is, of course, one of the main defendants in Winner's trial of social constructivism.

[9] Langdon Winner, *The Whale and the Reactor* (Chicago, IL: The University of Chicago Press, 1986), 19-39. Another version (from which many authors quote) appeared in Donald MacKenzie and Judy Wajcman (eds), *The Social Shaping of Technology* (Milton Keynes, Bucks. & Philadelphia, PA: The Open University Press, 1985), 26-38.

And yet it does not say much. In contrast to the experimental sciences (and economics), monographs and edited books remain the major form of publication in the human sciences. Since the *SSCI* covers only journals, its count hardly offers a fair estimate of the reach of a text, as measured by citation frequency. Langdon Winner himself has told me that the *Daedalus* article was quoted in almost every technology-related book on his shelves.[10]

The Moses story is also a particularly nice case of Chinese Whispers:[11] one author whispers a line into the ear of the next, and in the end a quite different one comes out.[12] Interesting simplifications, adaptations, even reversals occur. In the version I quoted at the beginning, for example, Moses turns into an *architect*, the bridges are built in the *thirties*, the height of the bridges becomes a *technical norm*, the parkways mutate to *Autobahnen*, the Autobahnen are the *sole access roads* to Long Island beaches, Moses died *many decades ago*, the person who discovers the wrong height of the bridges becomes *Langdon Winner*. None of these points is to be found in Winner's text, but all can be traced in the texts of participants in these Chinese Whispers.[13]

More instructive then such displacements are the ways in which particular authors appropriate the bridge story for their own purposes, whether or not they argue for Winner's implied thesis.[14] But rather than reconstructing in more detail the career of Winner's anecdote, I shall briefly exemplify its reappropriation with two stages in the Chinese Whispers, illustrated by the work of two authors: Bruno Latour and Steve Woolgar, erstwhile co-authors of that study, *Laboratory Life*, whose aftershocks can still be felt in social studies of science and technology.[15]

Latour has referred to 'Do Artifacts Have Politics?' to enhance one of his own paradigmatic stories, that of the automatic door closer:

---

[10] Remark made in an interview (Sigtuna, Sweden, 6 December 1994).

[11] Or, as the children's game is called in German, '*Stille Post*'.

[12] An important source for many could have been the often-quoted introductory essay to the volume edited by Donald MacKenzie and Judy Wajcman (op. cit. note 9), esp. 7. Here Winner's Moses-interpretation appears in the first few pages (and is appropriated for the argument against technological determinism).

[13] Other texts in which Winner's parable is drawn on in the affirmative include, for example: Ilana Löwy, 'The Legislation of Things (Essay Review)', *Studies in History and Philosophy of Science*, Vol. 28, No. 3 (September 1997), 533-43, at 534-35, where the Moses quote is without further referencing attributed to Andrew Feenberg, *Alternative Modernity: The Technical Turn in Philosophy and Social Theory* (Berkeley, CA: University of California Press, 1995) and to Mary Tiles and Hans Oberdieck, *Living in a Technological Culture: Human Tools and Human Values* (London: Routledge, 1995); John Law and Annemarie Mol, 'Notes on Materiality and Sociality', *The Sociological Review*, Vol. 43, No. 2 (May 1995), 274-94, at 280-81; Bernward Joerges, 'Technology in Everyday Life: Conceptual Queries', *Journal for the Theory of Social Behaviour*, Vol. 18, No. 2 (June 1988), 219-37, at 235 (n.7); Donald MacKenzie, 'Marx and the Machine', *Technology and Culture*, Vol. 25, No. 3 (July 1984), 473-502, at 500; and many others. No doubt readers have their own lists...

[14] As, for instance, in Bryan Pfaffenberger, 'Technological Dramas', *Science, Technology, & Human Values*, Vol. 17, No. 3 (Summer 1992), 282-312, at 294.

[15] Bruno Latour and Steve Woolgar, *Laboratory Life* (Beverly Hills, CA: Sage, 1979; Princeton, NJ: Princeton University Press, rev edn, 1986).

> To use the classic Langdon Winner's motto (1980), because of their descriptions these doors *discriminate* against very little and very old persons ... they discriminate against furniture removers and in general everyone with packages, which usually means, in our late capitalist society, working or lower-middle class employees (who, even coming from a higher strata, has not been cornered by an automated butler when he or she had their hands full of packages?).[16]

Similar to Winner, Latour seems to point here to discrimination *via* things: 'how to do things with things'. Artifacts somehow are political. With Latour, however, this is not 'political' in the sense of a definitive political order. The aspect of intention and design - so central in Winner's strong programme - does not interest Latour much here. Much as Winner does, Latour takes things seriously: but he dissolves or reverses Winner's causal nexus. In contrast to Winner, Latour assumes a high degree of contingency: the power of things depends on how they are (as Latour says) 'syntagmatically' networked with other things, in competition with paradigmatic counter-programmes of differently coupled actants. The power of things does not lie in themselves. It lies in their associations; it is the product of the way they are put together and distributed. Accordingly, Latour's reference to Winner is slightly mocking: he allows automatic doors to discriminate against millionaires, provided they are coupled with boxes, much as Moses' bridges discriminate (of course) against luxury buses.

In Steve Woolgar's equally influential paper 'The Turn to Technology in Social Studies of Science',[17] Woolgar attacks Winner, and speculates about the attractiveness of stories like the one of Moses' bridges:

> Ironically, the appeal of these stories lies in part in the display of a 'rational' connection between the revealed (that is, constructed) consequences. More important, however, is the dependence of these stories on definitive accounts of *the* outcome of the technology. Despite the argument that the outcome or impact of technologies is contentious, that it is highly problematic to nominate one or other effect as arising from technology per se rather than from other social 'factors,' each of these stories unproblematically nominates *the* outcome (effects) of a technology.[18]

Woolgar's criticism here is that Winner claims as a definitive effect (racial discrimination for keeping Jones Beach clean) 'what might elsewhere be treated ... as essentially contingent and contestable versions of the capacity of various technologies ... [which] from the point of view of a broad constructivist commitment ... are clearly part of the phenomena to be investigated'.[19] Here 'contingent' presumably means

---

[16] Jim Johnson *aka* Bruno Latour, 'Mixing Humans and Non-Humans Together: The Sociology of a Door-Closer', *Social Problems*, Vol. 35, No. 3 (June 1988), 298-310, at 302 (emphasis in original).

