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June, 2010

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The Visual Display of Economic Knowledge in the United States (1921-1945)

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Abstract: The rise of visual representation in economics textbooks after WWII is one of the main features of contemporary economics. In this paper, we argue that this development has been preceded by a no less significant rise of visual representation in the larger literature devoted to social and scientific issues, including economic textbooks for non-economists as well as newspapers and magazines. During the interwar era, editors, propagandists and social scientists altogether encouraged the use of visual language as the main vehicle to spread information and opinions about the economy to a larger audience. These new ways of visualizing social facts, which most notably helped shape the understanding of economic issues by various audiences during the years of the Great Depression, were also conceived by their inventors as alternative ways of practicing economics: in opposition to the abstraction of “neoclassical” economics, these authors wanted to use visual representation as a way to emphasize the human character of the discipline and did not accept the strict distinction between the creation and the diffusion of economic knowledge. We explore different yet related aspects of these developments by studying the use of visual language in economics textbooks intended for non-specialists, in periodicals such as the *Survey*, a monthly magazine intended for an audience of social workers, the Americanization of Otto Neurath's pictorial statistics and finally the use of those visual representations by various state departments and administrations under Roosevelt's legislature (including the much-commented Historical Section of the Farm Security Administration). We show how visualizations that have been created in opposition to neoclassical economics have lost most of their theoretical content when used widely for policy purposes while being simultaneously integrated into the larger American culture. It is our claim that those issues, which are familiar to those involved in cultural and visual studies, are also of crucial importance to apprehend the later developments of modern economics.

Keywords: Visualization, economics, American Economy, Otto Neurath, Rexford Tugwell, Roosevelt, Roy Stryker, Photographs, Pictorial Statistics

JEL Classifications: B20, A14

¹ Correspondence may be addressed to charles@ined.fr or yann.giraud@u-cergy.fr. In the course of this research, we have benefited from the material help of several institutions including Duke University, EconomiX, Ined, the Museum of Science and Industry (Chicago), the Sophia Smith collection, the University of Chicago, the University of Minnesota and Thema. This paper has been presented at the HES 2009 conference, the ESHET 2010 conference and the Economics as Culture 2010 Workshop. Earlier versions of this paper have also benefited from comments by Malcom Rutherford and Tim Leonard.

1. Introduction

“Ce n'est pas une image juste, c'est juste une image”

Jean-Luc Godard, *Vent d'Est*

Giving a personal account of the evolution of economics in the second half of the 20th century, Robert Solow (1997) began his recollection by depicting the visual austerity of 1930s economic textbooks, as opposed to the rich visual content of their modern counterparts. One should not, however, infer from Solow's sensible observation that the larger literature dealing with economic issues did not benefit from a wide array of visual aids in the interwar period. Indeed, American social sciences witnessed at this time the intense diffusion of visual representations of economic and social facts in newspapers, magazines, pamphlets, official reports and non-technical economics textbooks, even though these methods resulted in figures – photographs and pictorial representations for instance – which were different in nature from the kind of analytical diagrams the twenty-first century student is now used to encounter in economic textbooks. Yet, while these techniques of visualization were invented and used by people whose ambition was to contribute to the advancement of social sciences including economics, they have received scant attention of historians of these fields. The latter's interest in visual representation, is itself a recent development, focused on theoretical works or at least works produced within rather than outside the academia.² Conversely, while historians and communication studies scholars have developed an interest in documenting and interpreting the rise of visual representations of the social from the 1910s to the Second World War, they did not address the issue from the perspective of social sciences in any detail.³

It is important to acknowledge that over the past two decades, narratives in the history of science and art history have begun to converge. While recent works in art history have increasingly referred to science as an important factor in the development of aesthetics, historians

2 For an overview of the recent literature on visual language, see Giraud (2010). It should be noted, however, that recent works by Peart and Levy (2005, 2008) refer to the use of visual representation – cartoons – in the popular press as addressing core issues in economic philosophy.

3 The most comprehensive work being Cara Finnegan's *Picturing Poverty: Print Culture and the FSA Photographs* (2003), which studied the early diffusion of the photographs collected by Roosevelt's Resettlement Administration (RA) and Farm Security Administration (FSA) to document the Great Depression. Other references on the pre-WWI and interwar context include Aubert (2005), Gordon (2006), Greenwald (1996), Mora and Brannan (2006), Shanken (2006), Seixas (1987) and Smith-Shank (2003).

of science such as Norton Wise (2006) have called for a 'history of vision' that would transcend the traditional divisions between culture and science, geometry and algebra, laboratories and museums for the closer we approach the question, the more we realize that it is at the intersection between these dichotomies that visualization operates.⁴ In addition, the fact that science is indeed the study of a form of communication in which knowledge transits from individuals to larger communities and vice versa renders a neat distinction between what is scientific and what is not scientific quite ineffective from a historical point of view.⁵ In the social sciences and most notably economics, a neat division between scientific works and works of popularization has been accepted as a commonplace by most social scientists and philosophers of science.⁶ However, even if we may accept it for the later period, the projection of this distinction on earlier periods is problematic. In the interwar period, several prominent social scientists, economists and philosophers coming from very different backgrounds such as Otto Neurath, John Dewey and the institutionalist economist Rexford Tugwell were arguing that the development of science was not (and should not be) separate from its diffusion to the public at large. Our contention is that visualization played a central role in defining their epistemological position as well as their practices as social scientists and economists.

