

From *Market Devices*. Eds. Michel Callon, Fabian Muniesa and Yuval Millo, Blackwell Publishing, 2007 (forthcoming, September 2007)

Scorecards as Devices for Consumer Credit: The case of Fair, Isaac & Company Incorporated

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Please cite published version.

Introduction

The object of interest in this research is called a ‘scorecard’ in the consumer lending industry, a calculating tool for selecting and managing consumers of credit¹. The technology’s name is an historical affectation since early commercial scorecards were literally a simple sheet of cardboard on which was printed a statistically based point distribution to be added up by the lender. Designed from an odds-based prediction of risk, early scorecards served as an aid to establishing whether credit should be granted to a prospective applicant according to the person’s responses to a series of set questions. Today there is no card as ‘scorecards’ are embedded in sophisticated software packages and computer interfaces that co-ordinate between back-stage statisticians, electronic data warehouses, risk managers and front-stage marketing campaigns. Beyond the disappearance of the card, how the insides of the scorecard are constituted has also undergone significant transformations since the first scorecards were developed in the late 1950’s, because the architecture of the algorithm or statistical model depends on the raw materials that have been used for its assembly. Without providing a full mathematical description of the scorecard, this paper will nevertheless show that it is crucial to look closely at scorecard production if its significance as a ‘market device’ is to be understood, since differences in scorecard design and implementation can significantly change how the technology constitutes markets through risk calculation.

Most academic writings refer to a 1941 report by David Durand (c1941), published through the National Bureau of Economic Research as the first known application of statistical methods to the problem of selecting credit applicants, but it is unclear how influential this work was on any systems that might have emerged in practice. What is certain is that quantified credit application screening, while far from widespread, were initiated independently in a number of retail, mail order, and financial credit services reportedly starting as early as the 1940's (Lawrence and Solomon 2002:44). As with other historical movements of statistics, techniques for treating the credit application problem probabilistically can be seen developing in the hands of practitioners working on the ground with a domain experience, as opposed to being developed and diffused by academic or professional statisticians. Spiegel's, the mail order giant based out of Chicago, to give one example, is reported to have had manual scoring in place in the 1950's, designed by a gentleman named Henry Wells. The Wells system involved teams of women working with boxes of punch cards and 42 pound Fridan calculators². Yet, the current credit scoring technology as it is known today did not simply evolve out of a repetitious natural process of local discovery. As I will argue, the fact that credit scoring practices were absorbed in a somewhat common form in the U.S. can be largely attributed to the perseverant commercial efforts of a firm called Fair, Isaac & Company Incorporated³ (Fair, Isaac), to move its tools throughout the consumer credit industry.

By focusing on the history of the 'scorecard' as a 'market device', this chapter will demonstrate how statistical methods, credit data and banking practices have been mutually adjusted and articulated in the U.S. to produce several concatenating market forms. In this view, the governance and economic effects of contemporary consumer credit are not issue of a singular calculative revolution but are, rather, largely predicated on the cumulative success of a number of scorecard-centred calculative arrangements. More importantly, it will be shown that while all of these devices arguably issue from the basic 'scorecard', the effects they generate on how consumer credit markets operate has been quite different depending on how they translate the immediate conditions under which risk quantification is being elaborated. Since the three devices discussed in this chapter – application scorecards, pre-screening scorecards, and bureau score(card)s – have been engineered and implemented by groups of experts working in specific locations, in particular at Fair, Isaac, I have sought out and magnified this firm into a locus of study. The company's first credit scoring product was the custom application scorecard, and their most well known product – the FICO[®] credit bureau score – is currently the standard metric in circulation for evaluating consumers in the U.S. market for consumer credit⁴. To focus on Fair, Isaac then, is not only a means to unpacking a theoretical point about the varieties of calculative effects that credit analytics models can have on markets, but it is simultaneously an exploration of the consolidated configurations that fuse the market for consumer analytics with markets for consumer credit together; it is an exploration of some of the actual apparatuses that most strongly shape the conditions of contemporary U.S. consumer credit consumption.

Credit scoring in the social scientific literature

Contemporary practices of credit scoring have already come to the attention of social scientific authors concerned with the rise of risk management in consumer finance. From the point of view of science and technology studies however, none of this work takes scorecard technology as its object of investigation *per se*, preferring to focus on the more general theme – the transition towards quantification practices. To demonstrate this point, it is worth reviewing three examples. In response to rational choice theories Alya Guseva and Akos Rona-Tas (Guseva and Rona-Tas 2001) have argued that scoring is a form of rationalization rendered possible only under the appropriate institutional conditions. They compare the U.S., the oldest credit card market, and Russia, a nascent market where little data on consumers exists, in order to describe how credit card markets (a subset of consumer credit markets) work differently depending on whether institutions that house and make consumer data available are in existence. Drawing on classic concepts in economic sociology they propose that in Russia, credit cards are distributed on the basis of subjective evaluations, on social networks and on ‘trust’ (i.e. demonstrable friendships, kinship ties and employment), while in the U.S., a mature market, institutions such as credit bureaus make calculative credit scoring practices feasible. The authors deploy Knight’s theory of uncertainty to conclude that in the absence of data collecting and data distributing institutions, credit markets must run under conditions of uncertainty, while in the presence of the right institutions uncertainty is transformed. This permits the rise of data driven risk management techniques.

Andrew Leyshon and Nigel Thrift (Leyshon and Thrift 1999) have also taken note of the enhanced role of business information derived from large-scale consumer data repositories, in retail banking. They have argued that such ‘databases herald the arrival of a new form of governmentality based on new practices of knowledge’ (Leyshon and Thrift 1999:453) encoded into software, and therefore rarely studied. According to these authors a ‘quantitative revolution’ in retail banking is allowing lenders to overcome the problem of ‘information asymmetry’ when dealing with prospective borrowers. As formulated in economic theory, information asymmetry occurs because borrowers ostensibly know more about their potential to repay a loan and it is in their own interests to reserve this information from the lender. Leyshon and Thrift’s claim is that under conditions of asymmetry, credit scoring is an attractive option since digital data analysis can replace a dependence on information coming directly from individuals. What a reorientation towards scoring does is to ‘enable strategists within firms to visualize the complexity of market segmentation’ (Leyshon and Thrift 1999:440) from which they can construct types of identities through data processing. The title of the piece alludes to the cautionary attitude of the authors: the analysis of ‘Lists’ through specialized software is said to make their contents ‘come alive’ in such a way that sovereign individuals are supplanted by the governing power of neo-liberalizing software and electronically managed data.