[17] Steve Woolgar, 'The Turn to Technology in Social Studies of Science', *Science, Technology, & Human Values*, Vol. 16, No. 1 (Winter 1991), 20-50.

[18] Ibid., 34 (emphasis in original).

[19] Ibid., 35.

'dependent on the motives and interest of those who may tell the story' (although, in reading Woolgar, a continental author can never be so sure). This is an entirely different argument from Latour's. Woolgar's contingency concerns interpretations of the bridges in literary texts, not associations of the bridges in action programmes. In Woolgar's view, Winner fails to take into consideration versions of the Moses-story which he (Winner) might favour although, from a constructivist point of view, Winner's story clearly is part of the phenomenon under study. Different authors, says Woolgar, could tell the Moses-story quite differently. One must also take into consideration these other versions, in which for some reason other effects are posited as definitive. And so on and so on, in a never-ending semiosis. Indeed, it is said that now and then a bus has tried to negotiate (with) one of Moses' low bridges, with the definitive effect that he or she ended up like an opened tin of sardines.[20]

Woolgar himself does not look into other versions of the story. But the exercise of Chinese Whispers proves him right so far. The Chinese Whispers process, with its more or less productive misinterpretations, shows that an endless series of variants of Moses' bridges exists. Authors who have taken up Winner's tale tend to re-tell the story somewhat differently, declaring other definitive effects, and using the story for the explication of broad classes of technological effects privileged in their own theories.

This is why one should follow Woolgar here, albeit with a difference. Woolgar and his followers in social studies of technology tend to deny the material level of technology. They get caught completely in the whispers, as it were: they somehow avoid referring to a world outside the multilingual murmurs. To talk about tangible bridges and buses tends to become the same as to talk about texts which talk about bridges and buses. They talk, at best, about 'how to do things with words', exactly *not* about 'how to do things with things'. And then comes the talking about the talking of texts that talk about bridges and buses. The preferred rhetorical stance is the ironical.[21]

The fundamental hermeneutic suspicion that something might be wrong with Winner's story has grown on me for a while. Could it be that all this was a bit different? Winner presents his example like a concrete historical event. But he is not too much concerned with Moses history or New York history. He leaves out all the details that make for the interest of an historical text. He aims at a general lesson, a more theoretical lesson (on the way that material artifacts embody social relations), and a moral lesson (on how, as a consequence, using such artifacts must be accounted for). In order to deliver these lessons, he translates a highly detailed historical

---

[20] Robert Caro, *The Power Broker: Robert Moses and the Fall of New York* (New York: Alfred Knopf, 1974), 938.

[21] In a little controversy around Winner's black-box article (in which the bridges turn up again, of course), Marc Elam, Langdon Winner, Trevor Pinch and Steve Woolgar have it out in various ventriloquist guises. In the end, Woolgar is pleased at having persuaded Winner that in the last analysis it all comes down to rhetoric *tout court*: see Trevor Pinch, 'Turn, Turn, and Turn Again: The Woolgar Formula', *Science, Technology, & Human Values*, Vol. 18, No. 4 (Autumn 1993), 511-22; Steve Woolgar, 'What's at Stake in the Sociology of Technology? A Reply to Pinch and to Winner', ibid., 523-29; Mark Elam, 'Anti Anticonstructivism or Laying the Fears of a Langdon Winner to Rest, ibid., Vol. 19, No. 1 (Winter 1994), 101-06; Langdon Winner, 'Reply to Mark Elam', ibid., 107-09.

episode into a highly successful *parable*: a pious tale in which analogies are drawn between specific instances and human behaviour at large.[22]

Robert Caro's Version

From where in these Chinese Whispers does Winner take his tale from life? He finds it in Robert Caro's monumental biography of Moses, *The Power Broker*.[23] There Caro indeed recounts the design-version,[24] and bases it on two interviews, one with engineer Sidney M. Shapiro, an early Moses Man:

> Moses had restricted the use of state parks by poor and lower-middle-class families, by limiting access to the parks by rapid transit; he had vetoed the Long Island Rail Road's proposed construction of a branch spur to Jones Beach for this reason. Now he began to limit access by buses; he instructed Shapiro (one of his engineers) to build a bridge across his new parkways low - too low for buses to pass.[25]

By way of substantiation, Caro also quotes Lee E. Koppelman, a regional planner on Long Island. Koppelman, he says, told him (almost half a century after the event):

> ... 'I was coming up to one bridge across the parkway', he would recall, 'and just as I was about to go under it, I noticed how low it seemed to be. I took a good look at the next bridge, and goddammit, it was low! I pulled over and measured it with my arm at the curb, and I could see that it wasn't any fourteen feet high. At the next exit, I got off and found a store and bought a yardstick and got back on the parkway and measured the next bridge. At the curb it was eleven feet high. And I didn't have to go and measure all the other bridges. I knew right then what I was going to find. I knew right then what the old son of a gun had done. He had built the bridges so low that buses couldn't use the parkways!'.[26]

On these two conversations rest Caro's (and therefore Winner's) story. As far as I can judge, there exist no other (and, especially, earlier) sources for Moses' intention to keep poor and black people away, with the durable assistance of the low bridges, from Jones Beach. One might as well assume that such a source never existed.[27]

Caro's book was published in 1974, and quickly became enormously influential. It appears to be a painstakingly documented study. Caro also presents it, not so much as a personalizing life history, but as a study on power: 'the great forces

---

[22] 'Jesus uses the form to illustrate his message to his followers by telling a fictitious story that is nevertheless true-to-life': *Encyclopedia Britannica*, Vol. 9 (1990), 133.

[23] Caro, op. cit. note 20.

[24] '... Moses began to limit access by buses; he instructed Shapiro (one of his engineers) to build the bridge across his new parkways low - too low for buses to pass': Caro, ibid., 318.

[25] Ibid., 318.

[26] Ibid., 951.

