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People as Scientific Instruments*

Maarten Derksen[†]

People are common instruments in the social sciences. They may act as experimenters, receiving and instructing the participants; they may be stooges, confederates of the experimenter who are part of the experimental manipulation; they may function as raters of their own personalities or those of others; or they may conduct interviews and do observations. In most social scientific research, people are necessary to elicit, record, or measure the phenomena under study. They are an essential instrument in most social science.

I want to point out a recurrent feature of human instruments in social science: their instrumentality is hidden in order to be effective. I argue that the machinations of human instruments assert at the same time the manipulability of people and their recalcitrance, construct them as both predictable, natural objects and free, autonomous subjects. This requires, I argue in conclusion, an amendment of Latour's influential approach to the study of technology.

I. HUMAN INSTRUMENTS

There is surprisingly little literature on human instruments in the social sciences. As a case in point, two recent overviews of instruments in psychology do not include human beings. Horst Gundlach limits his extensive discussion of psychological instruments to "inorganic instruments," "for the sake of brevity," although he does acknowledge that "it is certainly correct to say that some psychological research does use humans as *means*" (Gundlach 2007, 205; emphasis in the original). Thomas Sturm and Mitchell Ash do not consider people at all in their otherwise excellent exploration and analysis of the roles of instruments in psychological research (Sturm and Ash 2005). Their definition of a psychological instrument, although "deliberately broad" (2005, 15), covers material devices and objects as well as abstract analytical methods, but not human beings. Speaking of ancient and medieval studies of the moon

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illusion, Sturm and Ash note “There are no instruments here, unless one takes the human eye to be an instrument” (2005, 10). Their reticence—to consider the human eye a scientific instrument would apparently be a step too far—contrasts with the enthusiasm with which many scientists have used themselves instrumentally in their own research. Leaving aside the natural sciences,¹ the early history of experimental psychology provides a good example.

Human instruments were essential in the “New Psychology” introduced by Wilhelm Wundt, as it relied heavily on introspection. Deborah Coon has analysed the way early experimental psychologists attempted not only to standardize introspection, but “even to ‘standardize’ the experimental human subject as an introspecting instrument” (Coon 1993, 759). The “observer,” as the person providing the data was called, was considered to be a scientific instrument no less than the brass laboratory apparatus surrounding him, and ideally would virtually be a machine. Similarly, Ruth Benschop and Douwe Draaisma showed that Wundtian psychology demanded not only the calibration of the material technology of experiment (notably its chronometric arsenal), but also of the “social technology” of the people involved in the experiment (Benschop and Draaisma 2000). The introspective method did not survive the ascent of behaviorism, which replaced the machine-like observer with the laboratory animal, and severed the problematic link between the object experimented on and the subject that registered the results.² Traces of introspectionism do remain, however. Survey research is based on the fundamental assumption that “respondents can give valid reports of their own subjective states” (Martin, quoted by Strack and Schwarz 2007, 228).

If we, as a first approximation, divide scientific instruments into those that produce phenomena, and those that register them, we can find numerous examples of both in the social sciences. The interviewer³ elicits responses; the stooge or confederate is part of the experimental manipulation; and the rater in a content analysis produces numerical data from text. Each is indispensable in the production or registration of the

¹ But see Schaffer (1992; 1988) for natural philosophers and astronomers using their own bodies or those of their assistants as instruments, and Raj (2007, chapter 6) for British explorers using “Pundits” as human instruments in the geographical survey of the Transhimalaya.

² The technoscientific ideal remained. To behaviorists, their rats and pigeons were machines that modeled the mechanisms of psychological phenomena (a case of “mechanicotheriomorphism,” according to Stam and Kalmanovitch [1998]).

³ Sturm and Ash (2005, 12-14) do discuss the interview, but as a tool used by the interviewer. That mixes up the interview with the questionnaire. The interviewer and the interview are inseparable.

phenomena of interest in their respective kinds of social science. If we go beyond the distinction of producing and registering, we may include the experimenter, who is instrumental in preparing the specimen. The experimenter guides the transformation of a volunteer into a “subject” by procuring informed consent and giving instructions and reassurances. Often the experimenter’s role extends to manipulating the beliefs of the subject by giving false or incomplete information about the goal of the experiment, or by giving false feedback during the experiment. In other words, preparation can be continuous with manipulation of the subject.