Most recently, Donncha Marron (Marron 2007) has discussed credit scoring in the U.S. as an emerging technocratic form of expertise that allows lenders to treat borrowers at the level of populations. Marron contrasts the inherent instability of risk measurement systems, which must be continuously refreshed to maintain their predictive power,

against a proliferation of scoring systems that is multiplying the types of risks at play in consumer credit management. For Marron, there is a searing contradiction between a) the epistemology of risk management systems – he refers to them as being in a ‘permanent process of failure’ because by definition statistical calculations are imperfect at the level of individuals – and b) what he calls ‘credit risk colonization’ – the ongoing process of situating the consumer within an increasingly complex spectrum of risk segmentations within the marketplace. With the rise of scoring, the credit industry is observed to have moved ‘from strategies of hierarchized avoidance by lenders to ones of polysemous engagement, from the treatment of risk as a cost to its deployment as a profitable opportunity’ (Marron 2007:105). If the article, in large part, gives the reader pause to wonder why such flawed techniques continue to prevail in the lending industry, the author points to the role of the state in sanctioning these methods, suggesting that there is a kind of elective affinity between credit scoring and a Keynesian rationality of economic governance that reached its height in the 1970’s.⁵

The pieces reviewed above all seek to decipher the effects that automated quantification practices writ large have produced on the consumer credit industry, reconfiguring banking and lending practices. Using scoring as a synecdoche for a larger movement towards risk management, each article captures an aspect of the profound transformations that digital mediation has induced on consumer finance as well as on the governance of consumers as subjects living within these markets. While the driving force attributed to the emergence of risk management techniques differs – the presence of institutions (Guseva and Rona-Tas), the impetus to overcome information asymmetry (Leyshon and Thrift), a compatibility of scoring methods with Keynesian rationality (Marron) are each invoked – what these authors do have in common is that they portray quantification as a kind of momentum sweeping across the consumer finance sector. A turn to scoring by economic sociologists seeks to capture what might be called a paradigmatic shift towards risk management in consumer finance that has accompanied consumer credit’s dramatic evolution over the last half century from an adjunct of retail into a booming free standing industry with circulating products (for example, the unsecured monoline revolving credit card⁶) all its own (Lewis 1992; Manning 2001). Yet although the current sociological work acknowledges the crucial role of calculation in performing this shift towards risk, so far there has been no concerted inquiry into the details of constructing scoring algorithms, their implementation into practice or the specific effects of their multiple materializations through time.

In an era that arguably is overwhelmed by economic discourses, calculation might well seem to be tumbling forward, relentlessly spreading like brushfire now that the laborious collection and digitization of consumer data is securely in place. From a distance, scores can appear to be amorously produced through the intuitive application of abstract, uniform and neutral mathematical methods to databases that have appeared out of a global information revolution. However, as historians and philosophers of statistics have aptly shown, each time statistical practices have been introduced to a problem in a substantive domain, expertise, networks of associations, technical objects and even new interpretations of probability must be formed to accommodate this extension (Desrosières 2000; Gigerenzer et al. 1989; Hacking 1975; Porter 1988). If statistical theories change as they travel, and if the places they go must be rebuilt and rearranged to fit to accommodate them in practice, then it is from the details of this

mutual refitting that novel calculative effects must emerge. In light of this, the details of how scoring systems are made, how they connect, co-ordinate, and interact, and most of all, how they evolve, should matter in how they have reformatted and reassembled the consumer credit industry through risk calculation. The research being presented here, therefore, draws upon the works cited above, but it also departs from them in several key ways. First and foremost, instead of treating data analysis as a set of delocalized methods or a generalized expertise, it will explore the consequences of treating credit scoring pragmatically as a set of concrete devices. Like Morgan's *Drosophila* flies (Kohler 1994), Edison's light bulb (Hughes 1983), or McLean's shipping container (Levinson 2006), credit scoring technology has also had a trajectory of innovation through implementation, modification, and dissemination.

Manufacturing custom application scorecards (1958-c1974)⁷

The company's humble beginnings in San Rafael, California are an intimate part of company lore. In 1956, having extricated themselves from the military and academic worlds, William R. Fair and Earl J. Isaac founded Fair, Isaac & Company Inc. in an apartment building with an estimated twenty four hundred dollars in capital. Smart guys and operations researchers by trade, they offered themselves as 'problem solvers' for hire, putting up for sale 'custom solutions' through the application of operations research techniques to civilian problems. It is important to note that their conception of a 'solution' was not a free floating 'idea' or even a 'method'. It was a material system, concretely embedded in paper, then in hardware, and later still with mass computerization, in software, to provide a business with ongoing information that might reduce the guesswork involved in making everyday decisions. Bill Fair, in particular, is remembered as having a strong aversion for what he referred to as 'blue suit consultation' because he felt that this did not deliver a clear value to the client. The pair remained adamant that the company's business was not to 'navel gaze and write papers' whose usefulness was untested and whose contents might never be realized. Until well into the 1990's an emphasis on 'tangible deliverables' fully installed and implemented was an important company hallmark. In addition to cards for scoring, things that would become considered as tangible deliverables included 'an automated packaged application processing software' or 'an estimate on a probability that somebody will repay based upon the information known on his credit report' (Senior executive A)⁸.

The company's first contact with credit cards appears to have come in the form of an invitation from Conrad Hilton to design, program and install a complete billing system for the newly invented *Carte Blanche* being distributed to the Hilton hotel chain's many guests. As the informally recorded story goes, when Earl Isaac arrived at the job, he 'opened a closet and found a pile of mail sacks full of payments that no one knew what to do with' (Internal history)⁹. It was not until later, when the company took on its first employee, Earl Follet, that they began concerted work on the problem of customer selection in consumer credit. For their first initiative, letters explaining the concept were sent to fifty of the nation's top consumer credit lenders, a range of both banks and finance companies. In an oft repeated story, only one, American Investment, a finance company based out of St. Louis, Louisiana bothered to respond. By 1958, Fair, Isaac had installed

the world's first commercially produced credit scorecards, one developed for the company's population of customers in the city of St. Louis area and another for the rest of Louisiana State. By 1960, they had developed a comprehensive system for use in the company's 800 operations nationwide. Although they would continue to dabble in other kinds of projects for another decade, from the late 1960's onwards, Fair, Isaac would eventually turn away from the general sale of operations research solutions towards the specific problem of application screening in consumer finance.

As the story goes, because the first Fair, Isaac credit scoring systems were to be deployed in small towns in rural America at the point of sale, they had to be simple enough to be understood by people with no knowledge of statistics and no access to calculators. The choice of statistical method as well as the card format for presenting the results in a tangibly deliverable and useful form to end-users, were both worked out 'in the field'. As scoring was to be done manually by retail clerks addition *in situ* was possible but multiplication proved more problematic. One third-generation Fair, Isaac analyst (who joined the company in the early 1980's) recounted the history as it was handed down to him as follows: 'the form of the model had to be simple enough that somebody could just ask a question, look up something, write down a single number, write down the question, look up something, write down another number, at the end of which, draw a line and add it up' (Senior R&D analyst). '[I]t is kind of ironic isn't it', he marvelled, 'that the most sophisticated credit decisions these days are easily made based on a model form that started from a small finance company in the South.' (Ibid.). The original system was carefully designed so that the answers provided by the credit applicant to a set of questions (in person or on an application form) could be classified in the table printed on the card and the associated point values added up to produce the 'credit score' – a calculation of the empirically assessed odds that a person with a particular combination of characteristics, compared against the known outcomes of a lender's population of clients, would default on a loan.