[27] See, however, Bernward Joerges, 'Expertise Lost: An Early Case of Technology Assessment', *Social Studies of Science*, Vol. 24, No. 1 (February 1994), 96-104, on the vicissitudes of this kind of statement ...

that shaped the times in which (Moses') subjects lived, particularly the political power'.[28]   However, if one believes more recent research on Moses, the book hardly satisfies standard historiographical criteria. Kenneth Jackson, Columbia historian and editor of a monumental New York encyclopaedia, told us that he sent a few generations of his students to research particular themes and episodes in Caro's biography, and that many appear to be doubtful or tendentious.[29]

How It Really Was[30]

Caro's and Winner's versions have been interpreted by most readers as implying two premises. First, that one *had* to use the Long Island parkways to reach the beaches; that Moses established a physical *point de passage obligatoire*.[31] Second, that Moses pursued racist politics. As to the first claim, at the time of the parkway building (beginning 1924), Long Island was already considerably well developed in terms of transport. The Manhattan-Long Island railway operated since 1877, and a rather dense system of ordinary roads was in place, parallel and across the parkways. The Long Island Expressway, a true *Autobahn* intended to relieve traffic congestion on the Island, was built by Moses alongside the Parkways.[32] Moses' building activities were

---

[28] Robert Caro, quoted from the introduction to Johann P. Krieg (ed,), *Robert Moses: Single-minded Genius* (New York: Heart of the Lakes Publishing, 1989), 14. Moses obviously did not like the biography of 'Caro, the snooper', as he wrote in an unpublished, outraged and bitter comment on a profile (condensed chapters of the biography) in *The New Yorker* on the occasion of the book's publication by Knopf: Robert Moses, 'Comment on a *New Yorker* Profile and Biography' (typescript, 26 August 1974, 23pp., courtesy of Arnold H. Vollmer). Recently, Robert Caro has strongly confirmed his judgement of Moses, and added a little saga of personal persecution by Moses after publication of *The Power Broker*: Robert Caro, 'The City-Shaper', *The New Yorker* (5 January 1998), 38-50.

[29] Kenneth T. Jackson, interview (Columbia University, NY, 13 November 1996). See also K.T. Jackson, 'Robert Moses and the Planned Environment: A Re-evaluation', in Krieg (ed.), op. cit. note 28, 21-30.

[30] This is, as latter-day relativists will fondly quote (wrongly of course, or rather: adapted to their purposes) what the Prussian Leopold van Ranke required historians to find out. In fact, Ranke said: '*...wie es eigentlich gewesen*'. Translating '*eigentlich*' as 'really', and putting the emphasis on '*eigentlich*' instead of '*gewesen*' (or 'was'), mistakenly places the quote in a relativism/realism context. But Ranke's intention was not to oppose a 'true' history to many other, 'alternative' histories: his appeal to historians was not to pronounce judgement. 'History has been ascribed the office to judge the past and to teach the contemporary world for the benefit of future times: such high offices are outside the scope of my present attempt: it only wants show how it actually was': Leopold von Ranke, *Geschichte der romanischen und germanischen Völker von 1494-1514, Sämtliche Werke*, Vol. 33 (Leipzig, 1855), viii, quoted from Friedrich Jaeger and Jörn Rüsen, *Geschichte des Historismus* (München: Beck, 1992), 45.

[31] Bruno Latour, 'Give Me a Laboratory and I will Raise the World', in Karin Knorr Cetina and Michael Mulkay (eds), *Science Observed: Perspectives on the Social Study of Science* (London: Sage, 1982), 141-70. This is of course another case of Chinese Whispers, where Latour uses (some would say abuses) notions introduced by Foucault and Serres with considerably different meanings, much as I do here with Latour's own meaning of the concept.

[32] The railroad was much frequented, although at high prices: see Vincent F. Seyfried, *The Long Island Railroad*, Part 1, *The South Side Railroad* (Port Washington, NY: I.J. Friedman, 1961), 154; on Moses' dealings with the railroad, see also Cleveland Rodgers, *Robert Moses:*

premised on comprehensive regional master plans. These sometimes would constrain a particular pet project of his; but sometimes he would be able to veto other interests - for instance, building a branch line of the Long Island railway to his beloved Jones Beach. Again, this particular action is interpreted by Caro (and others) as indicating his class bias and racism, but not everybody need (or will) follow these interpretations.

In the times of the young Moses, large parts of Long Island were in the hands of the 'robber barons', the rich money aristocracy of New York,[33] whose quasi-feudal life-style combined with an unchecked industrial capitalism. Of course, one must never forget that Moses was a big player in city and regional development planning, both on account of his strong visions, and of his ingenious entrepreneurial and organizational schemes. As to his overall concept for Long Island, he believed that the private property development and commercialization made possible by the railroad and the road system destroyed the paradise he had discovered since he went with his young family to Babylon (on Long Island) in the early 1920s. He dreamed up his parkways to preserve what could be preserved, and to submit the Island to benevolent state control by building and controlling parks.[34]

Today, New York historians quibble over whether Moses, with his parks and parkways (built in part on land appropriated from the barons),[35] prevented the ultimate commercialization, industrialization and ecological destruction of Long Island, thereby saving what could still be saved, or whether he entered into all kinds of unholy alliances with the robber barons and thereby furthered the sell-out of the commons.[36] The fact remains that blacks could gain physical access to Long Island beaches *via* many routes. And yet Jones Beach remained a white strand. Even today, when many more blacks drive cars, and when no politician tries to exclude them from the beaches, not many poor blacks seem to gather on Jones Beach.[37] There existed then, and there exist today, many reasons for black families to go elsewhere.[38] It

---

Builder for Democracy (New York: Holt, 1952), 281-87; for a re-evaluation of Moses' rôle in the transformation of Long Island, see Mollie Keller, 'The Best Laid Plans: Robert Moses and the Making of Metroland', in Krieg (ed.), op. cit. note 28, 203-12.

[33] Scott Fitzgerald's novel, *The Great Gatsby*, plays on Long Island.

[34] See John A. Black, 'Robert Moses: Long Island's First Environmentalist', in Krieg (ed.), op. cit. note 28, 141-50.

[35] John R. Logan and Harvey L. Molotch endorse the view that 'Commissioner Moses was able to overcome opposition to his vast highway and bridge building in the New York City area in part because the region's politicians were themselves buying up land adjacent to parkway exits, setting themselves up for huge rent gains': J.R. Logan and H.L. Molotch, 'The City as a Growth Machine', in Susan Fainstein and Scott Campbell (eds), *Readings in Urban Theory* (Oxford: Blackwell, 1996), 291-337, at 304.

