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Origins of the Modern Concept of a Cashless Society, 1950s–1970s

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Introduction: Go from Your Country to the Land I Will Show You

The discourse of the future has been particularly important in organizational adoption of information technology. From the 1950s onwards technology companies, experts, consultants, and business professors sold new technologies to firms by presenting elaborate visions of a future world transformed by universal adoption of technology. Acceptance of these visions took place not just individually but also

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collectively, by industries and occupations. When technologies failed to perform as expected this could be characterized as a bump in the road to the future, rather than as a challenge to the inevitability of eventually arriving at the agreed destination. Once consensus on the future destination was reached, a variety of specific systems or approaches could be presented as a step toward realizing this future goal, making the future a banner around which a heterogeneous alliance of interests could gather. This, of course, would further strengthen the power of the vision itself. The argument for business adoption of future technology has generally been made in the future tense.

So where do these visions come from? Hunts for earliest speculative depictions of particular technologies often lead us to the world of science fiction. Jules Verne wrote about space travel, air travel, and long-range submarines decades before such things existed. H.G. Wells warned of the dangers of aerial bombardment prior to the First World War. As science fiction emerged as a distinct genre in the 1930s and 1940s its practitioners prided themselves on their scientific knowledge and skillful extrapolation. Arthur C. Clarke claimed to have been the first to conceive of a geosynchronous communications satellite while moon missions, space stations and atomic weapons were fictional commonplaces long before their actual debut.

However, readers and writers of science fiction were perhaps more interested in rockets and physics than they were in banking, economics, or organizational innovation. When a fictional society was cashless it was generally also a moneyless utopia, as with the payment cards used by citizens to spend their standard allocation of "credit" in Edward Bellamy's highly influential socialist novel *Looking Backward* (1888). Capitalism was the default social organization of American science fiction, but few authors put much attention into imagining its future.[1] By the 1940s many had adopted the term "credit" as the universal name for future currencies, including Isaac Asimov for his two main strands of work (the far future Foundation saga and the near future Robot stories). Usually, however, this functioned as a simple linguistic substitution for "dollar"

[1] Leading in some cases to inconsistencies, such as those of the Star Trek universe. See http://www.sffchronicles.co.uk/forum/16664-money-in-star-trek.html (accessed December 7, 2015).

and one reads of credits being slapped onto counters, flung to parking attendants, drawn from pockets, and the like. So for most authors the use of the term did not imply automatic processing of payments. A partial exception can be found in the early work of Robert A. Heinlein, whose interest in economics and the workings of capitalism was unusual among the science fiction writers of his generation. His early utopian novel *Beyond This Horizon* described a communications network spanning North and South America. An automated cash register, which he dubbed the "auto-clerk" would encode every sales transaction onto paper tape. These were aggregated and fed into a "huge integrating accumulator" (i.e. a computer, to use the term that had not yet been standardized) in the Department of Finance.[2] However the function of this machine was to make macroeconomic corrections to keep the economy running smoothly, rather than to maintain individual accounts.

In contrast, the vision of a "cashless society" appears to have originated within the world of business and moved only later into the realm of fiction. The genesis of the idea associates with the computerization of retail financial intermediaries. Banks on both sides of the Atlantic began to adopt computers and telecommunications starting in the 1950s. As early as 1954, business technology researchers and consultants in the USA started to discuss the possibilities of a "checkless society" where sleek, efficient, and safe electronic messages would replace cumbersome, costly, and easily-forged paper checks. Once the major banks digitized their accounts, they argued, it would be relatively simple to connect their computers over a telecommunications network, and process most routine payments entirely in electronic form. A few of them even predicted that paper notes and coins would eventually be replaced by a nationwide electronic funds transfer system (EFTS), activated by some kind of economic identification card, ushering in a completely "cashless-checkless society."