The basic Fair, Isaac product was an 'application scorecard', a printed card that served as a calculating tool for quantitatively evaluating and selecting applicants for credit above whatever risk threshold (i.e. cutoff score) was fixed by management. Assuming that what happened in the past was indicative of what would occur in the future – insofar as the past was captured within the confines of a lender's administrative files – scorecards gave lenders an easy-to-use black box for numerically summarizing the recorded behaviour of previous borrowers in their portfolio in support of rapid, forward-looking decision-making. According to statistical theory and confirmed by Fair, Isaac's empirical tests, the predictive utility of a scoring model was deemed to be intimately bound to the parameters of the data set from which it is modelled. This means that scorecard development was dependent on the availability of data of adequate quality, and the resulting scorecard's predictive utility was considered limited to the specific population and credit product represented in that data. In more sophisticated terms, since 'the model for x could not be used for y' the initial product for sale was a custom-made statistical model of a particular finance or mail order company that rendered visible the past performance of the extant customer base¹⁰. Early scorecards mechanically replicated the choices that had been previously made by a lender, but refined this replication by sorting the population into statistically salient groups which were now assigned different odds of repayment as a scalar quantity. Using the tool, the operation could either

maintain volume while decreasing the rate of default, or could increase production while keeping default rates the same as they had known them before. The modest ‘lift’ offered (in industry speak) was therefore relative to the texture of the existing operation.

The implementation of scoring and the shift towards quantified risk-based management has demanded significant organizational changes (Sardas 1993) – for example, disciplining lending operations to invest in the forms (Thévenot 1984) required for routine, systematic, and later, electronic data keeping. As late as the mid-1970’s however, this did not as yet exist in finance companies, and Fair, Isaac worked with paper based records. Early scorecard production was a labour intensive endeavour involving the transportation of human expertise and material resources out into the field and then all the way back across the country to the ‘centre of calculation’ (Latour 1987) in San Rafael. Data collection trips involved travelling to suburban strip malls to collect samples of ledger cards and other information tucked in the hefty files of finance companies, the main type of client early on. As one retired executive vice-president describes it, ‘[I]n those days, every shopping centre had a loan office, and you’d go in and get an instalment loan [...]. They kept everything on little cards, all handwritten’ (Senior executive C). System construction was limited to the physical availability to access consistent paper records from which to draw a statistically adequate sample. The key scientific and organizational figure in the early process of production was called ‘the analyst’. It was their job to figure out, on the ground, how best to constitute a sample of cases that could be used to build a statistical model that would adequately discriminate between the performance of both ‘good’ and ‘bad’ borrowers.

The analyst was responsible for making numerous strategic decisions that would affect how sampling was to be achieved out of variegated and imperfect conditions. A few examples can serve to illustrate. Case selection was achieved by an imperfect method of sampling, usually by selecting a couple of offices deemed representative by management of the overall operations of the finance firm. Within these offices, each file selected had to have a lengthy enough history from which to extract two ‘snapshots’ of data. These snapshots were used to establish a statistical relationship between factors assessed at the point of application (first snapshot) and subsequent outcome (second snapshot). From the point of origination, the interval length adequate for declaring a file definitively ‘good’ (as opposed to ‘still good’ or ‘not yet bad’) was therefore of critical consideration since its status might change if the second snapshot was taken a few months later. What this means is that the very distinction between ‘good’ and ‘bad’ was flexible. That a case was considered grievous depended on how ‘bad’ behaviour was defined (i.e. one missed payment, two missed payments in 12 months, not paying at all for three months...) and policies on what was considered an account in default varied between firms. And then there was the basic question of sample size – determining just how many files, from how narrow and recent a time period in a firm’s history were necessary to build a representative model. While the credit analytics industry has a standardized ways of approaching these design questions today, the minute details of design were all once open issues that required active solution seeking. Analysts in the process of inventing scorecard calculation constantly faced questions about ‘where to draw the line so that we got the most robust credit prediction possible’ (Bureau scoring vice-president).

It is striking that in conversations with the first generation of analysts, the most memorable part of early scorecard projects is sample collection with little or no mention of the sanitized ‘smart’ work usually associated with statistical analysis. Far from the idealized image of the ivory tower, doing scientific work at Fair, Isaac could involve fairly intensive manual labour. Even a freshly graduated star PhD student of Robert Oliver¹¹ coming out of Berkeley’s IEOR program could not escape the mundane task of hauling boxes of data out of dusty storage rooms, some of which could be located in some ‘pretty unsavoury places’. In a small company, when something had to get done, everyone was expected to lend a hand and to help out. It was not uncommon for spouses to travel with analysts (and in at least one case a son) to aid in the grunt work of collecting the data that kept the company going. Once in the field, selected files were laboriously photographed by hand, page by page. ‘When we got a project, the idea was, you’d go out and you’d have microfilm cameras’ (Senior executive C). The film was shipped all the way back to the central office in California where it was developed and printed out on long rolls of paper that had to be hand torn and re-stapled to resemble the original files. Incidents of accidentally destroyed records, illegible copies, incomplete documentation, broken cameras, inaccessible records and even neckties caught in microfiche machines, all added to the challenge of assembling a workable sample, and converting it into a digitized information infrastructure.

Once transported, the reassembled credit application information had to be coded into usable data. As Bill Fair himself would find fit to record years later, ‘Data entry was demanding and tedious in the extreme. [...] Getting a deck of cards ready for a run was a matter of weeks of work counting the time it took to encode it before keypunching could begin’ (Informal memoir). This was a two stage process performed by housewives working at piece rates of a few cents per sample application out of their homes. The meticulous work of ‘the homecoders’ was the backbone of the scorecard since it was their job to interpret the writing on the ledger cards and reliably convert it into the standardized numerical codes demanded by the analytic process. Codes were transferred to paper, reviewed for accuracy by a woman assigned as a ‘checker’, and subsequently transferred to punch cards so that the data could be read by machine. As one of the women who headed coding described it, a punch card machine is ‘like a typewriter, you put your IBM cards in – they’re about five by seven – and you have to sort them. If we punched a certain digit that would mean [occupation]: housewife’ (Senior coder A). Because of its repetitive and mechanical nature coding was considered a mundane task in the company. Yet upon scrutiny it is clear that the work that was done involved its own form of skilled decision making that was far from obvious. A former coder made clear to me that ‘[t]here was some interpretation on all of this. You couldn’t just copy it. That was the hard part, coding it. [...] They didn’t just say he’s been three times thirty days late in nice English’ (Senior coder B). Another drew attention to the fact that, ‘We had to read these logs of payments and every company didn’t do the same thing, and we’d get so confused’ (Senior coder C).