[36] Robert Fitch, in his *The Assassination of New York* (New York: Verso, 1996), 59, traces problems of lack of public access, not to Moses himself, but rather to the Regional Plan Association's 1929 plan for New York and its corporate backers: 'just about every highway and bridge credited to Robert Moses was conceived and planned by the RPA. Moses simply poured the concrete on the dotted lines indicated in the plan'.

[37] Not having undertaken any primary surveys myself, I rely here on possibly impressionistic findings passed on to me by correspondents.

[38] Moses was obviously aware of this. As late as 1951, he wrote in a report to Mayor Impellitteri: '... the present 80-cent one-way fare is certainly a major deterrent to

seems to me that, all in all, Moses could not build the relations he wanted to build into his parkways - whatever they were - and that he could not arrest the development he wanted to prevent.

Was Moses, himself a thoroughly assimilated son of German-Jewish immigrants educated at Yale, Oxford and Columbia, a racist? Although, as it will turn out, it does not matter much whether he was or not, without doubt he was, subjectively (like practically every member of the East-coast establishment), what one might call a 'structural racist'. He supported and implemented policies he took to be liberal, reformist and above all progressive - policies, nevertheless, which left existing race and class relations unaffected, and which ignored that a booming economy up to the depression was apt to reinforce them. But he never pursued explicitly racist schemes. Instead, throughout his life he expounded an uncompromising meritocratic philosophy, not the least in running his many bureaucratic schemes. As a young man he was fired from the city administration for an attempt to enforce strict professional standards for public employees. Later in life he was known for his increasing intolerance towards the lifestyles and work-ethics of members of certain minority groups.[39]

And so the low bridges have lost much of their explanatory power: how, then, should one understand that Moses built some 200 overpasses so low? US civil engineers with whom I have corresponded regularly produce two simple explanations for the rationality of the low-hanging bridges: that commercial traffic was excluded from the parkways anyway; and that the generally good transport situation on Long Island forbade the very considerable cost of raising the bridges. In other words, Caro and Winner don't know what they are talking about.

But, of course, one knows that engineering discourses, especially, must also be scrutinized very carefully. I will therefore construct an auxiliary argument which could still justify the story of the bridges. Moses' reputation as 'killer of New York' does not result from his deeds or misdeeds on Long Island, or at least not in the first place. It comes from his merciless adaptation of New York to the requirements of the automobile.[40] To accommodate the cars, he sacrificed many functioning

---

widespread use of these unexcelled beach and recreation facilities and effectively drives more low-income families to Coney Island, which is badly overcrowded': Robert Moses, *Public Works: A Dangerous Trade* (New York: McGraw Hill, 1970), 325.

[39] George DeWan quotes Caro as quoting a private communication by Shapiro about what his old friend Frances Perkins once told him about Moses: 'He doesn't love the people ... It used to shock me because he was doing all these things for the welfare of the people ... He'd denounce the common people terribly. To him they were lousy, dirty people, throwing bottles all over Jones Beach ... He loves the public, but not as people.' (George DeWan, *The Master Builder: How Planner Robert Moses Transformed Long Island for the 20th Century and Beyond*, http://www.lihistory.com/7/hs722a.htm [3 August 1998], 8.)

[40] Robert Moses' many large bridges must be mentioned here, if only in passing. Moses built most of the giant bridges that link Manhattan with the other boroughs, and the rest of the country. In particular, the gigantic project of the Triborough Bridge (which is, in fact, four bridges connected by an intricate system of approaches) literally belonged to Moses. With the toll money from the Triborough bridges, he financed, in a rolling scheme, a good part of his rebuilding of New York, and thus effectively evaded control by the elected representatives of the city and its citizens.

neighbourhoods, as impressively described by Lewis Mumford, Marshall Berman, Jane Jacobs and many others.[41] In other words, Moses may not have built the small bridges with discriminatory intent, and the bridges may be innocent of the missing black element on Jones Beach. But *se non e vero é ben' trovato*. It could well have been so, and proof abounds that he has done worse. He was an undemocratic scoundrel all right.[42]

Michael Ignatieff has called Jeremy Bentham's '*Panopticon*-prison' - *the* classic parable for the social effects of a building technology - a 'symbolic caricature of many characteristic features of disciplinary thinking in his age's thinking'.[43] Are not the low bridges, even if they have not been built in the way depicted in the literature, a perfect symbol for Moses' and his governing contemporaries' politics? And would that not be excuse enough for Caro and Winner (and many others) to draw the symbolic caricature of the low overpasses? We could talk about this. But as it happens, in the 1980s there was an interesting turn in this matter, too. A new, revisionist city history of New York has retouched the cruel Moses picture. Today, many historians of New York do not see in him a 'Count Dracula of City Planning',[44] but rather a truly remarkable representative of the species 'political entrepreneur' - at times even 'benevolent early ecologist and conservationist'.[45] For some readers, Winner's low bridges may look, all things considered, rather like the caricature of a symbol than a symbolic caricature of the 'Moses way of thinking' about the metropolis.

But there is more. In Caro and Winner there is a suggestion that Moses has violated a valid standard of bridge-building, a tacit or explicit norm which elsewhere allowed buses and other high vehicles on such roads. Moses - so the implication goes - deviated intentionally and self-importantly from such a norm. But this, it seems, was not the case. In the USA, trucks, buses and other commercial vehicles were

---

[41] Marshall Berman, *All that is Solid Melts into Air: The Experience of Modernity* (New York: Simon & Schuster, 1983); Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961); see also the section devoted to Moses in Eugene Lewis, *Public Entrepreneurship: Toward a Theory of Bureaucratic Political Power* (Bloomington, IN & London: Indiana University Press, 1980), 156-228; and Joel Schwartz, *The New York Approach: Robert Moses, Urban Liberals, and Redevelopment of the Inner City* (Columbus, OH: Ohio State University Press, 1993), *passim*.

[42] Moses prided himself, above all, as a man of action. His famous adage, 'Those who can, build - those who can't, criticize!', thrown in the general direction of urban and technology studies but aimed very specifically at Lewis Mumford, finds a peculiar echo in Thomas and Agatha Hughes' (otherwise celebratory) appraisal of Mumford's rôle (in connection with Moses' United Nations Headquarters): 'In proposing destruction in the name of organicism, Mumford offers a brutal bulldozer urbanism little better than that of Le Corbusier or Robert Moses, whose urban ideas he so despised': T.P. Hughes and A.G. Hughes, *Lewis Mumford: Public Intellectual* (New York & Oxford: Oxford University Press, 1990), 281.