Note that the transition to a cashless society was usually understood as also requiring the elimination of checks even though these were the best established alternative to banknotes and coins in the 1960s and 1970s. Indeed, by the mid-1960s both "cashless" and "checkless" are used almost

[2] Robert A Heinlein, *Beyond This Horizon* (Reading, PA: Fantasy Press, 1948), 3–7. See also the discussion of economics and the role of government on pages 71–72 and 102–3.

as substitutes and often in the same sentence, such as: "Predictions of a cashless and checkless society are becoming widespread."[3] This was also the case in trade press reports whereas central bankers were more concerned with eliminating checks. Some referred to the "checkless society" or "checkless/cashless society" but we believe that these linguistic variations did not correspond to systematic differences in meaning but were different names for the same vision: the point was to remove the circulating paper from the system, whether that paper be personal checks or banknotes.

Figure 10.1 illustrates the variations in the use of the term "cashless society" by searching Google's library of digitalized books (Google's Ngram Viewer). This search suggests that the term appeared in use by 1959, peaked around 1980, and has remained more or less constant ever since. According to this database, the term "checkless" appeared at the same time and peaked just before 1975. Since then it dwindled until it became out of use. In comparison, the contemporary term "electronic payments" has become ever more popular in use. One can only speculate the reasons for this behavior but, perhaps, the negative connotations of

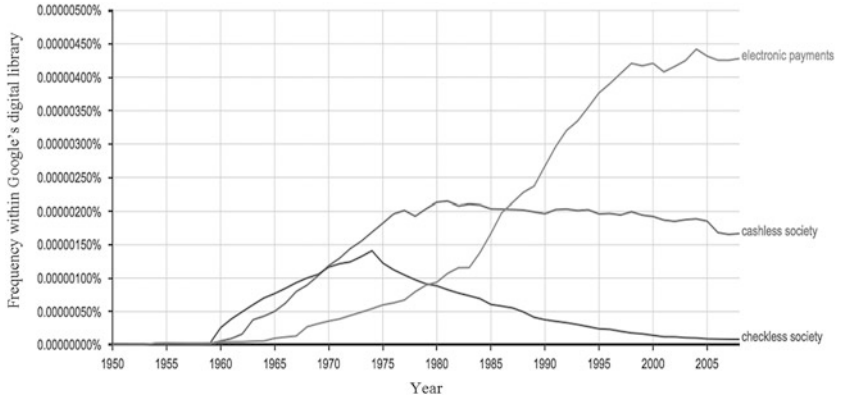

Fig. 10.1 Use of the terms "cashless society", "checkless society" and "electronic payments", 1950–2008

[3] Diebold Group. "Summary Report of a Survey on the Impact of Electronics on Money and Credit."

"cashless" has limited its use, personal checks are almost extinct outside of the USA and France, while the term "electronic" has a more modern, forward-looking ring to it. An alternative explanation is that towards the end of the 1960s the rhetoric started to shift to a "less-check and less-cash society" after the initial hype might have been deemed unreasonable.

Although the cashless-checkless society remained mostly a banker's dream throughout the 1950s and early 1960s, by the mid-1960s its advocates could make a persuasive case for the need to consider electronic replacements to paper checks. Over the decade, the volume of checks processed by the Federal Reserve had risen from 14 billion a year in 1955 to nearly 22 billion (about 60 million *each day*), and the projected rate of growth for the next decade was even higher.[4] Even with magnetic ink character recognition (MICR) and high-speed check sorters, the Fed was already finding it difficult to keep up with the explosive volume. This increasing volume was also incurring a significant monetary cost. At this time, all paper checks written in the USA had to be physically sorted, routed, and delivered to the issuing branch before the check was settled and final payment made.[5] This process incurred not only significant handling and transportation costs (estimated at $3.5 billion per year), but also "float" costs for the depositing institution until settlement was received.[6] Handling costs are per check, but float costs are per dollar, so any further increases in volume, or delays in clearing, would result in significant cost increases.[7]

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[4] Norris Lee, "Tomorrow's Checkless, Cashless Society: the Problems, the Solutions, the Benefits," *Management Review* (September 1967): 58–62. Another contemporary study estimated a similar trend but of different magnitude as it stated that approximately one and a half billion checks were cleared in the USA in 1939, and this volume increased to 6.5 billion in in 1950 and to 13 billion in 1960 (Boris Yavitz, *Automation in Commercial Banking*; New York, 1967, p. 11). Both these estimates concur in identifying a spectacular rise in check volume and activity, with no corresponding increase in the value of deposits, thus placing a severe strain on the US banking system.