The rise of large-scale digital data repositories has certainly advanced the cause of credit scoring, but their absence did not by any means deter early Fair, Isaac from building scoring systems. In spite of formidable logistical challenges, the choice of credit scoring as the company’s main business was a pragmatic one. A retired executive vice-president stated that the company focused on scorecards having ‘looked around in their

business and figured out that credit scoring was something that could be packaged as a solution [and] sold over and over again' (Senior executive A). When asked what the major steps to the success of the company were, another former executive replied that 'one is the innovating of a product, the other is kind of rolling it out into an industry' (Senior executive C). His key point was that 'there was a very routine nature in how we developed these [systems]' (Ibid.). In the early days, 'a big part of projects was actually getting the data into the model. ...80% of the task was that a lot of what was coming [to us was] on paper and had to go through data processing and so on' (Ibid.) Data processing involved figuring out its contents, stabilizing relevant codes, computerizing selected fields, and sifting through to find variables suitable for scoring models. A shared 'mindset' among company members, associated with operations research, 'of having a problem and trying to reduce it to a framework of a model in which you can then, basically, replicate the solution, with different kinds of inputs' (Ibid.) is said to have been important to innovating scoring as a refined process out of the melee of papers and analytic choices. '[T]rying to standardize how we developed the scorecards [...], that's where the innovation came in' (Ibid.). This is how Fair, Isaac transformed a fragile, location-based practice of custom statistical modelling into a commercially viable process of scorecard manufacture.

However, the engineer's penchant for standardization towards the constitution of a 'mass production' product should not overshadow the fact that each project continued to be a delicate custom job. Orchestrating client specific calculations depended on each firm's internal organizational structure, the quality and content of the data kept, and the co-operation of credit managers and other key personalities. Analysis began from scratch in that it started with a fresh data collection, cleaning and classing¹² and was limited to the information that could be gleaned given how the application forms were designed and how the records had been kept. At an approximate development cost of \$32,000¹³, the final algorithm was considered non-transferable and relevant to only a specific client-lender's business; and fortunately so for the conservation of Fair, Isaac's business proposition. Even if common factors repeated themselves, the score weights associated with them and the segmentation into multiple scorecards serving sub-populations¹⁴ was specific to the firm from which the sample was drawn. It is important to note that the specificity of scorecard to population meant that there was no single calculation of a person's odds of default, since the measure of this changed depending on the previous performance of the population against which an applicant's data was being run. The score of an applicant's risk which appeared only ephemerally at the moment of application, was the risk faced by a particular lending firm based on their previous experiences. In other words, risk was not stabilized in the person and did not travel around with them, but it was attached to the multiple calculative models cropping up across the credit industry.

From application data to credit bureau data (1980-c1985)

At the end of the 1970s, crucial developments in the U.S. credit analytic market caused Fair, Isaac to shift away from a market for custom scorecards towards a market for credit bureau based products. In the U.S. the credit bureaus are data gathering

organizations that have traditionally serviced the numerous small banks, finance companies and savings and loan associations scattering across the country by providing subscribers with access to first negative, and then positive repayment information on borrowers, as well as on bankruptcies, judgments, voter registration, and credit account histories across a number of industries. From a smattering of regional ‘mom and pop’ operations the bureaus have grown historically through a process of consolidation over the last century. At the end of the 1970’s there were only five major operations remaining with somewhat regional coverage: CBI, Chilton, Pinger, Trans-Union and TRW. By the end of the 1980’s these had been reduced to the three umbrella operations with near national coverage, known today as Trans-Union, Equifax and Experian¹⁵. From the point of view of people working in consumer analytics the bureau business is ‘intellectually nowhere near as interesting a business as Fair, Isaac’s!’ (Senior executive A) The original business model of the bureaus did not involve analytics as there was no analysis for sale. Traditionally they had received the data from lenders, dug it up from public sources (i.e. newspapers, public notices, court proceedings, and even by soliciting neighbourhood gossip (Black 1961)) and then aggregated and distributed it, sometimes by simply giving information to inquiries made by phone. They did all of this without considering the statistical meanings that might be made of its contents.

In the late 1970’s, the Fair, Isaac team came to appreciate that the rich public record data compiled in American credit bureau reports might be utilized to develop an alternative kind of scoring system to the ones they had painstakingly been producing from internal data. Former head of sales, O.D. Nelson, is commonly given credit for importing the idea of building scorecards exclusively off bureau data, having been inspired by a client contact at First National Bank of Kansas (Informal history). Based on a conceptualization of this client’s suggestions, the first product using bureau data alone was named ‘PreScore’. Original PreScore did not disrupt Fair, Isaac’s tried and true process of production. Just as with the application scorecard, it was a custom product processed through data entry and their proprietary statistical analysis programs, only the outcomes was a scorecard that allowed a lender to produce a score and to make decisions with only knowledge of an individual’s commercially available bureau data. Interestingly, what this idea did overturn was one of the company’s strongest sales points. For some time Fair, Isaac had been pushing its systems on the grounds that these might allow lenders to avoid the costs incurred by purchasing credit reports. They had encouraged this by designing scorecards so that it was possible in some cases to meet a critical numeric threshold before the information furnished by the credit report became a necessary contribution to statistical discrimination (Viewpoints 1980 4:4, 3)¹⁶. At an expensive two to three dollars a report, ‘This was major savings. Sometimes it paid for our development’ (Senior analyst A). It is not surprising, then, that the bureaus regarded Fair, Isaac as distinctly unfriendly.

At the advent of PreScore, bureau data was already familiar to Fair, Isaac because the files collected for the custom application scorecards had included information from ‘credit reports’ lenders had purchased and whose contents had generally been taken into consideration. Although they had had no direct contact with the credit bureaus, Fair, Isaac had worked attentively with the consumer credit reports purchased by lenders. For years, they had been including characteristics drawn from these reports into custom scorecards, although they had strictly limited its quantity because of the costs incurred by

having the coders enter superfluous data. The five simple variables that Fair, Isaac had been drawing from the bureau reports were: time in file (age of the record at the bureau), number of satisfactory ratings, number of inquiries, number of 'minor derogatories' and number of 'major derogatories'. So to begin the development of the PreScore product the coders were asked to significantly increase their efforts. One former coder remembers that during this period 'We got into doing specifics on credit reports where we copied the tradeline information' (Senior coder D). 'I went line by line,' she vividly recalls. Now, for each and every tradeline, that is, bank loan, mortgage, or credit card on file, they coded things such as the date opened, the maximum line, the current balance, and the delinquencies, such that eventually, the women 'had interpretations for how to interpret each bureau: thick books' (Senior coder D). Expanding amount of bureau data under consideration made hundreds of new variables possible. Assisted by the coders, the analyst responsible for designing the first PreScore products says he 'was able to [analyse] things like the tradeline with the highest use of the line, for example. So if on one tradeline you use 90% [VISA], but on the other you use 95% [MasterCard], is this predictive? [...] We'd never tested that before!' (Senior analyst A)