[43] In Michael Ignatieff, *A Just Measure of Pain: The Penitentiary in the Industrial Revolution, 1750-1850* (New York: Pantheon Books, 1989), quoted from Anne Crowther, 'Penal Peepshow: Bentham's Prison that Never Was', *Times Literary Supplement* (23 February 1996), 4-5. See also note 58, below.

[44] As Random House editor Jason Epstein still calls him recently: see J. Epstein, 'Metropolitan Life: The Encyclopedia of New York', *New York Review of Books* (16 November 1995), 4-6.

[45] See Black, op. cit. note 34.

prohibited on all parkways.[46] Moses did nothing different on Long Island from any parks commissioner in the country. Apparently, in those days, there was just one exception to this rule: only on Memorial Parkway, leading from Washington, DC, to the Washington monument on Mount Vernon, could buses run - but only after protracted and heated debates. The bus-lobby won out in the end, arguing that the parkway was built on the trail of a horse-drawn trolley bus. Many tourist-pilgrims arriving in Washington by rail or plane depended on public transport to reach the goal of their journey - the national shrine on Mount Vernon. In sum: *Moses could hardly have let buses on his parkways, even if he had wanted differently.*

A Nature for the Big City

A small detail could be the key to another interpretation, turning Winner's design argument from its head and on to its feet. True the bridges were low, but each had to be low differently. Moses took great care that each and every bridge was individually fitted into its natural context: standardized unicity, as it were, was part of an artfully laid out nature. One can show more generally that, when it came to parkway building, bridge-building culture was connected to a specific politics of nature. Maybe one should take a much closer look at Moses the aesthete and nature politician, because he invested a good part of his considerable local power and organizational ingenuity in his project to realize, through the park and beach schemes, his vision of a national nature/culture - and, in particular, to bring it to its apotheosis on Jones Beach.

In short: the low overpasses represent a national heritage, a deep institutional structure in the national building culture in which technological standards combined with many non-technical ones. Moses stood for the progressive variant of a national park code which was part of mainstream American culture. Simon Schama has impressively described this culture and its politics in his book, *Landscape and*

---

[46] To quote one of my correspondents who studies American scenic roads (Timothy Davis, personal communication, 28 February 1995): 'The prohibition of commercial traffic is one of the defining characteristics of parkways as a specific type of road. Of course there are similar roads which are open to all kinds of traffic. They are called highways or freeways ... a term coined around 1930 to denote parkway-type roads with free access for all types of vehicles.' Davis' letter then goes on to say that the prohibition of commercial traffic from parkways dates back to the 19th century: 'It reflects the fact that parkways were originally conceived as elongated parks with recreational drives through them, not as general purpose transportation arteries. 19th-century American parkroads and parkways were designed for use by light carriages and buggies. They excluded heavy wagons and commercial teaming, and only rarely allowed horse-drawn sightseeing omnibuses. These uses were considered detrimental to the road surfaces and incompatible with the essential purpose of parks, which were supposed to serve as a retreat from the hustle, bustle and commercial activity of the modern city. It was natural to continue these prohibitions to motor vehicles, especially since early motor trucks and omnibuses were extremely slow and unwieldy, and would certainly have dominated the park landscape and interfered with motorists' pleasure. Automobiles were initially a plaything of the wealthy but - in America at least - cheap new and second-hand cars were available to working classes by the 1920s when Robert Moses began building his parkways. It has been argued that the spread of automobile ownership in the 1920s made parkways and recreational driving vastly more democratic than they had been in the horse-and-carriage era.'

Memory.[47] The social basis of these politics was twofold: reformist, liberal-paternalistic élites on the supply side; upwardly mobile, automobile middle classes on the demand side - 'upward' in the new automobiles, the incarnation of the American dream of mass production, mass consumption, mass culture. And 'mass' must always be read as 'democratic', too.[48]

Moses created environments for the automobile society and what it represented. He invented and implemented standards for both - the *autogerechte* metropolis and its apparent opposite, nature. He saw the two as belonging together. *He put them together*. In my reading, it is this programme of the melioration and beautification of the giant city which Moses' low bridges caricature symbolically. Better, however, his large bridges, because they symbolize and perform the transition between the big city, which Moses loved and cherished, and the city-nature he invented. In an inverted sense, then, Winner has a point in looking for political programmes in the technologies of the time. At issue is an extended structure, the production of a new-old nature for a new metropolitan culture.[49] Winner, however, turns to Robert Moses as the power-seeking anti-democratic scapegoat for the crimes of this culture, allowing a generation of social scientists and city planners after Moses to unload the latent guilt of being part of its hidden agendas.[50]

---

[47] Simon Schama, *Landscape and Memory* (New York: Alfred Knopf, 1995); see also Roderick Nash, *Wilderness and the American Mind* (New Haven, CT: Yale University Press, 1967); Brester Snow (ed.), *The Highway and the Landscape* (New Brunswick, NJ: Rutgers University Press, 1959); Christopher Tunnard and Boris Pushkarev, *Man-made America: Chaos or Control?* (New Haven, CT: Yale University Press, 1963). For an account of competing American Parkway ideologies, see Gilmore Clarke, 'The Parkway Idea', in Snow (ed.), *The Highway and the Landscape*, op. cit., 32-55. Moses stood for one of the two main schools of National Park and Parkway development: an innovative concept, 'pro-urban', using modern means of production and regulation, as opposed to a more localist-folklorist, anti-urban tradition. - I cannot resist here a quotation from Moses' outraged and quite unpublishable response to Caro's *New Yorker* profile (Moses, op. cit. note 28, 21ff., my emphasis). After an aside on Caro's expertise in matters of public works... ('Caro's engineering and transportation outgivings are ridiculously amateurish, naive and infantile. He picked them up from a disgruntled young engineer with the City Planning Commission who indulged in nasty recriminations after he left ... the Commission') ... he confesses to a revealing affinity: 'In this context I always tip my hat to my cousin Frank Lloyd Wright. In his wilder projects of Welsh fantasy he really believed his own *architectural interruptions of nature* lifted us to the hills whence cometh our light, enhanced the plains and swept us out to the limitless seas. Frank's comparison of himself as a skylark and to me as a blind night crawler were of course just a quaint bit of Celtic humour. We take these things from the Frank Lloyd Wrights because we admire them in spite of their idiosyncrasies.'

