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It was Madame Marty, who was being propelled through the shop by her attack of spending. Since buying the scarves, the embroidered gloves, and the red parasol, her purchases had swollen to such an extent that the last salesman had just decided to put her parcels down on a chair, for they were breaking his arms; and he walked in front of her, pulling behind him the chair, on which petticoats, table-napkins, curtains, a lamp and three door-mats were piled up. […] Marguerite took the chair by its back and dragged it along by its back legs, which were gradually getting worn out by its being carted about in this way. Denise had only to carry the few metres of foulard which Madame Desforges had bought. It was quite a journey, now that the suits and dresses were on the second floor, at the other end of the shop. So the great trek through the crowded galleries began. Marguerite walked at the head of the procession, pulling the chair along like a little cart, slowly opening up a path for herself. […] As she passed through each department she could not help stopping. She made a first halt at the trousseaux, tempted by some chemises which Pauline sold to her, whereupon Marguerite got rid of the chair, which Pauline had to take over. […] Then Madame Marty's weakness came over her again ; she succumbed successively to a black satin corset, some fur cuffs which had been marked down because of the season, and some Russian lace which was often used at that time for trimming table-linen. All this was piling up on the chair; the parcels were mounting, making the wood creak; and the salesmen who succeeded each other harnessed themselves to it with increasing difficulty as the load became heavier. [...] On the great central landing the chair could hardly get through. Mouret had cluttered up the landing with a great display of fancy goods — cups with gilded zinc mounts, workbaskets, and trashy liqueur cabinets — because he felt that people were able to move about there too easily, that there was no crush there. […] While two porters were carrying the chair up to the second floor, Madame Marty bought six ivory buttons, some silk mice, and an enamelled match-case. […] They had to abandon the chair. It had simply been left in the furniture department, beside the work-table. The weight was becoming too much for it, and the back legs were threatening to break ; and it was decided that all the purchases should be centralized at one cash-desk, and from there sent down to the dispatch service.

Zola, E., [1883], 1998, *The Ladies' Paradise*, Oxford, Oxford University Press, Paperback edition, pp. 258-262 , translation by Brian Nelson

Introduction[1]

The supermarket corresponds to an original form of retail selling. Its emergence in the latter half of the 1930s stemmed from the combination of several inter-related phenomena that had started much earlier: the construction of nationally advertised brands and, connected to that, the proliferation of choice between different brands for the same product; the reorganization of distribution chains between producers and consumers, especially the redefinition of the role of jobbers; the upsurge of "scientific management" business tools; anti-chain laws; experiments in new forms of retailing on the West Coast from the 1920's; the increase in the equipment rate of households with cars and fridges; etc.[2] It is therefore necessary to analyze the supermarket in relation to the broader context that shaped it and in which it made sense. But the supermarket itself is a complex setting composed of multiple elements. These elements had to be invented and adjusted to shape this type of store which, at some point in time, was called the "supermarket".

Nothing was self-evident in the earliest supermarkets. For a while the term was used to refer to the collection "under the same roof" of counters of food products that housewives had been used to buying in different stores[3]. Only the grocery section was self-service. Susan Strasser has shown the immense task of adapting breakfast cereals and pickles to a mass market: regulations and engineering to ensure that products were clean and safe; producer's guarantee by way of the brand that required a legal base to exist; advertising in order to be known and packaging not only to contain and protect the products but also to lend a material support for

[1] This research has been supported by a Fulbright grant (2004). I need to warmly thank the persons and institutions who have provided an invaluable help in this research: the French-American Commission, David Stark and Monique Girard at Columbia University, Deborra A. Richardson and the members of the Archives Center of the Smithsonian Institution, David H. Shayt, also at the Smithsonian Institution. I want to thank my research center and especially Madeleine Akrich, for their intellectual as well as practical support. I also want to thank Liz Libbrecht for her wonderful work in translating the first version of this text. Of course, all remaining errors, in the form as well as in the content, are mine.
This research is based on three main sources: the Telescoping Shopping Cart Collection at the Smithsonian Institution Archives Center, hereafter referred to as TSCC; the trade journal *Super Market Merchandising* which began to appear in November 1936*,* hereafter referred to as *SMM*; and patent records.
Some elements of this paper were used in Grandclément, C., Cochoy, F., 2006, « Histoires du chariot de supermarché. Ou comment emboîter le pas de la consommation de masse », *Vingtième siècle*, no. 91, pp. 77-93.
[2] These phenomena and their interrelations have been described in detail by Susan Strasser, Richard Tedlow and, more recently, Tracey Deutsch. Strasser, S., [1989], 1995, *Satisfaction guaranteed: the making of the American mass market*, Washington and London, Smithsonian Institution Press; Tedlow, R. S., 1990, *New and improved: the story of mass marketing in America*, New York, Basic Books; Deutsch, T. A., 2001, *Making change at the grocery store: government, grocers, and the problem of women's autonomy in the creation of Chicago's supermarkets, 1920-1950,* PhD dissertation in History, University of Wisconsin-Madison.
[3] Seen through the *SMM* lens, the 1937 supermarkets were some sort of equivalent of department stores in which different counters, possibly a concession by the market owner, proposed various food products but sometimes also car or household accessories (e.g. hardware). The global setting could be a cheap one or a luxury one. See Deutsch, T. A., 2001, *op. cit.*

(writing) the brand. All this product engineering work was necessary (and is still on-going) to create products adapted to self-service in diverse categories: fresh produce, dairy, meat, etc. But adapting products to self-service was not enough, they also had to be presented on open shelves from which the customers could help themselves directly. In the 1930s the free standing display or gondola was a novelty for many customers and stores. It was furthermore necessary to design the trajectory of products, people and money in shops: how were the products to be arranged and the shelves restocked? How were customers to serve themselves? How was payment to be organized? To all these questions several answers were proposed before "the solution" of the supermarket, which today seems so natural, reached a point of stabilization.

A particular problem that arose was the carrying of customers' shopping in the store. Everyone knows the importance of means of transport in the construction of new unified markets; Chandler has highlighted the role of the railway and Tedlow that of the automobile. The shopping cart is the last link in the food supply chain in the era of mass consumption. It allows fast-moving consumer goods to be freed from their weight and to travel easily from the store shelves to the trunk of the customer's car. Yet for a long time this seemingly simple object constituted the "reverse salient" of the supermarket, that is: a localized but acute problem which impedes the development of the system as a whole[4]. Its development took over ten years of a collective and often conflictual effort by the different inventors and businessmen involved.

The aim of this article is to analyze the various episodes in the invention of this key object in the modern distribution of goods. Several histories of the shopping cart are available. Another objective of this article is therefore to study, along with the formal evolution of the object, the construction of a history of invention. When one looks for information on the origins of the shopping cart, the name Sylvan N. Goldman immediately appears. Internet, the press and even the most reliable sources attest to his importance: for instance, his presence in the Smithsonian and the academic biography devoted to him. But since 2001 the Smithsonian Institution has information on two contrasting histories of the object. On the one hand, the

[4] I use here the concept proposed by Thomas Hughes: "A reverse salient appears in an expanding system when a component of the system does not march along harmoniously with other components. As the system evolves toward a goal, some components fall behind or out of line. As a result of the reverse salient, growth of the entire enterprise is hampered, or thwarted, and thus remedial action is required. The reverse salient usually appears as a result of accidents and confluences that persons presiding over or managing the system do not foresee, or, if they do foresee them, are unable to counter expeditiously." Hughes, T. P., 1983, *Networks of power: electrification in Western Society, 1880-1930*, Baltimore and London, Johns Hopkins University Press, pp. 79-80.

"first shopping cart", that of Goldman, can be found in the Institution's department of artifacts; on the other, since the death in 2000 of Edith Watson, the wife of the other inventor of the "first shopping cart", the Smithsonian archive department also has traces of an alternative genealogy of the object. I will start my account with the first history, the one which, because of its convergence, eclipses all the others and recounts the story of the first shopping cart. I will then compare this first history with other sources. The second part of the article examines the history of the other inventor, Watson. Finally, the third part considers the paternity conflicts that erupted around this object and shaped the shopping cart as we know it today.

1. FROM MARKET BASKETS TO BASKET CARRIERS, 1936 - 1947

1.1. THE FIRST HISTORY OF THE SHOPPING CART, THE FIRST SHOPPING CART IN HISTORY: THE BIOGRAPHY OF S. GOLDMAN

The cart that changed the world: the career of Sylvan N. Goldman is the title of the book by Terry Wilson published in 1978 by the University of Oklahoma Press, on the life and work of the inventor of the shopping cart. More than just an authorized biography, it is truly a hagiography and has actually been severely criticized[5].