[5] This remained true until the passage of the "Check Clearing For The 21st Century Act – Check 21" in 2004.

[6] While the check passed through the clearing system, which could take several days, the depositing institution had to pay interest on the deposited funds and often make some portion of those funds available to the depositor, even though the depositing bank would not receive payment from the check issuer until the clearing process was complete.

[7] These costs were also more pronounced in the USA than in other countries due to the sheer number of banks. In 1966, there were 14,000 banks in the nation, so the likelihood that a check needed to go through the national clearing system was higher than in countries with fewer banks per cap-

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Two actors in particular seem to have established the initial framing of the volume crisis in the number of checks to be cleared and promoted the concept of the cashless-checkless society as the appropriate solution. The first was John Diebold, who had early popularized the term "automation." His consulting firm, The Diebold Group, constructed several networked computer systems for commercial banks in the early 1960s, and began researching the more general impacts of automation in the banking industry as early as 1966.[8] Diebold himself also wrote articles in leading business journals, warning of an impending "transaction overload" and stating that "the 'cashless society' is no longer an option but a necessity…."[9] Although he acknowledged that there was "considerable vagueness" surrounding the actual details of how such a society might be achieved, he nevertheless argued that "some system must and will develop in which money [and credit] moves quickly and safely" around the world.

This vision won influential support from George Mitchell, a member of the Board of Governors of the Federal Reserve, who began warning bankers in 1966 of the increasing costs of processing paper checks, urging the banking industry to consider how "the computer can drastically change money and its use."[10] Electronic payments, he argued, would reduce both the handling and float costs, as transfers could be achieved nearly instantaneously. He predicted that the use of checks would disappear within "the discernable future, probably much sooner than most of

ita. At the same time the use of personal checks was much higher in the USA than other countries. In Spain, for instance, their penetration as a means of payment remained negligible even after the introduction of check guarantee cards in 1971.

[8] Diebold Group (1966)*Summary Report of a Survey on the Impact of Electronics on Money and Credit,* New York.

[9] John Diebold, "When Money Grows in Computers," *Columbia Journal of World Business* (Nov–Dec 1967): 39–46.

[10] George Mitchell, "Governor Mitchell Considers Tomorrow's Banking," *Banking* (Dec 1966): 33–34. In a parallel development, the narrative of cost reduction to justify capital investments around computer technology was quite common in the early and mid-1960s in several European countries. See further Bernardo Bátiz-Lazo, J. Carles Maixé-Altés and Paul Thomes, *Technological Innovation in Retail Finance: International Historical Perspectives* (New York: Routledge, 2010).

us expect," and that paper notes and coins would soon after be relegated to increasingly limited uses.[11]

Despite a lack of concrete details, Diebold, Mitchel and other early social entrepreneurs did help convince the American Bankers Association (ABA) to begin investigating the possibility of a cashless-checkless society in 1967. Dale Reistad, the ABA's Director of Automation, predicted that it was "nearly inevitable that the banking system…will reverse itself and develop a 'checkless' system" by 1980, soon followed by a drastic reduction in the use of cash by businesses and consumers.[12] He also formed a "Checkless Society Committee" to determine "if the American economy can really function without bank checks" and answer the question "What must the banking industry do today to prepare for the eventualities of the future?"[13] The committee invited equipment vendors to demonstrate their most advanced wares, and encouraged them to develop point-of-sale terminals capable of initiating transactions in electronic form. The committee also asked retailers to parley about strategies for transitioning towards a checkless, and then eventually cashless retailing environment. And most importantly, the committee held a number of workshops on electronic payments for bankers across the nation, establishing a common vision that would guide the actions of many bankers for the next several decades.[14] A computerization movement was well underway.