[48] Except, arguably, for mass transit, although Moses also fought for the modernization of the railroads: see Rodgers, op. cit. note 32.

[49] It seems that Moses was highly conscious of this. Former Moses engineer Shapiro impressively (and affirmatively) pays witness to this when he tells Caro of Moses' grim determination to hold fast to his vision even when, in the 1960s, his Long Island Parkways had mutated into one of the world's most frequented and congested Highways. Long after his dream of linking the metropolitan Moloch to a redeeming nature had turned into a nightmare, did he enjoy the thought that his bridges may indeed have public transport blocked off from this nature for decades after his death? (see Caro, op. cit. note 20, 953).

[50] It has been said many times, of course, that American public transportation systems are

The Seductive Power of Parables

Back to Chinese Whispers. What is it with parables like Winner's version of the Moses story? Why has the low-bridges example been taken up by so many authors? Why did it become such a splendid piece of ready-made discourse - a 'discoursette', as it were? Why was it so wonderfully suited for further use in many other (in themselves quite different) texts in the social study of technology and of the city?

In an often quoted (but usually unreferenced) sentence, Victor Hugo is alleged to have said: 'Greater than the tread of mighty armies is an idea whose time has come' (*Histoire d'un Crime*, 1852).[51] I will now adapt this adage for my own purposes, and say: 'Greater than the mightiest idea is a story well told'. Winner's Moses example is so winning because in itself it is a particularly well constructed artifact, capable of serving a great number of rhetorical purposes. The form of the parable is so seductive because it lends itself to several things: it leaves room for multiple interpretations, yet it preserves concrete, ostensibly historical reference; and it offers in a nutshell a far-reaching, causally formulated theory of technology well in tune with healthy

---

shaped by a hidden (or not so hidden) agenda to discriminate bus-routes and railways. Says Robert Fitch (op. cit. note 36, 72), concerning the Long Island Expressway: 'A principal RPA imperative - keeping lower-income workers at a safe distance from upper-income businessmen - also goes far to explain why ... no provisions for mass transit were ever made, an outcome which Caro blames squarely on Moses.' - To be fair, Winner acknowledges (op. cit. note 2, 125ff.) that... '... most important examples of technologies that have political consequences are those that transcend the simple categories of 'intended' and 'unintended' altogether... Rather, one must say that the technological deck has been stacked long in advance to favor certain social interests, and that some people were bound to receive a better hand than others.' (See also his Chapter on 'Decentralization Clarified', in *The Whale and the Reactor*, op. cit. note 9, where Winner returns to the Moses case.) But it is his examples for the design-version, which he himself refers to as 'almost conspirational', that have made themselves a career in social studies of technology.

[51] [Editor's note] This quotation is the subject of a lengthy annotation in the Appendix to Burton Stevenson's monumental *Stevenson's Book of Quotations* (London: Cassell, 8th edn, n.d.), 2298. It is given there as: 'One can resist the invasion of armies, but not the invasion of ideas', and cited as: Victor Hugo, *Histoire d'un Crime: Conclusion: La Chute*, Ch. 10, p. 649 (Édition Nationale, Paris, 1983), Vol.36. However, it is noted that 'this sentence has been variously translated'. Later, the editor writes: 'And on April 15, 1943, *The Nation* sent out a subscription circular with the sentence, „There is one thing stronger than all the armies in the world; and that is an idea whose time has come", stating that this was the closing entry in Victor Hugo's diary, who died the same night in his sleep. A talk to the circulation manager responsible for the circular elicited the information that, while he remembered using the quotation, he had no idea of its source or where he found it. A search by the Information Division of the New York Public Library disclosed no trace of any publication of Victor Hugo resembling a diary or journal. A similar search by the reference department of the Library of Congress was also unavailing, but the sentence from *Histoire d'un Crime* given above was found, and is probably the origin of the sentence quoted by *The Nation*, which has since become familiar in a more picturesque form, „Greater than the tread of mighty armies is an idea whose hour has come"'. - It seems as if this quotation has had a 'career' similar to the parable of Moses' low bridges! We hope that this will be a warning to all contributing scholars: writing footnotes is *much* more rewarding than writing Editorials. [DE]

common-sense. Enormous interpretive flexibility, unambiguous empirical reference, elegant theoretical formula. And all that coupled with an urgent political-moral message. Not bad. One might say, with the historian Haydon White - or, still further back in this particular Chinese Whispers, with Aristotle - that Winner's story is so masterful because it combines all major rhetorical tropes: metaphor, metonymy, synecdoche - except for irony.

Artifacts may then, in Winner's sense, have politics: but surely politics have artifacts - well-built parables like Winner's.

Winner's knowledge-politics seem to be concerned with how to build power relations with things: at least, this is how most students read him. He does not (like, for instance, Woolgar) seem concerned with the performative power of words. 'Seem', I say, because in the end he is only concerned with the latter, notably: how one can achieve a definitive effect with words, how one can persuade and morally convince readers. *How to do words with things.* A while ago, he told me in conversation about the Moses article:

> I am not interested in theories, I am interested in moral issues. My point is not explanatory, it is about political choices.[52]

But Winner may turn any which way: he also offers, in this and in other texts, explanations for use in sociologies of technology or planning. He insinuates that with the help of building and other technologies one can predetermine effects, make them durable, without being there: real effects, which cannot be interpreted away and which cannot be reduced to some symbolic characteristics of particular technologies. Technologies, he says, have calculable characteristics of which to say they are 'open to interpretation' would be lofty, even immoral. The Moses story does not illustrate such theories well, but Winner has told his story splendidly. His parable has taken hold in the heads of some generations of students of scholars in (that is, students of) technology studies, who use it variously (without further ado by Winner) in teaching and research, as teaching thing and thinking thing. More effective, however, as teaching thing: the parable seems to possess a mighty didactic potential, precisely because it is presented as a thing to think with, a suggestive theoretical miniature.