In the mid-1930s Sylvan Goldman, born into a family of tradesmen, was – by a series of coincidences that I will not go into here – the owner of ten self-service stores in Oklahoma City. Compared to over-the-counter selling, self-service involved an extensive redistribution of identities and skills of actors in the trade. Familiarity with the products, for instance, was no longer the prerogative of the salespersons; in the new configuration they moved backstage, off the selling scene, behind shelves and packaging. Information was communicated *via* the product itself, in the multiple texts on the packaging and in the brand name artifact. With the elimination of the counter, the free movement of customers among the shelves of products and the widening of the choice (no longer canned pineapples but a choice between Libby's, Dole and Del Monte[6]), the transport of products was also reconfigured and retail sales logistics shifted over to the customer. From the 1920s some shops made wicker baskets

[5] Wilson, T. P., 1978, *The cart that changed the world: the career of Sylvan N. Goldman*, Norman, Oklahoma, University of Oklahoma Press ; Tedlow, R. S., 1980, "Review of Wilson, T. P., 1978, *The Cart That Changed the World. The Career of Sylvan N. Goldman*, Norman, Oklahoma, University of Oklahoma Press", *The Business History Review,* vol. 54, no. 1, pp. 135-136.

[6] This example is drawn from Anonymous, "Getting the Most Out of the Super Market", *SMM*, vol. 1, no. 2, pp. 4-5 & 12-13, citation p. 4.

available for their customers' use[7]. Sylvan N. Goldman, observing his customers, noted the limitation placed on the volume of purchases by the size and weight of the shopping basket. His first solution to this problem was to instruct his employees to approach those customers who had filled their baskets and to offer to put them aside at the check-out counter for them, so that they could carry on shopping with a second basket[8].

One evening in 1936 Goldman had a brilliant idea. Noticing two folding chairs in his office, he "found the solution" to the problem of carrying shopping. "If the seat of a folding chair was raised several inches and another similar seat added below, a basket could be placed on each of them. Wheels attached to each leg would make the chair mobile, and the back of the chair could be adapted as a handle to push the cart", Wilson explained[9]. Goldman instructed Fred Young, a handyman employed in one of his shops, to develop the system[10]. There were a number of problems: for instance the cart tended to return to the state of a chair and to fold up when the wheels bumped into something, or to tip over when going round corners. After a few months of work the shopping cart, equipped with two wire mesh baskets, was finally ready.

[7] Photos of the first self-service shops often show large containers for the wicker baskets, next to the till and the entry turnstile.
[8] Goldman was not the only one to get this idea, cf. Anonymous, "The Family Goes Shopping", *SMM,* 1937, vol. 2, no. 1, p. 16.
[9] Wilson, 1978, *op. cit.*, p. 78.
[10] It seems that prior to that, Fred W. Young applied his technical talents in a similar field, although probably for other employers. His name appears on a patent (No. 2,042,977) filed in July 1935 and granted in June 1936, concerning a folding shopping basket.

Sylvan N. Goldman's folding cart, c. 1937
(National Museum of American History, Smithsonian Institution)
Note that the folding chair is still identifiable in the folding cart.

On June 4, 1937 Goldman placed an advertisement in the Oklahoma City press, showing a woman harassed by the weight of her shopping basket. "It's new – It's sensational. No more baskets to carry" promised the advert – without any information as to how this miracle would occur. This was a (anticipated?) form of teasing, the advertising tactic that plays on the reader's curiosity to draw attention to the message. But rather than appearing in the following week's edition, the solution to the riddle was to be found in the real world. Readers were simply required to turn into customers and to visit Goldman's shops where a hostess offered them basket carriers.

Unfortunately this launch plan was a flop. Customers were loath to use the basket carriers: while the men protested that they were strong enough to carry baskets themselves, the women argued that they had pushed around enough baby carriages in their lives not to want the same yoke in the grocer store. Only the elderly customers used them. Yet Goldman would not give up. He placed another advertisement the following week, as mysterious as the first one, emphatically announcing that the "No Basket Carrying plan" met with instant approval last week-end"[11]. Then, in his main store, he employed shills, men and women of various ages,

[11] Wilson, 1978, *op. cit.*, p.87

with whom everyone could identify, to do their shopping with the basket carriers. Seeing other shoppers using this new system, the customers accepted the carts offered to them by the hostess, and the innovation was adopted. Within weeks all Goldman's stores were using the folding carts that were a tremendous success[12].

On a national scale the story of the diffusion of the folding cart is much the same. Nationally, the customers were not the end users but the managers of supermarkets. Goldman took advantage of the first Super Market Convention in September 1937 to launch his product and said that he received favorable appreciations from supermarkets operators. But when Goldman's sales representative went to visit supermarket's managers, he encountered terrible resistances. They were worried about the damage that their customers' children could cause by playing with shopping carts, for instance, and consequently refused to buy Goldman's carts. Goldman then used his employees as actors to make a movie showing the perfect order with which stores equipped with carts functioned. Pleased and reassured by what they saw, supermarket managers ended up adopting Goldman's folding cart. That was how the folding cart invaded the world of mass consumption and Goldman's new firm, the Folding Basket Carrier Corporation, was outstandingly prosperous[13].

Consider the design of the folding basket carrier. The choice of a chair in *The Ladies' Paradise* (cf. *incipit*), as in Goldman's case, was less of a coincidence than it seems. In both cases the innovation started with what imagination mobilizes most readily, which happens to be there, available, and constitutes the material of opportunity. Petroski, who studied the development (or not) of the objects inhabiting our daily lives, claims that the development of

[12] Wilson, 1978, p.88.

[13] Wilson and Goldman rather implicitly suggest a "diffusion by imitation" explanatory model of the adoption of innovations, both by end users and supermarket's managers. As it is applied here, this model supposes sheeplike adopters whose motives of action are "doing as the others do". I think that imitation alone cannot account for the adoption of innovations. Goldman's fake users did not induce imitation just because "it's cool to do the same as others do" for instance. Instead, those fake users tried to arouse interest, to *convince* by showing rather than talking; they act as *demonstrators* who make others (users and managers) see why it is interesting to use a shopping cart. The whole story of the cart show that the "diffusion by imitation" model may apply but only partially, since it is always combined with convincing, arousing interest or improving.
On users' role in innovation, see: Akrich, M., [1992], 2000, "The de-scription of technical objects", *Shaping technology / building society*, Bijker, W. E. and Law, J. (Eds), Cambridge, Mass, The MIT Press, pp. 205-224 ; Woolgar, S., 1991, "Configuring the user: the case of usability trial", *A sociology of monsters*, Law, J. (Ed), London, Routledge ; Oudshoorn, N. and Pinch, T. (Eds), 2003, *How users matter: the co-construction of users and technologies*, Cambridge: MA and London, The MIT Press.
On the "interessement model" of innovation, see: Akrich, M., Callon, M. et Latour, B., [1988], 2002, "The key to success in innovation, Part 1: The art of interessement" & "Part 2: The art of choosing good spokespersons", *International Journal of Innovation Management,* vol. 6, no. 2, pp. 187-206 & pp. 207-225.
A program for the sociology of demonstration can be found in: Rosental, C., 2005, "Making science and technology results public: a sociology of demos", *Making things public: atmospheres of democracy*, Latour, B. and Weibel, P. (Eds), Karlsruhe – Cambridge: MA and London, ZKM – The MIT Press, pp. 346-349.

these objects starts less with abstract ideas or laboratory studies than with situated adjustments, trial and error, tinkering with the objects themselves[14]. Likewise, the famous case of the photocopier-user communication analyzed by Suchman, like many studies in the situated action approach, shows that the empirical behavior of problem-solving is not one of planning and assessing the situation as a whole. Instead, in the situation to which we have immediate access, we seek critical signs and resources that we try to activate[15]. An intellectual genealogy of the development of the shopping cart would lead us to dozens of similar objects, from the industrial cart to the dinner wagon in bourgeois homes, via all sorts of agricultural carts, bag trucks, pushcarts and baby carriages. Zola's and Goldman's accounts show, by contrast, a situational genetics of the object. In the department store in Zola's novel, as in Goldman's office, the chair is both the resource offered by circumstances and the victim of circumstances (since in both cases it is mutilated).