II. UNOBTRUSIVE MANIPULATION

My aim here is not to draw up an inventory of human instruments in the social sciences, but to explore the significance of a feature that is shared by many: the fact that their instrumentality is more or less hidden. Javier Lezaun’s analysis of the focus group offers a good example of masked instrumentality (Lezaun 2007). The focus group is a scientific technology to elicit individual opinions, of a new consumer product for instance, by encouraging a conversation among a small group of people in a structured setting. Central in this technological assemblage is the moderator, who must manage the process in such a way that it produces a maximum number of authentic opinions from all group members. A central concern of the moderator is the tension between artificiality and naturalness. The artificiality of the focus group situation, embodied in the presence of the moderator, must engender a natural conversation in which authentic opinions are spontaneously expressed. Thus, “the fundamental problem for moderators is how to turn the research subjects away from the experimental features of the setting” (2007, 136). The participants are, of course, aware that they are there for a reason, they try to figure out what it is, and they often either resist it or try to be helpful, neither of which produces authentic opinions. The moderator must carefully manage the group to express “non-directive” opinions, but must do so without drawing attention to his tactics, “Non-direction needs to be actively engineered into the behaviour of the moderator and into the responses he elicits from the research subjects” (2007, 138). “The goal of the moderator is to benevolently (forcefully, yet imperceptibly) lead the focus group to a useful outcome (of which their subjects are ignorant)” (2007, 141).

Unobtrusive manipulation is also a part of many other social scientific methods, such as psychological testing (Derksen 2001). In psychological research it is standard procedure not to tell the participants what hypothesis is being tested, deceiving them instead with a cover story. Social psychologists in particular almost universally agree that subjects who know what the researcher wants to know do not produce good data.

Their behavior is calculated rather than spontaneous and authentic—a reaction to the social situation of the experiment, rather than to the experiment as social situation. Eliciting authentic behavior in the artificial environment of the laboratory requires subtle machinations—forceful, yet imperceptible—to create “illusions of reality” (Korn 1997). Social psychology has a history of elaborate experimental set-ups, often composed of multiple layers of deception. In Stanley Milgram’s famous obedience experiments, the experimenter was in fact a schoolteacher with a stern appearance and impassive manner, and the stooge who supposedly received the shocks a mild-mannered accountant; the shock machine had been meticulously constructed by Milgram himself. Korn refers to the 1960s and 1970s as the “stage production era” of social psychology (Korn 1997, 113), and although the reliance on deception has diminished somewhat since then, the first thing that first-year psychology students (the subjects in most psychological research) learn is that in psychological experiments, nothing is what it seems.

III. FREEDOM AND MECHANISM

Focus groups and social psychological experiments illustrate a recurring feature of social science: human instruments tend to be deceptive, and their machinations veiled. Manipulation and deception in social science are not uncontested. Milgram’s studies for example led to a heated discussion on the ethics of experimental deception (Baumrind 1964; Milgram 1964), a discussion that inaugurated a wider ethical debate in psychology that only abated in the 1970s. It has recently been revived by experimental economists, who contend that deception in social science is often unnecessary and counterproductive (Hertwig and Ortmann, 2001; 2008a; 2008b). They resent the “contamination” of the subject pool by (social) psychologists, whose deceptive practices make prospective participants distrustful, suspicious, and less willing to act as subjects. In experimental economy deception is proscribed, yet researchers are able to perform experiments in which subjects are not lied to. Typically, such experiments set up games between participants, and the strategies they deploy form the data. Experimental economics, however, is not free of machinations: Hertwig and Ortmann are careful to define deception as explicit, intentional lying, allowing the “withholding of information about research hypotheses, the range of experimental manipulations or the like” (Hertwig and Ortmann 2008b, 222). Note also that experimental control remains the goal: the problem with deception is that it breeds suspicion, and suspicious subjects may distort their behavior in ways that the experimenter does not control (an argument originally advanced in Kelman 1967). Only a minority of social scientists reject manipulation

and deception altogether, among them social constructionists like Kenneth Gergen, who see research as a collaborative exploration of possibilities, more like a dance than a contest of strength (Gergen 2009).

Hertwig and Ortmann's criticism points to an important aspect of the manipulative kind of social science: the human subject appears as both an instrument and a free agent. Manipulation must be hidden because the subject will resist it otherwise—Hertwig and Ortmann believe it does not remain hidden, and resistance will therefore grow among subjects. Machinations such as the ones described above are the middle term that links two seemingly incompatible metaphysical domains: that of nature and that of freedom. Hidden instrumentality coaxes free persons to follow the will of another, and allows human nature to express itself in artificial conditions. The products of this kind of social science include, on the one hand, new types of machinations, and, on the other hand, strategies for bringing them to light, resisting them or turning them to one's advantage (Coon 1992; Pettit 2007). B.F. Skinner's behavior analysis, for instance, came with a philosophy that did away with freedom altogether, and employed a fully mechanistic theory of human behavior in its interventions, such as the token economy. In practice, however, behavior analysts quickly learnt that "behavioral engineering" was accepted more easily if it wasn't linked to Skinner's radical materialist philosophy, and behavior analysis became the principle behind self-help regimes that promised empowerment and self-control (Baistow 2001; Rutherford 2009).