Max Weber's lecture on science as a profession - another case of Chinese Whispers from which generations of sociology students took their packaged version of 'value-free science' - has something to say here.[53] In this lecture, Weber warns that such parables loaded with value judgements may be effective, but they should be avoided in science (though not in politics): they must not be used to seduce the innocent (that is, the students, the not-yet-initiated). They are good mostly for the wise, those who already know.[54] And here this Comment could end, with the moral

---

[52] Winner, interview, loc. cit. note 10.

[53] Max Weber, 'Wissenschaft als Beruf', in *Gesammelte Aufsätze zur Wissenschaftslehre* (Tübingen: Mohr/Siebeck, UTB [1919], 1988), 582-613; in English: 'Science as Vocation', in Hans Heinrich Gerth and C. Wright Mills (eds), *From Max Weber: Social Essays* (London & Boston, MA: Routledge & Kegan Paul, 1948), 129-56.

[54] See once more the *Encyclopedia Britannica*: 'Parables can often be understood only by an informed élite, who can discern the meaning within the brief, enigmatic structures' (op. cit.

that such parables, the artifacts of politics, of which there are many in the social sciences, should always be handled with care.[55] But this would be too easy. Two objections might be briefly addressed, lest I am told by reviewers that my analysis begs the question. One has to do with my treatment of Langdon Winner. The other has to do with what is the 'real' relationship between technologies and social effects, if it is not as Winner claims in his strong, design-version. Let me now take these in turn.

The Two Cs

Langdon Winner must not be scapegoated in the way I have suggested he has scapegoated Robert Moses. He should not be made to carry the anguish and guilt of a generation of social scientists trying to find a new way to look at the moral and analytical issues of technological change. Even if I feel that he has a politics of knowledge I cannot share, he represents, much as Moses did, a cultural structure - namely, a particular tradition and a powerful discourse in the social sciences. One should look in turn for the historical and cultural roots of this discourse, and make an attempt to situate it in terms of a sociology of the sciences. In particular: what are the ideological rôles the parables and representations of this discourse play in legitimating the practice of the many professions concerned with the design and planning of human environments - that is, most scientific experts?

Theories of social change can be divided, in an heroic simplification, between the two grand discourses of *control* and *contingency*. In control theories (comprising, in particular, all theories of planned change), social order and disorder are presented as a result of intentional action. The rest is written off under rubrics such as 'unintended side effects' of action. The great models in this tradition are classical political theory, institutional theory, and early cybernetics. Design theories and bridge parables like Winner's seem to me to belong to the discourse of control. In its apparently opposite variants of theory of power (*Herrschaftstheorie*) and theory of planning, it had its heyday in the 1960s and 1970s.[56]

At the other extreme, approaches like Woolgar's, and most radical constructivist or deconstructivist programmes,[57] belong with a counter-discourse of

---

note 22, 133).

[55] Another example which may interest authors who were won over by Winner's narrative, is - on a slightly different scale - the story of Tokugawa Japan's intentional reversion from an advanced military technology (firearms) to a more primitive one (the samurai swords), as told (for instance) by Noel Perrin, in his *Giving up the Gun: Japan's Reversion to the Sword, 1543-1879* (Boston, MA: Godine, 1979). According to Conrad Totman's review of Perrin's book, this tale does not stand up to historiographic evidence for both motivations and outcomes: it seems this was neither intended, nor did it happen: see *Journal of Asian Studies*, Vol. 39, No. 3 (May 1980), 599-601.

[56] Recently, Richard Rorty has veritably demolished the US-American intellectual left since the 1960s, accusing them of academic abstractions, and of being incapable of pragmatic reform: see R. Rorty, *Achieving Our Country: Leftist Politics in Twentieth-Century America* (Cambridge, MA: Harvard University Press, 1997). This is how I read Winner's technology theory too: see, especially, Langdon Winner, *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought* (Cambridge, MA: The MIT Press, 1977).

[57] See Stephen H. Kellert, 'Science and Literature and Philosophy', *Configurations*, Vol. 4, No. 2 (Spring 1996), 215-32.

contingency which has flourished since the 1970s and 1980s. In contingency theories, one might say, social disorder and order are not seen as the product of planful, intentional action, but as the result of a conjunction of consequences of action. 'Consequences of' by all means 'intentional', but in principle of the 'blind' (that is, not guided by some overall design) actions of many small actors adapting to the circumstances at hand. The great models are: evolutionary theory, chaos theory, and theories of self-organization.

The classic architectural parable of control theories of social change is Jeremy Bentham's *Panopticon*, which has advanced to a mighty thing to think with in grand social theory (at least since Foucault).

> Morals reformed - health preserved - industry invigorated - instruction diffused - public burthens lightened - Economy seated, as it were, upon a rock - the gordian knot of the Poor-Laws are not cut, but untied - all by a simple idea in Architecture! ... Such is the engine: such the work that may be done with it.

These are the introductory lines in Bentham's famous *Panopticon Letters*, in which he designed his version of a *perpetuum mobile* of societal control *via* architecture.[58] The basic idea of these lines informs Winner's programme too: one could give the social process definitive form by making use of certain building technologies. There is, of course, a difference: Bentham presented a proposal which was never actually built, that is to say, tested empirically.[59] The low bridges have been built, and found quite innocent. However, to achieve its astonishing effect in the literature, Winner's story had also to be told counterfactually, even if it seems 'true to life'. If one looks for a classic architectural parable of contingency theories of social change, the Tower of Babel comes to mind. In what I call the *LogIcon* of the Babel Tower,[60] the multicultural babble of countless actors represents an uncontrollable and infinite ('contingent') process of coincidental action effects. The true story of the bridges plays somewhere between the grand discourses of control and contingency. But up to now, theoreticians of control have appropriated it.

Authorizing Bridges

The second objection could be that all of the above does not present any substantive alternative to Winner's view concerning the relationship of built environment and social process. On the one hand, it might be argued that - while the low bridges may

---

[58] Jeremy Bentham, 'Panopticon; or, the Inspection-House: Containing the idea of a new principle of construction applicable to any sort of establishment, in which persons of any description are to be kept under inspection ... with a Plan of Management adapted to the Principle...' (written in London, 1787): see Jeremy Bentham (ed. Miran Bozovic), *The Panopticon and other Prison Writings* (New York: Verso, 1995).