The choice of a *folding* chair is nevertheless worth considering. Why did Goldman invest in complex design work – which Wilson tells us lasted several months – to ensure that the basket carrier would not unexpectedly collapse, when it was possible to use an ordinary, sturdy and stable chair? Specialists of design often comment ironically on the survival of objects with completely obsolete functions or elements, simply due to the weight of things, because the element in question opened a way that no one had thought of closing. An example is the "R" key on fixed phones, which is still there even though no one knows anymore what its purpose is[16]. But this explanation is not valid here, for Goldman deliberately tried to manufacture a folding cart. His biography indicates that the small amount of space occupied in the store by the folded basket carrier and piled-up baskets was one of his strongest selling points[17].

At this point Wilson's account arouses doubt as to its reliability. The basket-carrier/folding chair is an answer to two problems: first, the weight of shopping and, second, the minimization of the perverse effects of the solution to the first problem, that is, the place

[14] Petroski, H., [1992], 1994, *The evolution of useful things*, New York, Vintage Books ; Petroski, H., [2003], 2004, *Small things considered: why there is no perfect design*, New York, Vintage Books.

[15] Suchman, L. A., 1987, *Plans and situated actions: the problem of human-machine communication*, Cambridge, Cambridge University Press. Suchman is an ethnomethodologist; see also the rather different tradition of cognitive psychology: Lave, J., Murtaugh, M. and de la Rocha, O., 1984, "The dialectic of arithmetic in grocery shopping", *Everyday cognition: its development in social context*, Rogoff, B. et Lave, J. (Eds), Cambridge: MA and London, Harvard University Press, pp. 67-94; Hutchins, E., 1995, *Cognition in the Wild*, Cambridge: MA and London, The MIT Press.

[16] Norman, D., [1988], 1990, *The design of everyday things (The psychology of everyday things)*, paperback edition, New York, Doubleday/Currency.

[17] Wilson, 1978, *op. cit.*, p.82.

taken in the store by the system for carrying shopping. In other words, the folding cart was a response to a problem that had not yet arisen. We may therefore wonder whether the basket-carrier was really all that new.

1.2. GOLDMAN'S PRECURSORS AND PREDECESSORS: WHAT OBJECTS, PATENTS AND ADVERTISEMENTS RECOUNT

Wilson does mention the existence of precursors, which he situates in the 1920s, but whose relevance he is quick to disqualify. An example is Henke & Pillot, a Houston store which was laid out in the shape of an "M" for re-shelving from the rear. Wilson tells us that the store had a fifteen-inch wide track, raised about thirty inches from the floor and fitted with low side-rails, that ran along the shelves and carried baskets equipped with tiny wheels grooved to slide inside the rails. "While this system eliminated the burden of carrying overladen baskets, it was not adaptable to stores with different floor plans. In addition, shoppers were forced to follow the entire track. This discouraged people who came in to buy a few items and had to wait behind slower customers"[18]. By comparison, this example clearly highlights the fluidity that could be obtained with the cart; like the motor car, as opposed to the train, it was designed to equip individuals rather than their environment.

Wilson took the case of Henke & Pillot from a book by M. M. Zimmerman, a journalist who put a great deal of effort into organizing the supermarket operators' profession. In this book it was Henke & Pillot's direct competitor, Joe Weingarten, who described the system in his rival's store, although his criticism was milder than Wilson's. Weingarten had invented a basket-carrier from a toy wagon and had improved it, so that in Zimmerman's book he was attributed with the introduction of the basket-carrier into the United States[19]. In *Super Market Merchandising*, the trade journal founded by Zimmerman, numerous references to basket-carriers are found. Basket-carriers were used in many stores, at least from 1936, when they had only three wheels and could bear only one single basket[20]. In the year 1937, no fewer that

[18] Wilson, 1978, *op. cit.* p.83.
[19] Zimmerman, M. M., 1955, *The super market: a revolution in distribution*, New York, Toronto, London, McGraw-Hill Book Company, pp. 26 to 28.
[20] Here is the corresponding description — it is interesting to note that, according to this description, the basket carriers were offered to customers at any place on the selling floor; therefore, the assigned park space area was still to be invented, customers had still to get accustomed to it and the problem of saving parking space was not yet identified. "As the customer begins her shopping tour through this huge edifice, she is given a Handy Ann shopping cart. These consist of a simple light metal frame on three wheels with a wire mesh basket set in the frame and they are placed at several conspicuous spots near every one of the Front Avenue entrances and the elevator and stairway from the parking floor. Portland men and women enjoy shopping when they can wheel their purchases smoothly along the aisles of the market. Sometimes the whole 250 of these Handy Anns are in

four cart manufacturers advertised in *SMM*[21]. These enable us to follow the genealogy of the shopping cart with far more continuity than in the one reported by Goldman.

United Steel Advertisement, *SMM*, May 1937

Thus, Goldman was not the only one to be concerned about what appeared to be a thorny problem for the entire profession from the late 1930s: the weight of shopping within the store. In 1937 a solution started to emerge in the form of a frame on wheels, on which two baskets were placed. But these systems took up space, whereas Goldman's invention saved space. Locally his folding cart may have been an innovative solution to customers' problem of carrying their shopping in self-service shops, but nationally he was less a precursor than a continuator. He provided a clever answer to the real problem of storing shopping carts.

Closer examination of the advertisements and patents for basket-carriers during that period gives us yet another picture. First, folding basket-carriers existed before Goldman's. In May 1937 the Roll'er Basket Company advertised a folding carrier. This one consisted of a frame onto which a basket was hooked, whereas Goldman's cart had platforms on which the baskets were placed. Although a chair had inspired Goldman, it seems that this was related more to its opening and closing mechanism than its quality as a chair or the fact that it folded.

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use at one time in this busiest of busy places", Zimmerman, M.M, "Building History's Greatest Food Market", *SMM*, 1936, vol. 1, no. 1, pp. 4-5 & 20-21, citation p. 20

[21] These manufacturers were United Steel, American Wire Form, Roll'er Basket and Folding Basket Carrier. Folding Basket Carrier was chronologically the last one to advertise in *SMM*. Another cart manufacturer was Meese but it was the only manufacturer who advertised a different cart: a kind of elongated bag made from a metallic chassis covered with fabric, much in the shape of actual household shopping cart.

First advertisement for a folding cart in *SMM,* May 1937

It is difficult to know exactly what inspired Goldman, as the project he had in mind seems really different from the one described years later. There was indeed another Goldman's cart before the official "first shopping cart"… The earliest illustrated advertisements of the Folding Carrier Corp., published in *Super Market Merchandising*, shows a cart bearing strong resemblance to a folding chair and which, when unfolded, formed not a seat but a sort of folding basket integrated into the structure[22]. This corresponded to the first Goldman's patent and what was probably the first real *shopping cart*, not simply a basket carrier.

This episode requires us to re-assess again Goldman's contribution to the invention of the shopping cart. In 1937 Goldman proposed a solution not to the first problem of carrying shopping, nor to the second problem of storing devices for carrying shopping, but to a third problem, that of the effort required to set up and dismantle the basket carrier. This solution

[22] Although Goldman displayed the two types of carts at the first Super Market Convention in September 1937 (cf. photograph in *SMM*, vol. 2, no. 10, p. 28), the cart with integrated basket did not appear on Folding Basket Carrier's advertisements until December 1937. This second cart was called the "Junior Size 2 basket carrier". It corresponds to the simplified, "historical" cart given to the Smithsonian Institution. Its patent was filed nearly one year after the one for the cart with an integrated basket. Interestingly enough, this second patent does not mention the first one. I can't figure out the rationale for this. First patent is patent no. 2,155,896 "Combination basket and carriage", filed May 4, 1937, issued April 25, 1939. Second patent is patent no. 2,196,914, "Folding basket carriage for self-service store", filed March 14, 1938, issued April 9, 1940.

consisted of a system in which the basket was part of the structure and yet was compactable. In other words, Goldman was even more a precursor than what he claimed to be… and also a great story teller. Why, indeed, further complicate a story, already nicely packed with obstacles (recalcitrant users and obstructive buyers) that the hero had ingeniously overcome, with details irrelevant to the progression of the tale? Goldman never mentioned this first cart anywhere. He simplified the cart and this early, more sophisticated version, purely disappeared from his official story…. Gone (from the story) were also the competitors and the remarkable and relatively quick convergence in the second half of the 1930's of shopping carts designed as two basket carrier — after all, may Goldman have assumed, his company, the Folding Basket Carrier, was by far the largest cart manufacturer in the US from the late 30's to the early 60's and so, the others may be negligible.