The rise of credit cards had expanded Fair, Isaac's business from the less prestigious and credit oriented finance companies, mail order firms or retail credit operations, towards the credit conservative banks. So the primary use of custom PreScore, as the name implies, was to pre-screen a bank's existing population in order to launch an unsolicited, promotional credit card offering¹⁷. The practice of pre-screening for bank cards using bureau data was not new at this time. In the 1980's there was a 'very large industry of going out there and just mailing millions and millions of credit card offers' (Senior analyst B). But the way pre-screening was being carried out was based on exclusionary 'knock-out' rules that were extremely rigid and restrictive. An R&D analyst described the process in a 1986 newsletter article. Banks, he wrote, would submit a 'long list of absolute requirements, and if any one of the conditions is not met, the prospect [was] eliminated from consideration' (Viewpoints 1986 10:3, 1). In other words, '[t]he way that rules work is that binary rules are very exclusionary. You chop off big parts of the population [...]' (Senior analyst B). The analyst concluded that '[a]lthough credit criteria do a good job of rejecting undesirable prospects, they also reject many good candidates' (Viewpoints 1986 10:3, 1). As with application scores, by weighting characteristics in the file PreScore shifted the way people were selected away from a simple yes or no, towards a linear gradation of classes constructed around empirically assessed odds-predictions which lenders could – sliding up and down the scale at will – parse out and treat differently. This means they could do more than focus on deciding who to reject. Now, they could experiment with and adjust how they were going to accept.

Relying exclusively on bureau data meant that the lender did not need to wait for applications to trickle in and get sorted to identify prospective borrowers one by one. To begin building 'a market' they could access their existing clientele's bureau information and filter this information through a custom made PreScore scorecard, effectively collapsing the credit screening process into a genuine marketing function. If the file scored above the risk threshold the campaign was aiming for (and this could be sliced in multiple ways), the person could swiftly be mailed an offer for the credit product being promoted. Unlike rules which rigidly reproduced decision making through rejection,

PreScore proved that it was an effective calculative device for imagining an elastic credit market whose ‘performance’ or ‘enactment’ was placed within the grasp of lenders. Instead of waiting patiently for individuals to identify themselves into potential customers and to express a desire for credit, this system rapidly placed the possibility of credit cards into the hands of individuals whose likelihood of default on their repayment obligations could be calculated in advance as low enough to be acceptable to the lender. At first these offers occurred within the intimacy of a banking relationship, but soon, as the bureaus started generating lists and the finance industry warmed up to the tool, pre-scoring opened up the possibility of offering credit in the absence of a previous banking or lending contact. Thus, the scores from bureau data impelled lenders to ‘consider this whole new population which they don’t know anything about’ (Senior analyst B). In a dramatic reconfiguration of agencies it was now lenders and not borrowers who initiated the economic transaction surrounding consumer credit; it was now lenders not borrowers who expressed desire, initiated calculation, and could be said to hold an active advantage based on information.

PreScore was not without its own implementation issues. Lenders with a national reach who resorted to many bureaus to accommodate regional differences in their data holdings were required to purchase multiple PreScore cards. This was not an attractive proposition where the scorecard was the basic unit that was priced — as it made sense to do in a custom driven business model. The R&D analyst assigned to the project attempted to build a PreScore system that could accommodate data from any of the bureaus. This proved to be impossible because he soon found that ‘[t]he characteristics were not the same across the bureaus and the contents of some of the fields did not correspond’ (Senior analyst A). That is to say, the ways the bureaus kept the data resulted in fundamental incommensurabilities (Espeland and Carruthers 1991). It was during this period that Fair, Isaac abandoned — but not without a struggle — their long held ideal that each statistical system needed to be a custom job in order to be a quality system. Again at the behest of clients, they agreed to produce a ‘generic’ PreScore product, based on a generic sample of bureau data, one corresponding to each of the bureaus’ data sets. Instead of making custom scorecards using the bureau data found in the files of their clients lenders, Fair, Isaac approached the bureaus for a representative sample of data which they received already digitized and stored on magnetic tapes. The generic scorecards, now embedded in software, were programmed directly into the bureaus’ infrastructure which pulled and processed the relevant data in batches for the lists of prospective customers submitted at the lenders request.

Multiple users scoring bureau files off a generic scorecard linked to a particular bureau was more than a new data source or a new product — it introduced the company to a veritably new way of doing analytics business. The ‘product’ was no longer ‘the scorecard’. Now, it was the use of a scorecard implemented at the bureau. ‘[F]or Fair, Isaac it was a breakthrough and a business model because we didn’t have to incur the labour of every custom project’ (Senior executive C). That is, they neither had to master the idiosyncratic qualities of locally constructed data sources for each new contract, nor worry about data entry or data cleaning. Moreover, they were now in a position to offer an empirical system to lending outfits that were too young or disorganized to have statistically significant data of their own, or too small to afford a custom model. The slippage away from the cherished philosophical principles held by the founders out of

both scientific and business convictions, was therefore three-fold. First, customization lost its fundamental importance. Second, scorecards gained the potential to be transferable. And finally, and most importantly, risk – although still attached to the model and the dataset– was detached from firm specific customer populations; in the absence of any individual initiative, it could be called up and materialized by lenders, at will. Stated sanguinely, the product’s overall effect was to start making ‘credit available to people who probably did not have the nerve to walk into a bank and ask for a credit card’ (Senior analyst A). More polemically, it might be said that the device began putting the option of credit cards in the way of people who could not have had, until then, any use, desire or preference for them. In other words, it subverted their role as service requesting customers, and positioned them to act as product selecting consumers.

The FICO[®] bureau scores and the circulation of consumer credit risk (c1986-1991)

The rise of ‘bureau scores’ pushed the concept of building scorecards out of bureau data to a whole new level. To produce true bureau scores, a complexly segmented scorecard operates inside the bureau and the analytic products sold are neither scorecards made from static application forms, nor the use of a scorecard to produce risk estimates corresponding to compiled lists of selected individuals. Instead, what circulate with commercial value are the discrete *scores* emanating from the generic model. Scores can be calculated for all bureau files fitting the criteria demanded by the model (known as ‘scoreable files’). In developing consumer credit markets the bureau model of risk assessment is theoretically considered to be the most economically desirable, because it ostensibly promotes open competition between lenders by providing uniform access to a set of information on a large number of consumers. But in attempting to start an idealized version of such a system from the ground up, as if to replicate U.S. market conditions, what is often overlooked is the idiosyncratic way in which the American bureau system has come into being, and some of the particular effects of how the score product and the market for scores has been configured by Fair, Isaac. Somewhat ironically, Fair, Isaac did not pioneer the bureau scores as they were not the first third party provider of analytics to begin working directly with the bureaus. But by business fiat they created an epistemological machine much bigger than just putting scorecards into bureaus: they created the illustrious FICO[®] scores.