In the following, we will show that visualization was one aspect of the revolt of institutional economists, social scientists, philosophers, social workers, journalists and artists alike against the dismal science created by those that Tugwell called the “classical economists”.⁷ We argue that the development of visual representations of all kinds and their diffusion to large audiences is a significant feature of American social sciences in the interwar period. As it is well-known, pre-world war II American social sciences and economics were heterogeneous and divided in several research programs (Morgan and Rutherford 1998, Ross 1991, Yonay 1998). The economic discipline was structured upon an opposition between the marginalists and the institutionalists, the latter being also partitioned in several groups that were only loosely connected and developed in significantly different directions (see Rutherford 2000, 2003 and 2006). Against what they saw as the overspecialization and over-abstraction of classical and neo-classical economics, the institutionalist economists and other social scientists produced and used

4 For a more exhaustive discussion of these new trends in history of science and art history, see the introduction of Cook (2005).

5 See Secord (2004) and Topham (2009).

6 On postwar positivism in social sciences, see Steinmetz (2005).

7 For Tugwell, the “classical economists” is a category that included Ricardo as well as the Mills, Walras, Marshall and their marginalist followers (see Tugwell 1924).

a wide range of visuals (photographs, cartoons, statistical charts and pictographs) that were meant to democratize knowledge by speaking a language lay men and women were able to comprehend, and which in turn would enable them to have a larger share in society and government. These visuals were also meant to provide to the wealthy and the academic who were too remote from the common man a better understanding of the economic and social problems most Americans and Europeans and their institutions were facing. In other words, visual representations were meant to be a universal and neutral medium either to give access to certain aspects of economic and social reality or to convey social and economic knowledge and ideas.

In the next section we will present the growing interactions between American social sciences and visual images in the 1920s. In the third section, we will show how the Viennese method of visualizing statistics created by Otto Neurath and his team was disseminated in the 1930s USA. In the fourth section, we will concentrate on the wide use of photographs and Neurath-like pictograms by the Roosevelt administration to publicize its programs and results. Though the FSA photographs provided the most striking and well-known testimony of interest for visual of the Roosevelt administration, we will show that they were part of a larger interest for visuals as a means of representing economic and social realities. The fifth section will provide concluding remarks.

2. The visualization of the American economy in the interwar social sciences

The landscape of the American social sciences evolved rapidly after World War I. This was partly the product of evolutions prior to the war, such as the move of social work toward social sciences exemplified by the Pittsburgh Survey (Cohen 1991; Greenwald and Anderson 1996). This was also due to the war itself which provided a strong impetus for the development of the quantitative study of business cycles and the necessity of some sort of planning in the economy which prolonged into the 1930s (Alchon 1985; Balisciano 1998). It also corresponded to the heydays of institutionalism which rose to prominence in American economics throughout the decade (Rutherford 2000, 2003). On top of these changes, one should also mention the strong influence of John Dewey who advocated a reconstruction of philosophy and social sciences built on the notion of experience and along epistemological lines opened by natural sciences (Ross 1991). These transformations took place inside and outside the academia since, in the inter-war period, the frontiers between the two were often blurred. It is only after World War II that social

sciences and economics in particular would turn into full blown academic professions, and moreover in the case of economics one with a coherent and relatively consensual research program (Morgan and Rutherford 1998). In many cases, social scientists who emulated and participated to the changes that took place after WWI believed that old style social sciences were unable to provide adequate understanding of the modern industrial society that America had become. The technical advances of industry and science had created an unknown level of riches in America and the promise of everlasting progress in the future, yet, at the same time, it created social and economic problems that seemed to threaten all this. Poverty was looming amidst of plenty. Several of these different strands inside and on the margins of economics converged toward visualization.

The Pittsburgh Survey had been conceived by brothers Paul and Arthur Kellogg, assistant editors of *Charities and Commons*. The leading journal for social workers, the latter helped open a new era in the cooperation between social work and social sciences.⁸ From its beginning in 1907, the Survey was undertaken as a major project destined to impact on the way social research was conducted. Financed by the newly created Russell Sage Foundation, it involved economists, social scientists, photographers and artists, most of them staying in the city for more than a year in 1907 and 1908 to produce a huge six volume study.⁹ The department of economics of the University of Wisconsin, one of the major centers of institutionalism was closely involved in the Survey.¹⁰ Commons who had been recruited in 1904 as a labor economist and historian went to Pittsburgh for a month with two graduate students, William Leiserson and John Fitch. The latter stayed there for more than a year and worked with the Survey team to complete an in-depth study of Pittsburgh's steel industry. His findings were reunited in one of the volumes published by the Russell Sage foundation. A major feature of the Survey was the importance of visual arts, in particular photography. The Kelloggs had recruited Lewis Hine, a photographer already known for his deep interest in social issues as well as the modernist painter Joseph Stella to provide