First Goldman's advertisement in *SMM*, October 1937
A folding basket was integrated in the device
(see second image on the left).

2. FROM THE TELESCOPING CART TO THE NEST-KART, 1946-1949

Ten years were needed to definitely find a solution to the inconvenience of storing the carts and give birth to the modern shopping cart. Here is how Wilson related that episode:

> *"The new plant [1950] was equipped with a complete chrome-plating apparatus, the only one in Oklahoma. The firm's metal products no longer exhibited the olive-green color that had marked them since the 1930's. But more than the color was changed in the company's major line of merchandise, the shopping cart. In 1947, Folding Carrier introduced the patented Nest Kart. The new cart enabled grocers to store one-piece carriers in a smaller area than that required by the older models with their removable baskets. The back section of the carrier basket, now an integral part of the frame, swung forward when the front of a second carrier was pushed against it, allowing any number of carts to nest, each partly enclosing the one behind it." Wilson, 1978, p. 103.*

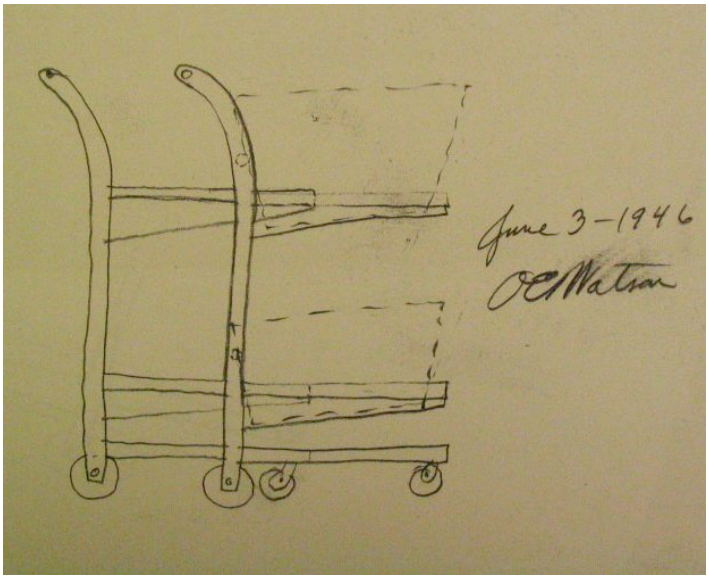
It was via this transition, by the change of coating, that modern shopping carts which dove-tail into one another were introduced in Wilson's book. This short-cut concerning such an important alteration is particularly surprising, especially in an account that is otherwise so quick to praise the slightest details of its subject's ingenuity. Between the folding cart carrying two baskets, designed in 1936, and the "nest-baskart" of 1950, resembling today's shopping carts, there was a real breakthrough in design. How was the step taken from one to the other?

2.1. TELESCOPING CARTS: ORLA E. WATSON'S IDEA AND HISTORY

At the beginning of 1946, 50-year-old Orla E. Watson left his job as draftsman at the Crafting and Processing Engineering Company in Kansas City to establish as a free-lance inventor. He wanted to develop a small pump. He had already in 1944 filed patents applications for a pump, a valve and an injection device. One day in April or May of 1946, so the story goes[23], on his way to do his shopping he noticed the huge amount of space occupied by shopping carts in front of the stores. Thinking about a way of improving existing carts, he started toying with the idea of horizontally telescoping frames rather than vertically stacked baskets. Watson initially followed the design mode of the day. The idea that he described to his wife Edith in April applied to separate elements: the structure on wheels and, separately, the baskets. In the

[23] This was how it was reported later by Watson's lawyer in a tax claim: 'Supplemental Statement with Law Brief Annexed of Orla E. and Edith Watson in support of their Claim on Form 843 for a refund of Federal Income Taxes paid for the calendar year 1950, containing 33 pages', dated 15 June 1953, TSCC, Box 2, folder 8.

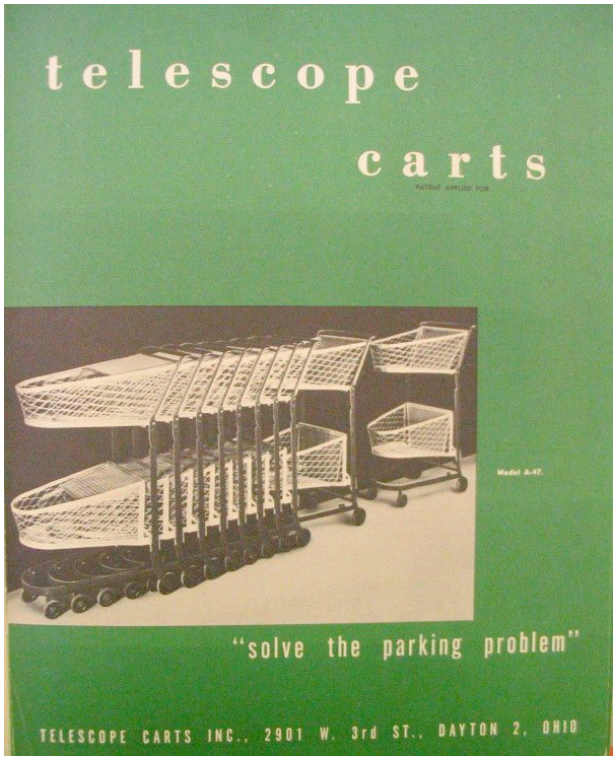
initial design and the first prototypes produced in July 1946, the telescoping applied only to the structure[24] to which two baskets were added once it had been extracted from its lodging.



First Watson carts
(TSCC, Oversize Platter)
This is the type of cart Watson applied for a patent initially. Baskets are still removable from the frame. In September 1946, Watson modified his patent application to reflect the improvement of his cart. He added telescoping baskets and permanently attached them to the frame.

After sharing this idea with the people around him, Watson built two prototypes which he showed to about ten individuals likely to commercialize them at the end of July 1946. Among the people watching his demonstrations was Fred E. Taylor, a retired Kansas City grocer who went into partnership with Watson to finance him. At the end of August Watson hired a lawyer to patent his carts. In early September the telescoping frames were lent for a ten-day trial period to one of the Milgram's Store outlets in Kansas City, situated close to Watson's workshop. The test was carried out with ordinary baskets. At the same time Watson was working on improving the telescoping frames by adding baskets that could also fit into one another. By mid-September he had designed prototypes and completed the patent application to include the addition of telescoping baskets[25].

[24] Like the luggage trolleys found currently in railway stations and airports.
[25] 'A brief History of the Telescoping Grocery Carts', 3 pages, document signed by Leslie S. Simmons, Personal Representative, Edith Watson Estate, TSCC, Box 1, folder 1; Private correspondence of Watson and Taylor couples, TSCC, Box 1, folder 5; Documents related to a preliminary search of patent for Telescoping Grocery Carts, dated August, 28 and 31, 1946, TSCC, Box 1, folder 6 ; "Letters Patent n°2 479 530", TSCC, Box 2, folder 1 ; "Supplemental Statement with Law Brief Annexed of Orla E. and Edith Watson in support of their Claim on Form 843 for a refund of Federal Income Taxes paid for the calendar year 1950, containing 33 pages", dated June 15, 1953, TSCC, Box 2, folder 8 ; "Summary of Orla E. Watson's activity with respect to application serial n°699 777, filed September 27, 1946, issued as patent n°2 479 530 August 16, 1949", dated November 13,



Telescope Carts brochure, c.1947
(TSCC, box 2, folder 3)

Watson's alterations to the shopping cart warrant particular attention, as with hindsight they seem so obvious and simple that their significance could easily be underestimated. The 1946 telescoping carts differed from their predecessors in two ways. They not only fitted into one another, owing to the swinging gate at the rear end of the baskets, but were also attached to the baskets so that they were permanently *shopping carts* and no longer basket carriers with distinct, separable elements. This was by no means self-evident: Watson first conceived of telescoping frames, before thinking of adding telescoping baskets as well and attaching them to the frame. Yet the strength of the system was clearly its combination of the two: telescoping and attachment. The "parking problem" that the telescoping carts claimed to solve was less the one and only problem of parking — the saving of space was the folding cart's advantage over its predecessors — than the double-sided one of parking and un-parking, that is the conversion of stock into flows.