Inspired by this vision, as well as the potential to leap ahead of their competition, several banks in the late 1960s and early 1970s conducted cashless-checkless "pilot projects" to determine whether such a system would be technically and socially feasible. These types of tests were well-covered in the banking trade press, which helped to legitimize the idea

[11] George Mitchell, "Effects of Automation on the Structure and Function of Banking," *The American Economic Review* (vol. 56, no. 1, Mar 1966): 159–166.

[12] Dale Reistad, "The Coming Cashless Society," Business Horizons (Fall 1967): 23–32. The "reversal" he referred to was a move away from making the processing of paper checks more efficient in favor of completely electronic clearing.

[13] "Checkless Society Check," *Banking* (May 1967): 115.

[14] " 'Checkless Society' Moves Toward the Drawing Board," *Banking* (August 1967): 93. The chairman of this committee also used the banking and business trade press to sell the visionvision—for example, see Robert L Kramer and W Putnam Livingston, "Cashing in on the Checkless Society," *Harvard Business Review* (Sept–Oct 1967): 141–149.

of a cashless-checkless society amongst American bankers. Interestingly, advocacy for the adoption of computers and telecommunications tended to come from the middle levels of management, not the upper levels—a trend that was also evident within European banks.

By the early 1970s bankers on both sides of the Atlantic were also quick to see a potential connection between the machine-readable cards used in these pilot projects and the rapid spread of new bank-issued credit cards. Surveys from the time also indicate that at least 70 % of bankers believed that credit cards were the first step towards the cashless-checkless society, and that they were entering that business in order to be prepared for what they saw as an inevitable future.[15]

The vision of a cashless society spread with equal speed beyond the community of banking technology enthusiasts and into broader communities. In his 1968 book *2001: A Space Odyssey*[16] (developed in parallel with the film), Arthur C. Clarke depicted a telephone call placed from space thus: "Floyd, after checking that the Area Code for the United States was still 81, punched his twelve-digit home number, dropped his plastic all-purpose credit card in the pay slot, and was through in thirty seconds." (p. 51) Two years later the book *Tomorrow's World*[17] (based on a British television series profiling new inventions) included as an appendix drawn from the emerging field of "futurology" to provide a comprehensive timeline of the near future. Most entries now appear ludicrously optimistic (a Soviet Mars landing in 1987; fusion power in 1996; a polar ice city with a population of 500,000 by 1998). In contrast the entries concerning information technology reflect technological goals that were largely met, even if the authors underestimated the ability of old and new to coexist. Computer terminals were to enter the home by 1980, the last national newspaper would close down in 1990, a "world computer-information bank" was to be established in 1994, and in 2008 the "Bank of England withdraws

[15] David Stearns, *Electronic Value Exchange: Origins of the VISA Electronic Payment System* (London: Springer, 2011); The Diebold Group, "Summary Report of a Survey on the Impact of Electronic on Money and Credit" (1967).

[16] Clarke, A. C. and Kubrick, S. *2001: A Space Odyssey* (New York: New American Library, 1968).

[17] Baxter, R. and Burke, J., *Tomorrow's World* (London: British Broadcasting Corporation, 1970).

cash and notes in favor of a credit-card economy."[18] The show itself had featured a lengthy imagined depiction of this cashless future, bolstered with models of an ambitious real-time banking system under development by Barclays bank.