IV. MACHINES AND MACHINATIONS

In his paper "*The Prince* for machines as well as for machinations," Bruno Latour first introduced his influential argument that our modern society is held together to a large extent by machines (Latour 1988). Whereas the Princes of Machiavelli's days could rely only on machinations that exploited human passions, thus making them dependent on the fickleness of people, nowadays one can tie together people with the sturdy bonds of material technology. "(H)ow much cleverer it is to bind together men, these wretched creatures that are always ready to break their contracts and go to [...] competitors, by wires, meters, copper, and filament lamps" (Latour 1988, 26-27). One cannot understand current society without considering these "missing masses" (Latour 1992). Latour's point was not that machinations have become irrelevant—it is the weaving together of increasing numbers of non-human machines with human machinations that characterizes our collectives. In practice, however, Latour's influential philosophy of technology has inspired many studies of material technology, but few of machinations. I believe a closer look at people as instruments in social science prompts an amendment of

two elements of Latour's view of technology, and a route for its further elaboration.

In all his texts on technology and society, Latour argues that social relations lack solidity and permanence without the cement of material technology. People are prey to unpredictable passions and whims; purely human bonds are soft. Without material tools, our society would be as volatile as that of baboons, who need to re-establish the social order each morning. "It is always 'things'—and I now mean this last word literally—which, in practice, lend their 'steely' quality to the hapless 'society'" (Latour 2005, 68). This claim ignores the extent to which the fickleness of people is the object of intense social scientific work, rather than being the uncontested, established fact that Latour (curiously, given his approach to facts) takes it for. The point of social science in the manipulative paradigm is to establish to what extent and under what circumstances human actions *are* predictable. The success of such research is often limited, but in general it contradicts the idea of unpredictability as a fundamental trait of people.

A second element of Latour's argument that requires another look is his suggestion that material tools have become the main source of social change. Applied to the social sciences, we may note that material technology indeed plays an important role in innovating procedures and producing new phenomena. An example is the Implicit Association Test (IAT), an instrument that has recently created much excitement among psychologists. The test requires a computer running the appropriate software, and the phenomenon it produces and measures—small differences in reaction time sorting pairs of concepts printed on the screen—would not exist without it. The IAT has made a formerly shadowy psychological variable, unconscious attitudes, producible and measurable. Unconscious attitudes can now become a reliable part of the machinations of marketing and advertising, to name but one area of application. Thus, the IAT is a good example of the weaving together of human and non-human technologies that Latour sees as characteristic of Modernity. However, the IAT not only produces reliable responses, but also raises the issue of human recalcitrance. Unlike other psychological tests, at least one version of the IAT is freely accessible,⁴ and this has prompted doubts about its reliability: a subject who realizes how the test works can resist it and produce a calculated, "inauthentic" result (Verschuere, Prati, and Houwer 2009). Some who study unconscious determinants of behavior explicitly aim to further such resistance, for instance aiding "consumers in controlling and improving their decisions" (Chartrand 2005, 209). Latour's

⁴ implicit.harvard.edu/implicit/demo/

focus on material technology as the engine of social change should therefore be broadened to include the contrary assertion of human control it may give rise to. Devices may be crucial in innovations such as the IAT, but resistance and the exercise of freedom are part of the social change they foster.

My point is not that attempts to instrumentalize human relations will always flounder on the essential freedom of the subject, or some similar humanist position. A consideration of people as instruments in social science rather suggests a study of human instrumentality and resistance as simultaneous creations, articulated in relation to each other. The focus on the weaving together of human and non-human tools that has become so dominant in social theory recently, needs to be broadened to include the relation between human predictability and recalcitrance, and the negotiation of the two in veiled machinations.