Watson's cart made compatible two contradictory injunctions in the folding cart system: storage and use. The small and ingenious device of the tilting of the rear end of the basket absorbed alone those two injunctions by maintaining the form of the cart in each state: stored

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1950, TSCC, Box 2, folder 9 ; Accounting documents of the Western Machine Company, July and August, 1946, TSCC, Box 2, folder 10 ; Witnesses' sworn statements, TSCC, Box 2, folder 11 ; Watson's drawing dated June 3, 1946, TSCC, Oversize Platters.

or ready for use. Consequently, the effort required to accomplish that conversion was reduced, from the long sequence of setting up/dismantling to the easy movement of pulling/pushing[26]. From the self-service development logic, this simplification is particularly interesting insofar as it allows for a transfer of the effort of putting the cart into use from the store employees to the customers. This, in addition, permits a quasi-perfect adjustment of the rate of stock-flow conversion to the customers' flows. Thus, both the availability of shopping carts and storage space are not only increased but permanently optimized[27].

Yet despite its superiority over the basket carrier, Watson's shopping cart was still close to its origins. Just as the folding chair was discernable in the folding cart, so the folding cart appeared in the telescoping cart. Economists describe the irreversibility of an initial technological choice as a "path-dependence" phenomenon[28]. This can be extended to design issues. Following the design path of his time, Watson remain faithful to the principle of superimposing two baskets; the idea of a single, bigger basket like the one characterizing today's shopping carts never occurred to him. As a consequence, he designed a complex system to facilitate operations of loading and unloading the two baskets. The top basket of the telescoping cart could be tilted into a vertical position to facilitate access to the bottom one — the integration of the baskets to the frame analyzed above was thus only partial. When the customer checked out, access to the bottom basket was further improved by a motorized platform incorporated into the counter of the till. The cashier would press a pedal and the basket, sliding vertically, was lifted to the level of the counter. Watson had thus designed a whole technical environment for his telescoping cart. It is hard to know if Watson was prisoner of the two baskets carrier design or if he really intended to keep the two baskets

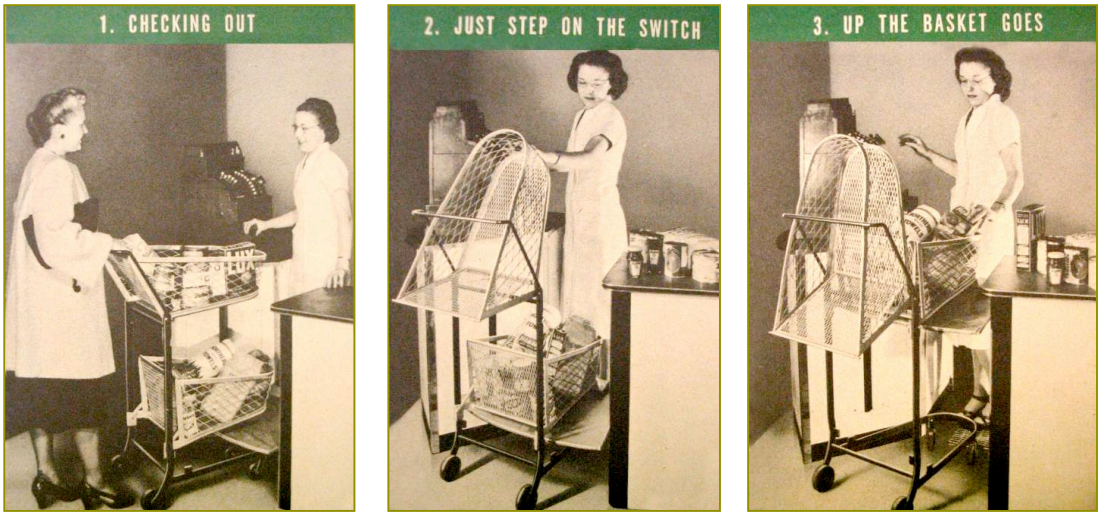
[26] This point owes a lot to the illuminating analysis of the door carried on by Bruno Latour: Latour, B., [1992], 2000, "Where are the missing masses? The sociology of a few mundane artifacts", *Shaping Technology / Building Society*, Bijker, W. E. et Law, J. (Eds), Cambridge, Mass, The MIT Press, pp. 225-258.

[27] It is interesting to note that both Goldman, a grocer, and American Wire Form and United Steel, two basket manufacturers, came from the retail sector and based their invention upon the market basket. They tried indeed to find a remedy to the market basket's defects they observed: small in size and heavy to carry. Moreover, the market basket implies a neat difference between stock and flow — when not in use, market baskets are piled up, out of use. Watson, on the contrary, was a man of flux industry — he worked in the oil field and in air conditioning systems and was used to pumps, valves, fluids, circulation. With the back flap, he devised a kind of valve principle for baskets, which maintains a horizontal continuity between the cart in use and the cart out of use. It is sometimes heard that the supermarket applies industrial principles of continuous production, division of tasks, and large scale production to retailing. If it is so, the genealogy of the shopping cart shows that it is by no means the result of a direct transfer or application but rather of a far more complex process, which involves many inventors, small improvements, and recombining. Through the telescoping cart, the supermarket may have progressed toward the industrial ideal of continuous production. But none of these inventors have had a clear conscience of what they were trying to achieve, except trying to advance, improve, and modernize.

[28] Arthur, W. B., 1989, "Competing technologies, increasing returns, and lock-in by historical events", *The Economic Journal,* vol. 99, no. 394, pp. 116-131 ; David, P. A., 1985, "Clio and the economics of QWERTY", *The American Economic Review,* vol. 75, no. 2 (Papers and Proceedings of the Ninety-Seven Annual Meeting of the American Economic Association), pp. 332-337.

because that way he could better automate the check-out. Both are probably true: the two baskets design was as well a constraint as an opportunity.

Despite the hopes placed in the "Power Lift", as the system was called, and the interest in it — although this was moderated by the expensiveness of the system[29] —, Watson sold only a few copies, manufactured by him. The ingenuity, effort and care that had gone into the Power Lift seemed to have been in vain once the single-basket shopping cart came into general use. The patent application filed on 13 November 1946 was eventually withdrawn.



Telescope Carts, Inc. brochure (details), c.1947
"speeds check out, saves back-breaking"
(TSCC, box 2, folder 3)

2.2. THE PARADOX OF SUCCESS: THE SPECTACULAR DIFFUSION OF THE IDEA OF A TELESCOPING SHOPPING CART AND THE DIFFICULTIES OF TELESCOPE CARTS, INC.

In autumn 1946 Watson, like any good innovator, tried to create a network for his invention[30]. He went into partnership with a man who was more enterprising than himself and better at business, especially retail trade, Fred E. Taylor. Thanks to Taylor, the first investor in the telescoping shopping cart but also a former grocer, Watson's carts and counters had an experimental site and commercial network from the end of 1946. Floyd Day's, the "guinea pig store", as Watson and Taylor called it, was in fact Taylor's former grocery store. Taylor persuaded the new owner to equip his store with Watson's carts. The commercial network that Taylor obtained for the Telescope Cart and the Power Lift was represented by George

[29] See the personal correspondence of the Watson and Taylor spouses, TSCC, Box 1, Folder 5.
[30] See Akrich, M., Callon, M. et Latour, B., [1988], 2002, "The key to success in innovation, Part 1: The art of interessement" & "Part 2: The art of choosing good spokespersons", *International Journal of Innovation Management,* vol. 6, no. 2, pp. 187-206 & pp. 207-225.

O'Donnell, salesman for a leading firm selling refrigerating equipment for the retail trade. In constant contact with supermarket managers and wholesalers specialized in point-of-sale furniture, O'Donnell was thoroughly familiar with the market and fully aware of the potential of Watson's inventions. He went into partnership with Watson in October 1946[31] and became a fervent promoter of the telescoping shopping cart, determined to conquer the supermarket world. The following excerpt from one of his first letters to Watson, dated November 5, 1946, bears witness to this:

> *"I become more enthused daily and I am sure there will be a ready market for your carriage, matter of fact I believe once we are in full production, our Competitors will have a hard time staying in business. I wish you would talk with your Patent Attorney and determine if his application covers foreign countries, this is most important, for as you know I have every intention of invading these markets and we want to be well protected."* Letter from O'Donnell to Watson, November 5, 1946, *TSCC*, Box 1, Folder 4

The distribution of tasks between the three men was as follows: Watson was responsible for design, development and production (or supervision of sub-contractors) via his own firm, Western Machine; Taylor was in charge of various managerial duties; and, finally, O'Donnell, who planned to leave his actual employer once the business was profitable, was entrusted with sales management, finding sub-contractors, promoting and selling shopping carts and counters and, finally, general management of the operations.