[59] Although many prison buildings to this day look similar to Bentham's original device (if not its details), only two prison buildings which somehow corresponded to Bentham's plans seem to have been built eventually - one in Illinois and one in Cuba (where - talking about disciplinary effects - Fidel Castro wrote his famous speech 'History Will Absolve Me'): see John Ryle, 'The Panopticon', Letter to the Editor, *Times Literary Supplement* (1 March 1996), 17.

[60] I use the term 'LogIcons' as shorthand for 'pictures to think with' - that is, visual representations in science (and in other technical activities).

not have fulfilled the control tasks ascribed to them by Moses or Winner - there are ample other examples of social control through buildings and other engines. Evidently this is not the place to go into this matter in any detail. However, it must be said that not only did Moses' overpasses *not* control much, but that similar non-effects of intentional control *via* building can be demonstrated for almost *any* randomly chosen physical set-up.[61] How then should one construe the subtle but theoretically entrenched relationships between built form and its social contents - this particular variant of the 'relation between things and words'? It would be cheap to say: one cannot go behind the discourses; bridges do what they are discursively ascribed to do, and the most powerful discourse decides what is fact.

One alternative to control approaches - closer to the discourse of contingency - would be to decipher the effect of technical (in particular, building) artifacts primarily *via* their expressive values. Things induce nothing, but they indicate something. Built spaces are considered as media which tell something to those capable of reading and listening. Like all texts, everyone may read them differently: buildings must and can be read anew all the time. Authorial intentions (that is, designers' purposes) sometimes play a rôle in this, but usually a peculiarly indeterminate one. In a highly contingent process, many many others will decide over and over again which meanings and uses are inscribed into built spaces.

On this road one arrives at a completely different sociology of technology, or of city space, than the usual one cued to planning and melioration: namely, a sociology of space/technosymbolism/aesthetics, of taste and fashion, of the ritual *mis-en-scène* of professional design and designers - planners, architects, politicians and propagandists. Other themes current in social studies of technology and the city are difficult to discuss in such frameworks: for example, the production of inclusion and exclusion in big cities; the failure of municipal regimes; the robbing of power from legitimate communal agencies by mostly distant world corporations incapable of implantation in local political cultures; and so on and so forth. One might then wish to look for a middle road between the two Cs of contingency and control, between instrumentation and unpredictable adaptation.

It seems to me that this would mean treating things - bridges, roads, buildings and such - as *phenomena* 'in the middle' or, to use a currently fashionable term, 'boundary objects'. Conceiving of built spaces and other technical installations as boundary objects avoids preconceived notions of control or contingency. Attention is then directed to the ways in which they serve as media of mediation, negotiation and translation between the reciprocal expectations and requirements of many people or organizations (and especially of those who represent them, who are authorized to speak for them). One looks for the continuous re-institutionalizations, the changes in the legitimate, taken-for-granted and at times irremovable rules regarding rights to

---

[61] It is peculiarly difficult to give specific examples for this position. I sometimes name alleged inherent social-control effects of concrete high-rise buildings, or of so-called fascist architecture, only to open up long debates, because it is so commonsensical to account for things in terms of inherent social qualities and to classify them accordingly: see also Bernward Joerges, *Gebaute Umwelt und Verhalten: über das Verhältnis von Technikwissenschaften und Sozialwissenschaften am Beispiel der Architektur- und der Verhaltenstheorie* (Baden-Baden: Nomos, 1979).

use and actual uses taking place over the lifetime of things.

In this perspective, to put it very briefly, the bridges represent legitimate or contested property and access rights which as a rule change over time. The *practices* of the bridges, their factual symbolic and mundane uses, will always remain loosely and ambiguously coupled to such representations. The institutionalization and ongoing re-institutionalization of bridges can be understood as resulting from the interplay of order imposing bridge representations and contingent bridge practices.

Things, including bridges and other built artifacts, are like words. With his book *How to do Things with Words*, John Austin began the critique of Saussurean linguistic theories which distinguish an internal from an external science of language - a science of language, and a science of language use.[62] Because here, as Bourdieu has put it, 'the power of words is assumed to be only in themselves, namely there where it is not'.[63] Similarly with things: the power represented in built and other technical devices is not to be found in *the formal attributes of these things themselves*. Only their *authorization*, their legitimate representation, gives shape to the definitive effects they may have.

In particular, built spaces always represent control rights. They belong to someone and not to others, they can legitimately be used by some and not by others. Variable control rights over built spaces constrain what can pass in and around these spaces. *Only rarely and in the most trivial senses can one show that such constraints are coupled to building form.* In this view, it is the processes by which authorizations are built, maintained, contested and changed which is at issue in any social study of built spaces and technology.[64]

Note

I owe thanks to many colleagues, with whom I have discussed the case of Moses' bridges over the years. Without wholly persuading them of my viewpoint, I have especially profited from conversations with Bettina Heintz, Heinz Bude, Sally Wyatt, Gerald Wagner, Johannes Hörning, Barbara Czarniawska, Reiner Grundmann and Richard Rottenburg. Jasdan Joerges, although he is a biologist, has done much of the fieldwork.

Bernward Joerges is a Senior Research Fellow at the Wissenschaftszentrum Berlin für Sozialforschung, where he heads the Metropolitan Studies Group, and Professor of Sociology at the Technische Universität Berlin. His current research focuses on big-city management. His latest publications include *Technik - Körper der Gesellschaft* (Frankfurt-am-Main: Suhrkamp, 1996), *Körper-Technik: Aufsätze zur Organtransplantation* (Berlin: edition sigma, 1996), and (edited with Ute Hoffmann and

[62] John L. Austin, *How to do Things with Words* (Cambridge, MA: Harvard University Press, 1962).

[63] Pierre Bourdieu, *Ce que parler veut dire: L'économie des échanges linguistiques* (Paris: Fayard, 1982), quoting from the German edition, *Was heißt Sprechen? Die Ökonomie des sprachlichen Austauschs* (Wien: Braumüller, 1990), 73.

[64] Looking at it this way, the title of this Comment could well have been: 'To Whom Belong the Bridges of Robert Moses?'; or: 'To Whom Belong the Bridges of Robert Moses?'.

Ingrid Severin) *LogIcons: Bilder zwischen Theorie und Anschauung* (Berlin: edition sigma, 1997).

Address: Wissenschaftszentrum Berlin für Sozialforschung, Reichpietschufer 50, D-10785 Berlin, Germany; fax: +49 30 25 411254; email: joerges@medea.wz-berlin.de