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REFERENCES

- Baistow, Karen. 2001. Behavioural approaches and the cultivation of competence. In *Psychology in Britain. Historical essays and personal reflections*, ed. Geoff C. Bunn, A. D. Lovie, and G D. Richards, 309-29. London: Science Museum, British Psychological Society.
- Baumrind, Diana. 1964. Some thoughts on ethics of research: After reading Milgram's "Behavioral Study of Obedience." *American Psychologist* 19, no. 6 (June): 421-23.
- Benschop, Ruth and Douwe Draaisma. 2000. In pursuit of precision: The calibration of minds and machines in late nineteenth-century psychology. *Annals of Science* 57, no. 1: 1-25.
- Chartrand, Tanya L. 2005. The Role of Conscious Awareness in Consumer Behavior. *Journal of Consumer Psychology* 15, no. 3 (July): 203-10.
- Coon, Deborah J. 1992. Testing the limits of sense and science. American experimental psychologists combat spiritualism, 1880–1920. *American Psychologist* 47, no. 2: 143-51.
- Coon, Deborah J. 1993. Standardizing the subject - experimental psychologists, introspection and the quest for a technoscientific ideal. *Technology and Culture* 34, no. 4 (October): 757-83.
- Derksen, Maarten. 2001. Discipline, subjectivity and personality: an analysis of the manuals of four psychological tests. *History of the Human Sciences* 14, no. 1 (February): 25-47.

- Gergen, Kenneth J. 2009. *An Invitation to Social Construction*. 2nd ed. Los Angeles: Sage.
- Gundlach, Horst. 2007. What is a psychological instrument? In *Psychology's Territories: Historical and Contemporary Perspectives from Different Disciplines*, ed. Mitchell G. Ash and Thomas Sturm, 195-224. Mahwah, NJ: Lawrence Erlbaum Associates.
- Hertwig, Ralph, and Andreas Ortmann. 2001. Experimental Practices in Economics: A Methodological Challenge for Psychologists? *Behavioral and Brain Sciences* 24, no. 03: 383-403.
- Hertwig, Ralph, and Andreas Ortmann. 2008a. Deception in experiments: Revisiting the arguments in its defense. *Ethics & Behavior* 18, no. 1: 59-92.
- Hertwig, Ralph, and Andreas Ortmann. 2008b. Deception in social psychological experiments: Two misconceptions and a research agenda. *Social Psychology Quarterly* 71, no. 3 (September): 222-27.
- Kelman, Herbert C. 1967. Human use of human subjects: The problem of deception in social psychological experiments. *Psychological Bulletin* 67, no. 1 (January): 1-11.
- Korn, James H. 1997. *Illusions of Reality: A History of Deception in Social Psychology*. Albany: State University of New York Press.
- Latour, Bruno. 1988. *The Prince* for machines as well as machinations. In *Technology and social process*, ed. Brian Elliott, 20-43. Edinburgh: Edinburgh University Press.
- Latour, Bruno. 1992. Where are the missing masses? The sociology of a few mundane artifacts. In *Shaping technology/Building society. Studies in sociotechnical change*, ed. Wiebe Bijker and John Law, 225-58. Cambridge, MA: MIT Press.
- Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Clarendon lectures in management studies. Oxford: Oxford University Press.
- Lezaun, Javier. 2007. A market of opinions: the political epistemology of focus groups. *Sociological Review* 55 (October): 130-51.
- Milgram, Stanley. 1964. Issues in the study of obedience - reply to Baumrind. *American Psychologist* 19, no. 11: 848-52.
- Pettit, Michael J. 2007. The unwary purchaser: Consumer psychology and the regulation of commerce in America. *Journal Of The History Of The Behavioral Sciences* 43, no. 4: 379-99.
- Raj, Kapil. 2007. *Relocating modern science : circulation and the construction of knowledge in South Asia and Europe, 1650–1900*. Basingstoke, UK: Palgrave Macmillan.
- Rutherford, Alexandra. 2009. *Beyond the Box: B.F. Skinner's Technology of Behavior from Laboratory to Life, 1950s–1970s*. Toronto: University of Toronto Press.
- Schaffer, Simon. 1988. Astronomers Mark Time: Discipline and the Personal Equation. *Science in Context* 2, no. 01: 115-45.
- Schaffer, Simon. 1992. Self-evidence. *Critical Inquiry* 18, no. 2 (WIN): 327-62.

- Stam, Henderikus J., and Tanya Kalmanovitch. 1998. E. L. Thorndike and the origins of animal psychology—On the nature of the animal in psychology. *American Psychologist* 53, no. 10 (October): 1135-44.
- Strack, Fritz, and Norbert Schwarz. 2007. Asking questions: measurement in the social sciences. In *Psychology's Territories: Historical and Contemporary Perspectives from Different Disciplines*, ed. Mitchell G. Ash and Thomas Sturm, 225-50. Mahwah, NJ: Lawrence Erlbaum Associates.
- Sturm, Thomas, and Mitchell G. Ash. 2005. Roles of instruments in psychological research. *History of Psychology* 8, no. 1: 3-34.
- Verschuere, Bruno, Valentina Prati, and Jan De Houwer. 2009. Cheating the Lie Detector: Faking in the Autobiographical Implicit Association Test. *Psychological Science* 20, no. 4: 410-13.