During the year 1947, the three men's projects were gradually fleshed out as the weeks went by[32]. On the production side, Telescope Carts, Inc. was officially founded in April and in May a manufacturing contract signed with a sub-contractor in Dayton, Ohio. It had been decided that counters equipped with the Power Lift would be manufactured by Watson's own firm, Western Machine. On the sales side, a first order for 48 carts and three Power Lifts was put through by Charles Ball, a Kansas City retailer who planned to open a modern supermarket in May. By the end of the summer O'Donnell had orders from his regular customers for over 100 carts[33]. Finally, the three men organized public demonstrations on a large scale. After their first participation in a trade fair in October in Peoria, Illinois, they decided to present the telescoping cart at the Super Market Convention which opened on November 2, 1947. This

[31] 'O'Donnell & Watson Agreement', 5 October 1946, TSCC, Box 2, Folder 10. Watson et Taylor formalized their verbal agreement reached in the summer, in a document dated 30 November 1946 ('Partnership Agreement', 30 November 1946, TSCC, Box 2, Folder 7 and Box 2, Folder 10).

[32] Cf. the business correspondence between Watson, Taylor and O'Donnell, TSCC, Box 1 Folder 4; and the personal correspondence between the Watson and Taylor spouses, TSCC, Box 1 Folder 5; as well as the document 'Supplemental Statement with Law Brief Annexed of Orla E. and Edith Watson in support of their Claim on Form 843 for a refund of Federal Income Taxes paid for the calendar year 1950, containing 33 pages', dated 15 June 1953, TSCC, Box 2, Folder 8.

[33] Cf. the business correspondence between Watson, Taylor and O'Donnell, TSCC, Box 1 Folder 4 and the personal correspondence between the Watson and Taylor spouses, TSCC, Box 1 Folder 5.

was probably the most important event of all for self-service operators. Goldman had presented his folding shopping cart at the inaugural Convention ten years earlier. Thanks to O'Donnell, Telescope Carts was able to obtain a stand only two months before the opening[34].

While news from the sales front was positive, the situation nevertheless became tense on the production side. The switch to industrial production entailed many problems that Watson had to solve *ad hoc*: defects in the telescoping, problems with wheels and handles, risks related to sharp angles, etc. Throughout 1947 he constantly revised the telescoping shopping cart model[35]. Various packaging solutions were also considered and tried so that the carts would reach their destination undamaged and at the lowest cost[36]. But constant difficulties relative to procurement of steel in the war context of shortages was probably the most penalizing problem for Telescope Carts. In autumn 1947 nothing had left the Dayton factory yet. Only two Kansas City stores (Floyd Day's and Chas Ball Supermarkets) had been equipped with telescoping carts, produced individually by Watson himself. At this stage the market, which was believed to be large and seemingly easy to monopolize[37], suddenly changed and shrank, due to the entry of a competitor.

At the chain store operators' trade fair in October 1947, Goldman's firm, the Folding Carrier Corporation[38], pre-announced the launch of the "New Triple-Plus Capacity Nest-Baskart", a shopping cart that tripled the quantity of shopping a customer could transport, saved parking space and speeded up the checking-out process. This triple performance stemmed from a twofold innovation: a large, single basket, and a telescoping system that was surprisingly similar to Watson's.

George O'Donnell panicked: was it possible that others had invented the system of telescoping carts before Watson? On visiting the Folding Carrier stand at the Food Chain Operators Convention incognito, O'Donnell learned, among other things, that the unexpected competitor was selling its shopping carts for nearly three dollars less per unit than those of Telescope Carts, and that it had already received orders for 3,000 carts. Goldman's firm moreover announced that it would be present at the Super Market Convention in November and that it had already launched an advertising campaign. The announcement of the Nest-

[34] Cf. the business correspondence between Watson, Taylor and O'Donnell, TSCC, Box 1 Folder 4.
[35] Cf. the business correspondence between Watson, Taylor and O'Donnell, TSCC, Box 1 Folder 4; and the personal correspondence between the Watson and Taylor spouses, TSCC, Box 1 Folder 5.
[36] O'Donnell explained that he had noticed that the carts were not sufficiently protected during their transport and that they arrived with bent wheels, deformed baskets and buckled frames, for instance. O'Donnell's letters to Taylor dated 7 and 8 December 1947, TSCC, Box 1, Folder 4.
[37] Cf. George O'Donnell's letter to Orla E. Watson dated 5 November 1946, TSCC, Box 1, Folder 4.
[38] The firm, formerly called The Folding Basket Carrier, shortened its name in the late 1940s, Letter from S.N. Goldman to R. Roth, curator at the Smithsonian Institution, dated 22 November 1972.

Baskart launch – that O'Donnell attached to one of his alarmist letters – appeared in the October and November issues of *Super Market Merchandising*[39]. Everything pointed to the fact that Telescope Carts was about to be overtaken in the race for the commercialization of telescoping carts.

> *"These people have virtually copied our carts and have beat us to the punch with present introduction to this Important Group of Buyers. As stated they will also be at the Super Mkt. Convention, which of course will present competition, and to a great degree take away from us all the Glamour of being the only ones with such a featured cart. The important question is, WHAT HAVE YOU DONE WITH YOUR PATENT ATTORNEY TO HASTEN A THOROUGH INVESTIGATION AS TO POSSIBLE INFRINGEMENT, we cannot afford to take SLOW measures in determining who is right or wrong, something MUST be DONE IMMEDIATELY to ascertain the facts and if at all possible restrain them from exhibiting their cart at the Convention",* Letter from O'Donnell to Watson, October 16, 1947, TSCC, Box 2, Folder 2.

Watson responded to O'Donnell's panic by assuring him that he was within his rights since the preliminary investigations carried out with a view to filing a patent application had shown that no other device of a "telescopic nature" for shopping carts or similar instruments existed. He furthermore endeavored to boost his allies' morale and to nurture the solidarity of the group that he had formed around his project to conquer the world with the shopping cart.

> *"It is unfortunate that there is always someone to spoil ones fun especially if that fun is good and ours is good and we will be fighting them off continually from now on is my guess. This is just the beginning. [...] I'll bet it didn't take all these Cart Manufacturers long to get here and examine our carts at the Floyd Day Store when it was first put in and with all of the talking we done and pictures we passed out it just wouldn't be possible that they did not know about them and of course they did, and if this Oklahoma outfit knew about them at that time they would have jump down on our neck long before this if they had had any ideas of a patent on this telescope principle."* Letter from Watson to O'Donnell, Hanson and Taylor, October 18, 1947, TSCC, Box 1, Folder 4.

Once the initial anxiety had subsided the three men felt confident that the patent problem would be sorted out easily, especially since they received good news from the production side: since late September the sub-contractor had been manufacturing a growing number of shopping carts[40].

[39] *SMM*, vol. 12, no. 10, p. 126 and vol. 12, no. 11, p. 209.
[40] Cf. the business correspondence between Watson, Taylor and O'Donnell, TSCC, Box 1 Folder 4; and the personal correspondence of the Watson and Taylor spouses, TSCC, Box 1 Folder 5.

ON DISPLAY IN BOOTH 101 AT THE SUPER MARKET CONVENTION

LEADERS IN THE FIELD

We are proud to present

THE NEW "TRIPLE-PLUS" CAPACITY NEST-BASKART

. . . the STREAMLINED SHOPPING CART of the POST-WAR ERA
. . . for use with "CUT" CHECK STANDS or "PRE-SORTING" SLIDES

HOLDS MORE MERCHANDISE THAN 3 REGULAR SIZE BASKETS

MODEL NO. NB-1100

CARTS NEST COMPACTLY TOGETHER IN ONE ANOTHER

NO MORE BASKET CARRIER PARKING PROBLEM!

Carts simply "dove-tail" into one another requiring only 5 inches of space for each additional cart. A parking space 6' x 8' consisting of three rows will accommodate 36 "NEST-BASKARTS". The same size parking space will only accommodate 12 regular basket carriers ready for customers use.

FASTER CHECKOUTS

Top "Triple-Plus" capacity basket has the largest shopping capacity ever devised in any shopping cart. It holds more merchandise than three regular size baskets, inducing larger purchases and speedier checkouts with "Cut" check stands or "Pre-Sorting" Slides.