A business model of selling scores instead of scorecards may have meant generating continuous streams of revenue on a usage-based rather than fixed-price custom product, but unlike custom systems it provided a very limited number of opportunities – five later reduced to three, to be exact – to set up productive systems. So in addition to rethinking the bureau data (yet again) and engineering an intricate multi-scorecard system capable of fitting national level data, Fair, Isaac also had to leverage decades of accumulated social capital in the service of exploiting competitive tensions between the bureaus. Thus client demand for a Fair, Isaac offering is said to have become of the utmost importance leading to a ‘snowball effect’. Having provided custom scorecards to nearly every lender of any importance in the country, and having single-handedly created the market for consumer credit analytics in the absence of competition

for the better part of twenty years, Fair, Isaac had become a recognized branding that lenders associated with sound expert products of high quality. Since the bureau's clients were also Fair, Isaac's clients, 'the boys' purportedly 'went to the CitiBanks and the AMEXes and Chases of the world and sold them on the idea of scoring the bureau data (Informal history). These customers, in turn, went to the credit bureaus and said 'You will code this in, of course, won't you?' and the bureaus really didn't have a lot of choice' (Vice-president A). As it is pithily told today, '[O]nce some of the largest lenders started buying these scores, then the bureaus would supply the scores [or] they would say well, you don't have the FICO score so we can't do business with you' (Ibid.). When TRW infamously attempted to back out of contract negotiations at the last minute, presumably to favour the promotion of an in-house product, it was client threats to abandon them as a provider that forced them back to the table.

In 1991, Fair, Isaac consolidated joint ventures to maintain a scorecard within each of the three remaining bureaus. The official product name for the generic bureau score was different at each of the bureaus because they are technically and scientifically different calculations of risk. The underlying model was tailored to the specificity of each bureau's data and the scores were distributed from distinct production partnerships. Nevertheless, any score produced by a Fair, Isaac algorithm at a credit bureau, including the many industry specific scores that have subsequently been developed¹⁸, has come to be known in industry speak as a 'FICO score'. This is more than a symbolic elision. It is the effect of several fortuitously converging processes of 'product qualification' (Callon, Méadel and Rabeharisoa 2002), qualifications that actually generate the important analytic properties of these scores which distinguish them from other calculations. First, the FICO[®] scores hinge on a contractual situation, on keeping what is known as the 'tri-bureau solution' intact. Until very recently, Fair, Isaac was the only fourth party provider with access to all three bureaus¹⁹. As Fair, Isaac discovered, maintaining this delicate situation has meant implementing the technology at each bureau without disrupting the competitive structure within the existing bureau market. The vice-president in charge of negotiating with the bureaus admitted that, 'We didn't really set out in the start to do that when we got started, but once we got involved it became clear that was what we should do. And it worked' (Senior executive C). Fair, Isaac developed a strategy called 'the centre of the pasture'. The idea has been to never favour any bureau over the others and to invest in keeping the playing field even. Thus, 'the typical way to proceed when we had an innovation involve bureau data was we worked just as hard as we could to get one bureau to be the guinea pig. We'd say well we can offer you a lead in the market place if this stuff works' (Vice-president A). Once a new development was made with one bureau, an equivalent would be offered to the other bureaus as well, smoothing out and equalizing the field.

The second element at play in the unification of the FICO[®] is the result of a process of re-branding and marketing. In the face of all this bullying by its clients, the bureaus had an understandably reluctant attitude towards this parasitic new-fangled score product. It was Fair, Isaac that 'had to sell the scores to the end users. Frankly if we didn't do it the bureaus were never going to do it for us. So, we went out, and really sold it' (Bureau score analyst). Once the scorecards were designed, the work was only beginning. Just as with application scorecards, the introduction of a new risk management tool in the form of scores involved reconfiguring user institutions from the

inside out. Personnel at the financial institutions as well as at the bureaus had to be trained to accommodate and integrate bureau scores in practice. '[S]o there were road trips with [the bureau] sales people around the country. At different stops we'd go from city to city around the country in partnership [with a given bureau]' (Bureau score analyst). In light of Fair, Isaac's omnipresence behind what were all clearly 'their' scores, even if manufactured at separate bureaus, it was only good business sense for them to start re-appropriating them under a common brand name. The final and most effective force of product unification results from a feature of product design. Ensuring maximum competition between the bureaus has meant minimizing switching costs for score users. Fair, Isaac used identical segmentations in all three algorithms and 'scale[d] the scores in such a way that the same number was associated with the same risk level no matter which bureau was used. And that turned out to be a big idea' (Bureau scoring vice-president). A big idea because this rendered the scores sold from the three different bureaus, all on log-odds scales of 850, into virtually interchangeable pieces of information from the point of view of the end user.

The effects of free floating bureau scores on the consumer credit market have been manifold. Because the data at the bureaus are constantly being renewed, bureau scores are ongoing, responsive measures that are frequently recalculated. They have been put to many more uses than just application and simple pre-screening, inserting themselves into mortgage origination, portfolio management (i.e. adjusting line limits, assigning accounts to collections strategies), experimental design (i.e. testing credit product strategies on statistically identical groups), and perhaps most importantly, risk based pricing (i.e. making credit products with different promotional terms and interest rates for different market segments). In addition, they have given rise to a whole new category of financial services companies and banks that offer credit products to consumers through co-branding strategies while they themselves maintain no retail fronts (i.e. MBNA prior to its merger with Bank of America, Capital One, or GE Capital etc.). In an information-based, expert-driven industry of lending, the equivalence of a person to a commensurate credit product has to be statistically calculated. With the diminishment of personal banking relationships and the quasi-disappearance of application forms for credit cards, to access basic credit in the U.S., therefore, an individual must have a commercial score rank, otherwise their value is no longer institutionally visible or 'evaluable' to lenders. It is in this way that the structure of the market for commercially available consumer scores simultaneously constitutes the population of 'credit consumers' and consolidates a market for consumer credit as a fluid transactional space; it transforms a patchwork of markets for consumer credit into 'the market' which can be differentially segmented and competed for.

A more subtle point, perhaps, is how the FICO[®] standard has acted to objectify risk. Freely circulating bureau scores have exploded consumer choice by offering multiple financial institutions the possibility of simultaneously viewing the consumer market and the individual consumers in that market in exactly the same way. From a pragmatic point of view, they therefore act on the 'same' market, a co-ordination effect that has intensified direct competition, amplified production, and encouraged the manufacture of mass credit offerings. Although Fair, Isaac was unable to create a set of genuine statistical standards (i.e. by merging the datasets into a single national population), the *de facto* standard that results from the achievement of a unique market

position has proved every bit as robust in its effectiveness to travel and act as a universal metric. At the level of the aggregate, the common scale effaces the differences imposed by statistical theory given the dissimilarities in the datasets and the data retrieval mechanisms underlying each supplier. If custom application scorecards made risk relative to the previous choices of multiple lending agencies; if generic pre-screening generated risk at the level of bureau data; then diffusing tri-bureau scores have dissolved it from any firm association with calculative apparatuses. In circulating everywhere, in appearing as the same kind of number, in being perpetually recalculated, consumer credit risk calculation is no longer anchored in particular moments or in specific places. As such, the synchronic variations in the three bureau scores for each person appear to be errors in measuring some intransigent underlying quality, and their diachronic variation becomes solely attributable to changes in consumer behaviour (even if this is thought to be affected by macro-forces). It is through the FICO[®] that credit risk in the U.S. can take on the ontological firmness of being a calculable personal property, rather than being a relative value, constituted and affixed to the person *through* calculation.

