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DONALD MACKENZIE (2009), *Material Markets: How Economic Agents are Constructed*. Oxford University Press, 240 pp.

When the historical sociologist Donald MacKenzie started working in the budding field of social studies of finance, alongside other scholars with a background in the social studies of science and technology such as Michel Callon, it was clearly an exciting and important new approach to studying that part of late-modern capitalism which concerns itself with credit and debt, equity and liquidity, futures and options, and so on. Now it is more than that. Since Summer 2007, and especially since Fall 2009, the work of MacKenzie and his colleagues in the social studies of finance appears both incredibly prescient, and, at least in MacKenzie's case, refreshingly even-handed and free of accusation or polemic. MacKenzie is far more interested in understanding the way in which the interaction of the denizens of the financial world with the material and mathematical technologies that surround them affects the day-to-day behavior of markets, whether they be in derivatives or carbon credits, than he is in analyzing credit crises or pointing fingers at (or defending) those denizens.

MacKenzie has always seen the potential of subtle and sophisticated scholarship in the social studies of science to explain the real problems that real human beings face in the contemporary world. His classic *Inventing Accuracy*, a seminal case study for the social studies of technology, argued that if certain aspects of nuclear missile design (such as guidance systems, MacKenzie's specific example) were predicated on military and political choices, and not the inevitable improvement of a given technology towards ever-greater effectiveness, then conscious human choices could undo what conscious human choices had wrought¹. His focus now, as then, is not on painting social and technological issues in black and white terms, but rather on emphasizing the broader range of choices available to elites and the public alike, all the while rendering what are often seen as «natural» and «inevitable» components of our social and technological environment as simply a few of many possible outcomes. With *An Engine, Not A Camera*, MacKenzie pursued this general goal in his analysis of the coevolution of the (then) novel aca-

¹ Donald MacKenzie, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance* (Cambridge: The MIT Press, 1993).

demic discipline of finance economics and equally novel derivatives markets in the 1980s. Among other things, MacKenzie tried to show in this work how the tools created by economists purportedly to study the world of finance, especially the Black-Scholes model for pricing derivatives, played a major role in shaping that world, in this case by encouraging derivative prices to behave in the way the Black-Scholes model assumed they already did².

Material Markets, based on a series of lectures MacKenzie gave at Oxford's Saïd Business School, continues these themes, although it is less historical and more exploratory in tone. «When dealing with topics, such as markets», MacKenzie writes, «that have enormous implications for people's lives, researchers should surely aim not just at high-quality academic research, but also should seek to reach out beyond academia to wider publics». One goal of this «public social studies of finance», beyond simply explaining highly technical issues so that any committed reader can understand them, is to encourage «a potential broadening of the forms of political engagement with markets» beyond simplistic pro-market (right) and anti-market (left) perspectives (181-82).

In addition to his argument for publicly accessible and useful sociology, MacKenzie, through a series of empirical case studies grounded primarily in his interviews with, and ethnographic observations of, financial workers, attempts to demonstrate the value of a few of his personal «precepts» for the social studies of

finance. Most significant of these, other than his big point that financial actors do not simply play with numbers but live in specific material conditions and take actions within those conditions, is the crucial point that «'technical' matters such as mathematical models and credit ratings...are not 'mere details' that can safely be set aside by social scientists looking for 'the big picture'» (179).

Macrocconomic phenomena, like a recession or the nationalization of a huge bank, cannot be properly understood without an adequate appreciation for the role that seemingly mundane and complex microcosmic details play in these phenomena, a case MacKenzie makes particularly strongly for the daily calculation of LIBOR (London Inter-Bank Offered Rate), the average interest rate at which the world's leading banks are willing to lend to each other (1-2). This calculation is made every day in a drab London office by mere cogs in the global financial machine, but, as MacKenzie demonstrates, it requires them to make certain choices and take certain actions, and the rate that is set for the day serves as the benchmark for numerous other interest rates outside the world of bank-to-bank lending, which will typically be set at a certain number of «basis points» (1/100 of 1%) above or below LIBOR³. The «big picture» events that hinge on this basic average should not be treated as though they somehow overwhelm the significance of the technical business of calculating LIBOR, nor should LIBOR be treated (much like the missile guidance systems of MacKenzie's earlier work) as

² Donald MacKenzie, *An Engine, Not a Camera: How Financial Models Shape Markets* (Cambridge: The MIT Press, 2006).

³ For a case of the significance of LIBOR in determining interest rates for a \$9.7 billion dollar loan from J.P. Morgan and third-party investors to 307 non-bank firms, see: Donald MacKenzie, «All Those Arrows», *London Review of Books*, 25 June 2009., and the book of which this is a review: Gillian Tett, *Fool's Gold: How Unrestrained Greed Shattered Global Markets, Corrupted a Dream, and Unleashed a Catastrophe* (London: Little, Brown, 2009).

if it were automatically determined, a mere fact of nature requiring no real human choices by real human beings.