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to meet your specific requirements

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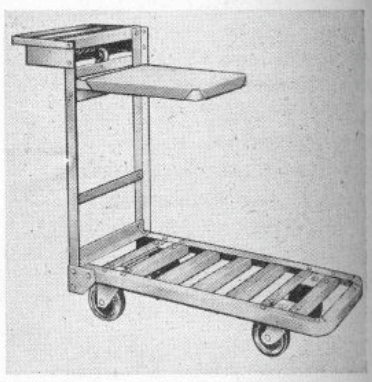
This All-Purpose Utility Store Truck with attached tool basket is ideal for stocking shelves and moving merchandise. Upper retractable work-shelf affords a "WORK-TABLE" wherever needed. Heavy-duty, double-ball-bearing steel wheels with resilient, replaceable rubber tires.



FOLDING CARRIER CORP.

THE ORIGINATORS OF FOLDING BASKET CARRIERS AND STORE SERVICE TRUCKS
1238 WEST MAIN • OKLAHOMA CITY, OKLAHOMA

Folding Carrier's Advance Anouncement
(reproduced from SMM, October 1947, also in TSCC, Box 2, Folder 3)

3. THE PROPRIETARY-STANDARD FORMAT TENSION: THE GRANTING AND CONFIRMATION OF THE WATSON PATENT, 1949-1953

3.1. THE WATSON-GOLDMAN COMPROMISE, 1949

While legal mediation promised a solution to the dispute, albeit one that would take some time to materialize, the competition carried on in the market. In order not to leave the price advantage to Folding Carrier, Telescope Carts lowered its rates and sought a new manufacturer for its shopping carts[41]. In June 1948 a contract was signed with Binkley. After the Super Market Convention, orders and requests for information poured in from leading national chain stores such as Piggly Wiggly, The Atlantic & Pacific Tea Company, and Kroger, as well as regional chains such as the one belonging to Joe Weingarten, inventor of one of the precursors of the shopping cart (cf. *supra*). In December O'Donnell reserved stands at the 49th Annual Convention of the National Association of Retail Grocers, scheduled for the following June. Since economic competition is a matter of territory, O'Donnell rented a stand for Telescope Carts just two stands from Folding Carrier: "I felt we should be as close to these rascals as we could", he explained[42].

The Nest-Baskart was a copy of the Telescope Cart. The scenario put together by Watson and Taylor was the following: Goldman had been informed of Watson's idea, probably by the Milgram brothers, as one of their points of sale had been used to test the first prototype of the telescoping shopping cart. They assumed that Goldman had subsequently gone to Kansas City in June 1947 to visit stores equipped by Watson, and then redesigned Watson's shopping cart with the same telescoping system[43]… for which he filed a patent application registered on May 5, 1948[44]. On October 25 of that year, following Watson's various claims, an

[41] Cf. the business correspondence between Watson, Taylor and O'Donnell, TSCC, Box 1 Folder 4.
[42] Letter from O'Donnell to Taylor, December 22, 1947, TSCC, Box 1, Folder 4.
[43] This story is reported in "A brief History of the Telescoping Grocery Carts", 3 pages document signed by Leslie S. Simmons, Personal Representative, Edith Watson Estate, TSCC, Box 1, Folder 1 ; and in "Brief for plaintiffs on rehearing", Orla E. Watson and Telescope Carts, Inc. v. Henry Heil and J. Henry Heil individually and doing business as Henry Heil, a partnership, Civil Action n° 4946, United States District Court, District of Maryland, dated 3 October 1953, 19 pages, document submitted to the judge by Watson's attorneys in the 1952-1953 patent contest, TSCC, Box 2, Folder 9.
[44] Goldman filed two patents applications, respectively on May 5, 1948 and in January 1949. Cf. "Brief for plaintiffs on rehearing", Orla E. Watson and Telescope Carts, Inc. v. Henry Heil and J. Henry Heil individually and doing business as Henry Heil, a partnership, Civil Action n° 4946, United States District Court, District of Maryland, dated April 3, 1953, 19 pages, document submitted to the judge by Watson's attorneys in the 1952-1953 patent dispute, TSCC, Box 2, Folder 9.

interference procedure concerning Watson's and Goldman's patent applications was officially opened by the patent office[45].

In 1948 other shopping cart manufacturers also launched the production of improved telescoping carts. Two of them signed a license agreement with Telescope Carts in late 1948 and early 1949, because the firm had warned them of its (possible) situation of illegality[46]. Binkley, the sub-contractor, delivered very few of the 100,000 carts ordered. Various reasons were given for this: difficulties in obtaining steel; inappropriate premises and lack of space; design defaults; replacement of the wheels originally provided for by an unsuited alternative; disagreements on the rate set and then on the quality of the carts manufactured; etc. At the beginning of 1949, faced with so many setbacks, in addition to the growing competition and the improvements that its rival was making to the telescoping shopping cart, Watson and his partners decided to salvage something from the wreckage. Since the centralized mediation of the patent office and the distributed mediation of the market both seemed unfavorable to Watson's immediate cause, an out of court settlement appeared to be the best option. On June 3, 1949 Goldman and Watson signed an agreement that put an end to the interference procedure. Goldman recognized Watson's invention and paid one dollar in damages for counterfeit, in exchange for which Watson granted Goldman an exclusive operating license (apart from the three licenses that had already been granted). On August 16, 1949 Watson was granted the telescoping shopping cart patent[47].

At the end of 1949 Watson, Taylor and O'Donnell gave up idea of producing and commercializing telescoping shopping carts themselves. On December 31, 1949 Telescope Carts ceased manufacturing and selling carts and became a personal holding company in order to devote itself entirely to the management of its patent operating licenses. Within three years, and despite the rapid success of the telescoping shopping cart, the three men's ambitions of conquest and monopoly, expressed when they initially became partners, were

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[45] "Declaration of Interference", TSCC, Box 2, Folder 2. On the interference procedure, cf. Kingsland, L. C., 1948, "The United States Patent Office", *Law and Contemporary Problems,* vol. 13, no. 2, pp. 354-367. See also : Reingold, N., 1960, "U.S. Patent Office records as sources for the history of invention and technological property", *Technology and Culture,* vol. 1, no. 2, pp. 156-167 ; and the famous (and still controversial!) interference case on the loading coil between Campbell and Pupin: Brittain, J. E., 1970, "The introduction of the loading coil: George A. Campbell and Michael I. Pupin", *Technology and Culture,* vol. 11, no. 1, pp. 36-57 and answers in *Technology and Culture,* 1970, vol. 11, no. 4 : Espenschied, L., "'Something rotten in Denmark'… in Boston", Jackson, J. G., "Patent interference proceedings and priority of invention", Brainerd, J. G., "Some unanswered questions", pp. 596-603.

[46] Cf. License Agreements, TSCC, Box 2, Folder 7.

[47] Here is how the episode is recounted in Wilson: "Periodically conflicts developed over later Goldman patent claims and other applicants' inventions. Goldman's new-model nesting cart met with some difficulty. […] Another incident, in 1949, involved a lengthy appeal with Telescopic Carts of Kansas City, Missouri. The case ended in an out-of-court settlement." Wilson, 1978, *op. cit.,* p. 106

shattered[48]. The idea of lateral telescoping of shopping carts had been so successful from the outset that it surpassed its initiators. O'Donnell had been right in 1946 (cf. citation *supra*), that patent protection would be crucial and that there was a ready market for Watson's invention. But it was precisely the existence of a market already formed, that is, the existence of customers and of competitors with industrial know-how and probably with contacts for procuring steel, that handicapped Telescope Carts. By hitching Goldman's industrial equipment to his innovation, albeit reluctantly, Watson was nevertheless able to conquer the world as he had intended to. The single-basket telescoping shopping cart, the fruit of unexpected and forced collaboration between Goldman and Watson, swiftly became a universal object of mass distribution.

[48] Yet O'Donnell, Watson and Taylor took considerable benefits from the patent royalties.

Folding Carrier Advertisement, *SMM,* October 1949
Four months after the settlement between Watson and Goldman and two months after Watson was granted the patent, Goldman advertised his (new) legitimate manufacturing of patented carts.

3.2. CHALLENGING THE VALIDITY OF THE PATENT, 1950-1953

But the story does not end there. Watson and Goldman reached an agreement to solve their dispute, in terms of which Goldman had to grant the intellectual property rights of the telescoping shopping cart to Watson in exchange for an exclusive license. Only Goldman, Watson and the two manufacturers (Chatillon and Campbell-French) who had signed a license agreement before the granting of the patent could thereafter legally produce telescoping carts. The former partnership between Telescoping Shopping Cart and Binkley was dissolved and as compensation Binkley was granted a free two-year license for 100,000 telescoping carts. However, probably because its manufacturing problems had not been solved, Binkley conceded its license to United Steel and to Tote Cart, two leading basket-carrier manufacturers.