Conclusion: Multiple scorecard configurations, multiple market forms

This chapter has sought to anchor credit scoring within the material history of the scorecard in order to draw current understandings of the rise of risk calculation in consumer finance back to its humble beginnings. It has argued that a full grasp of the practice of credit scoring means moving beyond, on the one hand, the presumption of a static textbook theoretical understanding of quantitative methods for decision making in finance, and on the other a separate account of a passive set of conditions (i.e. the constitution of mass databases²⁰) conducive to the application of these theory. As work in the anthropology of calculability has shown, it takes material and social effort to produce spatial practices appropriate to calculation (Callon and Muniesa 2005). This means moving towards an analysis of credit scoring as the result of a process of economic production that has been able to achieve an articulation between theory and circumstances, between statistical practices and data, by constantly rearranging the world through active perseverance. While not all of the innumerable tools available to contemporary consumer credit risk managers stem from the Fair, Isaac scorecard, nonetheless the company is an important locus of investigation for tracing the practical innovation, differentiation and expansion of credit scoring technologies. Custom scorecards originally manufactured from a single commercial locus and diffusing outwards in multiple arrangements – this picture offers reasons to move beyond treating risk management as a uniform, abstract movement.

This is not to deny the genuine proliferation of scoring that is occurring from multiple loci today. Credit risk managers and marketers are quick to point out that the FICO[®] is only one part of the complex machinery of interconnected calculative tools they work with (i.e. internal custom scoring systems interact with commercial scores). Against the constant introduction of new analytic apparatuses, the FICO[®] is slowly sinking into the background. It is discussed more for the cumulative costs it incurs than for its conceptual novelty, as competitive forces from banks, the bureaus and other

analytic outfits with an economic stake actively seek to overflow the FICO frame and undermine it. ‘Let’s face it’, said one young global strategic analyst at CitiBank when asked for his opinion on whether the FICO[®] was indeed an unsurpassable calculation of consumer risk.

Up until now, it hasn’t been the nine hundred pound gorilla. It’s been the ninety thousand pound gorilla, because for the longest time it was the only place to go. And that momentum’s really, really carried through. [...] When you look at the FICO score, it really hasn’t changed very much from the initial concepts. It’s because it’s something that works and you don’t really want to change it or innovate too much, because frankly, bankers hate change. I know it sounds stupid, but this tends to be the reason why. Now having said that, there *is* a burgeoning market for tools and stuff like that, so you’ll see a lot of companies trying to really start up, build analytic tools. [...] If you’re large enough like CitiBank, and you have well trained staff, you really don’t need this. You don’t need any of these tools. You can probably build it yourself.
(CitiBank global strategic analyst)

This statement is striking for its contrast with the arduous and limited nature of early scorecard production and the tremendous work required to garner the co-operation of a reluctant lending industry. It requires that we pose questions about the gradual emergence of conditions that have made the mass dispersion of some forms of calculative agency – but not all – possible. Seen as a whole, Fair, Isaac’s trajectory recapitulates the movement from an emergent to a consolidated techno-economic network (Callon 2002). Michel Callon has employed these terms to describe how economic theory, scientific research, and the functioning of markets converge. In the new economics of science following Arrow and Nelson, the output of research, scientific knowledge, is equated to ‘information’ defined as being a public good. Callon remarks however, that for information to be a public good it must have acquired certain qualities. It must also be non-rival (able to be used simultaneously by multiple actors), non-appropriable (costly to own) and universal (widely generalisable). Yet as his work has shown, ‘The Holy Grails of modern economics – nonrivalry, nonappropriability, and universality – are not given but rather obtained at the price of costly investments’ (Callon 2002:292). Drawing on laboratory studies, the origins of science and technology studies, he argues that since scientific innovation begins locally, scientifically produced information can only become a public good once material investments in the durable metrological networks that allow its replication and dispersion have been made. Callon therefore concludes that ‘If non-rivalry, non-appropriability, and universality exist, they are not to be found in emerging science but in what Kuhn termed normal science or in what I prefer to call consolidated configurations’ (Callon 2002:292).

If technical networks are congealing around similar risk management practices in the consumer credit industry, then this is in no small part due to Fair, Isaac’s early dedication to delivering tangible commercial tools and to their active work within client organizations to make them amenable to these manufactured analytic goods. Yet this outward replication has not proceeded with uniform results. Following a simplified trajectory of products – from application scorecards, to prescreening scorecards, to tri-bureau scores²¹ – demonstrates how at each moment a ‘single’ method of calculation (if narrowly conceived), can have a strikingly varied impact on the constitution of risk

depending on the moment in which it is networked outwards and established as a technological device. When these distinct scorecard configurations are placed side by side it is evident that the socio-economic effects of concern to social scientists – such as the responsibility placed on consumer choice for debt, the intensification of (monoline) credit cards through aggressive marketing practices, and the personalization of risk – are not inherent properties of risk calculation but are differentially generated and vary according to particular scorecard configurations emerging from activity in the parallel market for analytics.

It can be concluded therefore, that the robustness of scores as objectified / objectifying measures is not the product of a general shift towards quantified risk management. Rather, as I have sought to show, it is ‘performed’ by a specific assembly of scorecard algorithms acting as consumer credit market devices. This effect is also a cumulative one in that the concrete scoring edifice or consolidated configuration which has emerged in the U.S. is arguably a direct result of articulating layers of Fair, Isaac activity together, culminating in the circulation of tri-bureau scores – pieces of circulating, non-rival information brought into being ‘in the wild’ (Callon 2007). Although not directly issued from professional economists, these avidly circulating risk scores nevertheless do curiously resemble the fluid, scientifically produced, economic information for assessing market quality hypothesized by economists of science in support of economic theories. In all but one way: although serving their function as a market device the scores are appropriated, because their means of production continues to belong to Fair, Isaac.

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Endnotes

¹ Acknowledgements are extended to Steven Epstein for his attentive assistance in the preparation of this chapter. They are also due to the participants of Sub-theme 40: *Markets for technologies, technologies for markets* at the 22nd EGOS Colloquium (July 6-8 2006, Bergen, Norway), as well as to C.F. Helgesson, Janet Roitman, Akos Rona-Tas and the editors for their thoughtful

comments on previous versions of this text. This material is based upon work supported by the National Science Foundation under Grant No. 0451139.

² I am assuming that the vivid reference to Fridan calculators by the interviewee was to the ST-W or STW-10 model mechanical calculators, whose weight is infamous, although by the 1960's the first electronic Fridan models were already available.