Perhaps the chapter on «Constructing Emissions Markets» best illustrates the significance of technicalities for the «big picture», the role of economists in constructing markets, and the need for a wider political spectrum that takes into account the fact that «multiple forms of markets with diverse characteristics and substantially different consequences are possible [and therefore] politics divided between ‘pro-market’ and ‘anti-market’ (both in the singular) is wholly impoverished» (182). Markets in tradable CO₂ emissions permits, which can be purchased by those firms which want to pollute above a certain limit without getting fined, and sold by those firms which have polluted below that limit, «are a quintessential example of a strong form of the kind of process...in which economics has *done* something: its role has not been to analyze an already-existing market, but to help bring a new market into existence» (139).

Furthermore, emissions markets cannot be understood without an appreciation for technicalities such as «the ratchet», a mechanism by which SO₂ (sulphur dioxide-the US market in emissions of this pollutant was an important precursor to the CO₂ market built into the Kyoto Protocol) emissions were controlled. After 2000, the total amount of emissions allowed to all firms involved by the United States Environmental Protection Agency could not exceed 8.9 million tons, and any allocation of emissions permits to a specific state, industry, or firm which caused the total to exceed that would lead to a proportional decrease in all emissions permits to all the involved emitters in order to meet the 8.9 million ton limit. This esoteric technicality

made it very difficult for the emitters and their lobbyists to fight for more emissions, since the cost incurred by one emitter while fighting «the ratchet» would benefit all emitters (147).

Finally, pro-market and anti-market politics are clearly too simplistic when it comes to understanding the creation of emissions markets, I would suggest. On one hand, you have a free market in emissions permits as the mechanism by which polluting firms can either pollute more or benefit by polluting less. Moreover, firms are free to choose the mechanism by which they limit their own emissions, and free to pollute more if they can afford to buy the permits from a firm that is polluting less. On the other hand, the market in emissions permits could only have come into being through direct government intervention, which served to mandate the total amount of emissions allowed, create the permits system by which firms pay or prosper from emitting more or less, and enforce the fines which compel firms to pollute only up to the point where their permits run out. So, if the emissions market works, free-market incentives allow firms to benefit from polluting less, while the market they partake in could never have been built by the invisible hand alone.

In closing, the title of MacKenzie's excellent book, *Material Markets*, deserves explanation, because it emphasizes the book's overarching theme, a theme which runs counter to much of the current discussion of the financial world. Financial experts and commentators often treat «money in abstract, mathematical, ultra-complex terms, without any reference to tangible human beings», in the words of financial reporter Gillian Tett⁴. MacKenzie emphasizes throughout his book that not only do financial activities have a po-

⁴ Tett, *Fool's Gold*. Quoted in: MacKenzie, «All Those Arrows».

werful effect on people's material existence, but that these activities are also carried out by people living in the material world. Financial workers exist in specific spaces, they develop specific bodily capacities as a result of their work, and the information they deal with is encoded and transmitted in specific forms by specific technologies. The book is replete with examples of the «embodied» nature of markets. One of the most striking is MacKenzie's discussion of «broker's ear», the unique ability to monitor, and if necessary respond to, verbal information being exchanged between other parties while simultaneously discussing complex technical matters over the phone. «When interviewing brokers at their desks», MacKenzie writes in a clear demonstra-

tion of the power of human contact to teach us things that could not be learned any other way, «I sometimes found “broker's ear” disconcerting. Someone could apparently be paying full attention to his conversation with me, when he would suddenly respond to a comment or question from five or six desks away that I simply hadn't heard» (12).

The fact that finance involves real people in real places dealing in numbers that, as with emissions markets, represent real things, and that it is not simply a mathematical shell game divorced from the material basis of human existence, is one that all inhabitants of the early twenty-first century should bear in mind.

Adam Lawrence

Material Markets; How Economic Agents are Constructed. Uploaded by. Douglas. When the historical sociologist Donald MacKenzie has always seen the potential of subtle and sophisticated scholars in the field of social studies of finance, MacKenzie started working in the budding field of social studies of science to explain the real problems that real human beings face in the social studies of science. Donald MacKenzie is Professor of Sociology (Personal Chair) at the University of Edinburgh. His books include *Do Economists Make Markets? On the Performativity of Economics* (Princeton University Press, 2008), and *An Engine, Not a Camera: How Financial Models Shape Markets* (MIT Press, 2006). Product details. Publisher : Oxford University Press; Reprint edition (March 17, 2019). Donald MacKenzie. OXFORD university press. CONTENTS. Acknowledgements List of Figures. 1. Introduction. 2. Ten Precepts for the Social Studies of Finance 3. Assembling an Economic Actor. with Iain Hardie. 4. Derivatives: The Production of Virtuality. 5. The Material Sociology of Arbitrage. with Daniel Beunza and Iain Hardie. 6. Measuring Profit. 7. Constructing Emissions Markets. 8. Conclusion: Opening the Black Boxes of Finance. Glossary.