Everything seemed to be solved for a few weeks, even months, until the dazzling success of the telescoping shopping cart once again turned the odds against Watson. The solution that he had proposed seemed so relevant and yet so simple that it seemed unavoidable. Those manufacturers of shopping carts who had been excluded – United Steel and Tote-Cart after the Binkley license had expired, and Technibilit – therefore commercialized telescoping carts in spite of their exclusion.

In 1950 a legal battle broke out between Telescoping Carts and United Steel, which was to last for three years[49]. Watson's archives contain very little on the early stages of this dispute. Telescope Carts sued United Steel for patent infringement and the latter company defended itself on the grounds that the patent was invalid. United Steel argued that it was unacceptable to reserve the benefits of the commercialization of such generic elements as the hinge or the principle of the gate, even adapted to the basket. At the first trial of this case the patent in suit was held invalid. On appeal the case was reversed and remanded for a new trial. As a result of the retrial an opinion was filed on October 23, 1952, which concluded on the validity of the patent and its infringement. United Steel filed a petition for leave to introduce further evidence, which was granted by the court on December 1, 1952. After presentation of this additional evidence, the judge found that there was no reason to change the October 23, 1952 ruling. United Steel subsequently appealed, on May 4, 1953, but this appeal was withdrawn and the October 23, 1952 verdict was finally confirmed on October 1, 1953. In the meantime,

[49] United States District Court for the District of Maryland, Civil Action n°4946. I am exposing here "United Steel" and "Telescope Carts" or "Watson" as the actors of this story, but the parties in suit were in fact Orla E. Watson and Telescope Carts, Inc., versus Henry Heil et J. Henry Heil, individually and doing business as Henry Heil, a partnership. Heil and Heil represented United Steel and Wire, Co. as can be inferred from the terms of the License Agreement contract (TSCC, Box 2, Folder 7).

on July 1, 1953, Telescope Carts signed license agreements with United Steel (provided it withdrew all charges), Technibilt and Tote-Cart.

This is the point at which the history of this case was stabilized. But before the patent was confirmed, Watson felt threatened again; he sensed the fragility of the partnership with his former rival and realized how easily all the allies, interests, compromises and agreements that had been pooled could fall apart, returning to their initially fragmented state, and how prone coalitions of interests are to disintegrate and to coagulate elsewhere. In 1951 Goldman challenged the amount of royalties that he had to pay Telescope Carts, on the grounds that many manufacturers were infringing the patent. Watson and Goldman therefore signed a contract in terms of which they agreed that, from January 1, 1952, Goldman would no longer pay royalties to Watson until a solution had been found to the cases of United Steel and Wire, Tote-Cart and Technibilt, which were supposed to pay royalties. Goldman furthermore paid a fixed amount of 35,000 dollars in royalties due for the year 1951. On January 8, in exchange for 20,000 dollars, Watson agreed to pay Goldman 30 cents per shopping cart on all the royalties paid by any future licensees other than the initial ones[50]. In March, Chatillon claimed that it "has been losing business in telescope carts to concerns who have been infringing the Watson patent, and that [the company] need[s] substantial relief in the matter of royalty payments […]"[51]. This company was consequently granted a credit of royalties on 60,000 carts, limited to 3,000 carts per quarter. Following the license contracts signed between Watson and United Steel, Tote-Cart and Technibilt, Telescope Carts' payment of royalties to Goldman was amended, as of September 1953, to 25% of all royalties, with the exception of amounts paid at signature of license agreements as compensation for past infringements or as advances[52].

On October 1, 1953, the withdrawal of United Steel's appeal took effect. In the following years new cases of infringement arose and one of Telescope Carts' only activities was to sue offenders and ensure that they complied with the patent restrictions. Owing to the fact that the court had upheld the validity of the patent, this was more or less a matter of routine, with no risks for the grouping and alignment of interests secured by Telescope Carts.

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[50] Agreement and License Agreement between Telescope Carts, Inc., Orla E. Watson and Folding Carrier Corp, January 1st, 1952 ; Supplemental Agreement (same parties), January 7, 1952 ; Assignment of Royalties between Telescope Carts, Inc., Orla E. Watson and Charles E. Frances, trustee under the Morris Dreyfus Trusts, January 8, 1952, TSCC, Box 2, Folder 7.

[51] Letter from F. E. Taylor to N. W. Mailman at John Chatillon & Son, dated March 27, 1952, TSCC, Box 1, Folder 3.

[52] Agreement and Assignment of royalties between Telescope Carts, Inc., Orla E. Watson and W. A. Colement, trustee under the Morris Dreyfus Trusts, September 12, 1953, TSCC, Box 2, Folder 7.

Conclusion

To conclude, it is interesting to consider the judge's motives for recognizing the validity of Watson's patent. United Steel had challenged the fact that Watson's shopping cart was a patentable innovation, on the grounds that Watson's patent concerned elements that were either generic or else already under patent. Moreover, United Steel's telescoping carts differed substantially from those of Watson. The lawyers defending Watson highlighted the "reverse salient" argument and used case law to show that "where there has existed for a considerable period of time a problem in an industry as to how a result could be achieved, the discovery of even a slight change in former processes which for the first time accomplish the desired result may amount to the dignity of invention". To substantiate their argument they supplied evidence that for a long time the industry had been seeking a way to reduce the place occupied by shopping carts in the store.

The judge who had ruled the first time in favor of United Steel was not convinced by Watson's arguments. He considered that the telescoping feature of Watson's shopping cart did not perform a new function with regard to the gain of floor space; carts of the folding type achieved this satisfactorily. On the other hand, owing to the unitary design of the carriage and basket, and the telescoping feature of both of them, Watson's cart effectively produced a new or different function or operation than therefore performed due to the greater convenience in handling the carts. But in the judge's opinion the main evidence of the patentability of Watson's shopping cart was its commercial success. He did recognize the competitors' contribution to the improvement of Watson's cart and thereby to its commercial success ("various manufacturers of this type of cart have very greatly improved the quality of the carts in appearance, sturdiness of construction and ease of carriage and convenience in handling"[53]) but nevertheless noted that Watson was clearly the inventor of this shopping cart which, within a few years, had replaced all the other types. "It is, of course, a well-known principle of patent law that while commercial success, without invention, cannot establish patentability, yet in really doubtful cases the factor of marked commercial success, and it has been marked in this case, will be sufficient to turn the scales of decision in favor of the validity of the

[53] Opinion filed on October 23, 1952, Chesnut, District, Judge, in Civil Action n°4946, District court for the district of Maryland, Orla E. Watson and Telescope Carts, Inc. v. Henry Heil and J. Henry Heil, Individually and doing business as Henry Heil, a partnership, TSCC, Box 2, Folder 9, pp. 4-5.

patent", wrote the judge[54]. This was a fair conclusion to the story since it was precisely that commercial success that had initially dispossessed Watson of his invention.

Finally, I wish to highlight two inter-related characteristics of the formal evolution of the shopping cart. Opening Watson's archives enables us to produce a more balanced account than Goldman's, which was biased in his favor. Above all, it allows us to show that there was neither one nor two inventors of the shopping cart but a multitude who all tested, altered and added features to the cart until it ended up with the shape it now has, all in a continuous and collective innovation effort. The shopping cart grew literally but slowly from the market basket. This collective and continuous dimension of innovation contributed towards the establishment of an increasingly robust object whose forms were progressively set, composed and made irreversible. This is the first characteristic of the formal evolution of the shopping cart.

Watson's contribution is no less noteworthy for all that; it appears to have been both limited and crucial. The judge considered that "the swinging gate at the rear of the basket" was the key element in Watson's innovation. Whereas Watson had conceived of a whole environment for his cart, and his patent defends multiple qualities without specially focusing on the hinged swinging gate (he even forgot it in certain claims), it was this small detail that was recognized as the main originality of the shopping cart. The principle of lateral telescoping of the carts through this small gate was crucial in the enterprise of maximal mobilization of the features characterizing the supermarket world. The second characteristic of the formal evolution of the shopping cart is therefore the consistent effort of shifting as many operations of distribution as possible over to the objects and customers.

[54] Opinion filed on October 23, 1952, Chesnut, District, Judge, in Civil Action n°4946, District court for the district of Maryland, Orla E. Watson and Telescope Carts, Inc. v. Henry Heil and J. Henry Heil, Individually and doing business as Henry Heil, a partnership, TSCC, Box 2, Folder 9, p. 10.