³ The company changed its name from Fair, Isaac & Co. Inc. to the Fair Isaac Corporation in 2003. I conserve the original name to emphasize the historical nature of the research. While other methods and firms might be resorted to for analytic solutions, Fair, Isaac has dominated the U.S. marketplace for credit analytics since its inception in 1956 until at least the early 2000's. According to the company website (consulted in 2004), Fair, Isaac had made the *Forbes* list of Top 200 U.S. Small Companies 10 times in the previous 11 years. It placed 19th on the Business 2.0 ranking of the 100 fastest growing technology companies in 2003; it was named one of the Top 200 IT companies globally for 2002 by *BusinessWeek*; and until recently all of the top 10 *Fortune 500* companies are said to have relied on Fair Isaac technology (<http://www.fairisaac.com/Fairisaac/Company/Profile/>).

⁴ Unlike most other countries where credit scoring is the backstage business of banks, card companies and finance houses, the FICO[®] is a score that has been brought into the American limelight. Home buyers and consumer groups 'discovered' the scores and agitated to bring them to public attention. This is how the 'FICO score' has rapidly become a household word in the U.S., whose recognition has been bolstered by the recent real estate and mortgage refinancing boom following the historically low interest rates set by the Federal Reserve in 2001. A way to release scores to consumers was devised, incidentally, in the same year. This product's evolution is largely responsible for growing the company from an estimated 50 million USD in 1991, to over 250 million USD in 1999.

⁵ According to Marron (2007), Keynesianism explains why legislators accepted scoring in the Equal Credit Opportunity Act (ECOA, 1974) as a means to ‘eliminating ‘subjective’ discrimination and helping to bring about an enhanced mass consumer credit market that would discriminate only on merit’. It is perhaps helpful to note that the [ECOA of Oct. 28, 1974, Pub. L. 93-495, 88 Stat. 1521](#) pertained only to traditional methods of credit decision-making. It was amended a year and a half later to include the clauses that refer to ‘empirically derived credit systems’ derived through statistical analysis ([Mar. 23, 1976, Pub. Law 94-239, 90 Stat. 251](#)). One could argue that placing scientific systems under the control of the law is a sign, not of their outright acceptance as objective and dispassionate systems, but of a profound recognition on the part of lawmakers that these systems could be as guilty of illegal discrimination as traditional methods of applicant selection if not subject to legal definition and control. In this view, regulatory intervention on the part of the state did not seek to sanction empirical methods as non-discriminatory so much as it actively contributed to the establishment and justification of their status as such.

⁶ An ‘unsecured monoline revolving credit card’ is a consumer credit instrument for which no collateral is given by the user (unsecured). It is extended in the absence of a bank account or other retail relationship by a company specializing in a specific type of financial business (monoline), and it automatically renews the amount of credit available up to a fixed amount as the debt is paid down each month (revolving).

⁷ The dates in brackets loosely correspond to the period of development or consolidation of each type of scorecard technology. Custom application scorecards remain a viable business proposition, although their importance within the overall market for analytics has been greatly decreased by the rise of other analytic products (i.e. bureau scores) and do-it-yourself statistical software applications.

⁸ The chapter draws directly from fourteen open-ended interviews conducted by the author with (primarily) former Fair, Isaac employees from a number of positions in the production process. Many of these individuals worked with the company their entire careers. Conversations to collect oral histories ranging from an hour and a half to two hours each, and were carried out between June 2004 and October 2006. Three interviews represented here are with former senior executive, five with former vice-presidents, four with former senior analysts, one with a former bureau score sales manager, one meeting with four former data entry personnel, and one with a current member of CitiBank's global strategic analytics group. For the sake of simplicity I have indicated a position that differentiates a speakers' approximate generation within the company hierarchy.

⁹ The chapter further relies on a number of unpublished internal histories that have circulated informally among employees.

¹⁰ A firm that had multiple products and/or regional operations would have had to have purchased more than one independently developed scorecard.

¹¹ Robert Oliver, now an emeritus professor at Berkeley's Department of Industrial Engineering and Operation's Research (IEOR) was a long time friend and confidant of Bill Fair's. The 'Oliver Connection' provided the company with many lifetime employees who would mature to become the company executive in the 1990's.

¹² Analysts went through a series of steps to segment variables into 'fine classes', but since these were often much too numerous to be useful, they then regrouped them into the 'coarse classes' that would constitute the options to appear on the scorecard. This kind of classification work and its political consequences (see also the footnote below on segmentation) has been extensively discussed in the science and technology literature, most notably by Geof Bowker and Leigh Star (2000).

¹³ Sales figures for a custom application scorecard renamed ACCRUE90, in 1990, were \$44,000 for the first scorecard with a diminishing scale for each subsequent scorecard. The flat price in 1976 is reported to have been a \$32,000 (Former vice-president, Personal communication)

¹⁴ Segmentation, a process of breaking data down into sub-populations that are scored on separate cards, is an important part of score system design. In this case the scorecards are not independent, unlike scorecards for different credit products, where an individual might be scored on each and every one depending on whether they are purchasing say, a home loan or an auto loan. In segmentation multiple cards are part of a single model that divides a single population into major sections. Each individual is only eligible to be scored on one of the scorecards, depending on their place in the model.

¹⁵ The Credit Bureau is now Equifax, Chilton was bought by TRW, Pinger was bought by Equifax and TRW was renamed Experian. There are other major data gathering operations in business that compile consumer credit histories and provide other marketing services (such as preparing direct solicitation mailing lists), but by strict definition a bureau sells actual credit histories and is subject to the [Fair Credit Reporting Act \(FCRA\) 15 U.S.C § 1581 et seq.](#)

¹⁶ “Viewpoints” was a company news letter for clients started by Mary Pellegrino in 1976. It continues to be published by the company (since renamed ViewPoints), but is now solely a vehicle for marketing rather than an informational and community building tool.

¹⁷ The first system was installed was for First National Bank of Kansas using Pinger bureau data. As an informal written internal Fair, Isaac history records, ‘The success of this project can best be evidenced in the fact that First National Bank of Kansas City went from the third largest bankcard company in Kansas City to the first with just two promotional campaigns.’ (Internal history)

¹⁸ It is important to note that while all scores derived from Fair, Isaac models might be casually referred to as ‘FICO scores’, only some of these are considered equivalents in practice. For instance, the distinction between each of the industry specific scores and the basic risk score is

maintained in the eyes of users, who recognize that the risks constituted by each type of score are used for different purposes. The public has only been exposed to the basic generic bureau score for the prediction of default.

¹⁹ At the end of 2006, the bureaus themselves came out with their own joint venture product through a fourth-party company they established to manage the partnership called VantageScore Solutions, LLC. The VantageScoresm product is built on a scale of 501-990 and is sold separately by all three bureaus, but is calculated from a single shared model developed from pooled data. It is the pressure created by the ascendancy of the FICOtm and the pricing pressure it creates that is said to have made this unlikely coalition feasible.

²⁰ The databases have not remained static in response to scoring. The sheer volume of the data has increased as credit use and credit providers have increased, new kinds of data and databases have been generated (i.e. transactional data from credit cards), and the contents of the data have been altered in response to uniformity and standardization imposed by data sharing protocols.