Within a five year period from 1965 to 1970 the checkless-cashless future had passed from a somewhat marginal speculation to a taken for granted part of the industry's conventional wisdom. No such payment system was in commercial operation, or had been proven in a pilot study of more than trivial scope. In fact the technology to realize the vision did not yet exist, as a series of failed projects in the financial industry during the late 1960s and early 1970s would demonstrate. Nevertheless, trade associations, technology suppliers, leading banks, industry commentators and consultants had all endorsed it as not just desirable but inevitable. In the language of the new institutionalism, a new and in some respects quite different kind of bank (with some core operational activities deleted and others added) had been successfully institutionalized within this organizational field as the future organizational form. Any bank that failed to endorse the new consensus would sacrifice legitimacy and be seen as conservative and marginal. Any ambitious young banker would be well advised to cast his (or occasionally her) lot in with the new order.

Fifty Years Later

The cashless-checkless society vision was still operating as a powerful force for mimetic isomorphism during the 1980s and 1990s, supporting the deployment of inexpensive point-of-sale (POS) terminals that could capture personal identification numbers (PINs) and transaction details, standardized machine-readable cards, and single-message authentication and clearing networks. By the turn of the millennium, the electronic payment services offered by banks in the USA were largely identical. Most every American bank today issues either a MasterCard or Visa-branded,

[18] The Tomorrow's World segment "New Banking" was broadcast on December 9, 1969 and can be seen at http://www.youtube.com/watch?v=ccqYKoLbT3I (accessed December 8, 2015).

universally-accepted debit card that could be authenticated with either a PIN or a signature depending on the context of use, and most can access a line of credit if there are insufficient deposits to cover the transaction.

Fifty years after it first emerged, the idea that clumsy and expensive-to-handle coins and notes could be replaced by efficient electronic payments (initiated by various types of plastic cards, chip cards or more recently, mobile phones) is still heralded as a tantalizing prospect for the twenty-first century. The argument remains that the growth in automated payment volumes (direct debits, standing orders and customer credits) together with increasing use of plastic cards (and/or mobile phones) will triumph as the premier payment method(s) and will substitute for checks and cash. The discourse of banking technology is still written in the future tense.

At the same time, the world we live in is similar to, and in many ways created by, the vision of a checkless-cashless society institutionalized within the banking industry during the late 1960s. Middle class Americans still have checkbooks and still carry cash, but they reach for them far less frequently than before. Major purchases are almost invariably charged to debit or credit cards, and to pay with cash is to mark oneself a potential criminal or terrorist (so much so that large transactions must be reported to the government). Small transactions are increasingly processed the same way. Fast food restaurants, parking meters, taxis, and even vending machines will often accept electronic payment. Most grocery stores no longer welcome personal checks.

In some other countries the process is more advanced. The UK will stop clearing checks in 2018. In Hong Kong, major transport operators launched in September 1997 a contactless card primarily for transport ticketing. In 2011, the "Octopus" card had over 11 million daily transactions of which about 40 % were non-transport, small value payments such as vending machines or fast food restaurants. In the European Union there is a clear trend towards a cashless and e-payment-based society among all member countries. Iceland is the most cashless society as measured by purchase value in shops, where only about 9 % of the turnover is paid by cash. Low cash usage is also found in Norway (28 % of all retail transactions), Finland (32 %) and Sweden (37 %). Surveys in Belgium and Holland report cash purchases ranging between 40 and 50

% of total value, while southern countries show levels between 60–80 % or even higher. Austria and Germany are also traditionally cash-based countries. Although all countries there showed increasing numbers of e-payments per inhabitant for the years 2002–2006 the actual variations between countries were very large. Holland and Finland seem to be the leading countries with only 4 % of transactions initiated by paper formats.

These statistics suggest that although there has been a move towards a cashless society in Europe, progress has been quite slow. Indeed, banknotes and coins remain a persistent part of everyday life. In 2015 they represent 9 % of the eurozone's economy and 7 % in the USA, according to the Bank for International Settlements. Even in almost cashless Sweden, banknotes and coins still make up 3 % of the economy. And in the UK, the Bank of England is of the view that cash is "resilient" and unlikely "to die any time soon."[19]

Further Reading

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