8 Born respectively in 1879 and 1878, Paul and Arthur Kellogg were natives of Michigan where they had spent most of their childhood. Paul moved to New Jersey in 1901 and entered Columbia University as a special student. There, he studied economics under Edwin Seligman and John Bates Clark and sociology under Franklin H. Giddings. He subsequently took a summer course sponsored by the New York COS and followed Devine's lectures, which eventually led to his recruitment as assistant editor at *Charities and Commons* in 1902, followed a year later by his brother Arthur. The latter died in 1934 leaving his brother as sole editor of the Survey.

9 Pittsburgh was a major industrial city and, in particular, the capital of steel industry – perhaps the archetype industry before the invention of the assembly line. On the Pittsburgh survey, see Greenwald and Anderson (1996).

10 On Wisconsin brand of institutionalism, see Rutherford (2006).

visual representations of Pittsburgh in parallel with texts. Indeed, in Fitch's volume on Pittsburgh's steel workers, one finds many pictures, photos from Hine as well as etchings, drawings and paintings from Stella (Fitch 1911).

The Pittsburgh project had a profound impact on social work studies and on *Charities and Commons*, which changed its name into *The Survey* in 1909. From 1912 onward when the Kelloggs took over the journal, the *Survey* became a much more important magazine, reaching an audience that went well beyond the social workers' profession. Edited by the Survey Associates, a non-profit organization uniting its subscribers and donors, it had a readership close to 30,000 by the end of the 1920s and probably more during the early 1930s.¹¹ Kellogg deemed the *Survey* as "a journal of experience" signaling the influence Dewey had on the whole project (Chambers 1971: 98).¹² This thirst for facts and the desire to interact with as large a public as possible was eased by the division of the *Survey* into two slightly different magazines in 1923: The *Midmonthly* was more specifically devoted to the coverage of current issues in relation to social workers while the *Survey Graphic* was aiming at a larger audience and the range of issues it covered was very wide, from the rising African-American culture in Harlem (special issue in 1925) to economic planning to the rise of fascism in Europe. The *Survey Graphic* compared either to the pre-1923 *Survey* or the *Midmonthly*, incorporated both longer and deeper articles and a richer visual content. Describing this innovation to one of his associates, Kellogg stated "The keynote of the thing is interpretation and we are going to employ photographs, etchings, drawings and texts of all sorts which we hope will get a new hearing for the big human concerns which lie underneath all this technical discussion of social problems" (cited by Chambers 1971: 85). Indeed, visual material was no substitute for more substantial content, but a way to gather and dramatize social facts. *Survey Graphic* was conceived as an educational project located within a journal rather than within a college. It followed an inductive method, beginning with observations and the primary sources from which conclusions could be drawn.

Included in the first issues of *Survey Graphic* were series of photographs and portraits by

11 This is much less than *Life* or *Time*, but similar to the left-wing *Nation* and *The New Republic*.

12 Dewey's books were given special treatment in the *Survey*. For example, *Experience and Nature* published in 1925 occasioned a series of short articles detailing its content, often in hyperbolic terms by the book editor, Joseph K. Hart such as: "a new sun – shedding life giving light and warmth over the very human world – on rich and poor, alike, on the just and on the unjust". More interestingly, he believed Dewey showed in his book "how we look at facts" and therefore was "the preeminent book for all who are engaged in social reconstruction, of any sort", fitting with one of the tasks of the *Survey* which was to see "the social as a whole", beyond isolated fields like "health, industry, social practice, education and the whole life of the community" (Hart 1925: 239-40).

Lewis Hine, documenting the role of human work in modern industries. Hine's work for the *Survey graphic* was a continuation of what he had done in Pittsburgh: his photo stories showed workers in their day-to-day activities, usually represented next to the machines they worked with. The visual rhetoric of his work is complex and interesting: Hine always took pictures of men and women which aimed to show them as social and professional characters and not as individuals. He was looking for expressions and set-up that figured men in postures typical to one profession or one social group. The captions also served his purpose since they did not display the name of the subject, who was described by his function in the industry he worked for. A machinist would be described as THE machinist or a pipe-fitter such as the one below as THE pipe-fitter.¹³ Because of this, his work portraits conveyed an often striking and completely deliberate artificiality: he believed that his pictures were even more effective than reality because they eliminated "the non-essential and conflicting interests" (Smith-Shank 2003: 35). Hence, Hine saw his work as part of a scientific analysis of society that aimed at reforming it.¹⁴

13 Hine had used this device in the Pittsburgh's Survey and transposed it in his subsequent work for the Kellogg's brothers. In the *Survey Graphic*, Hine's photographs were grouped into a column under his name walled "Work portraits", usually a series of ten to fifteen photographs with captions and sometime a very short text.

14 Hine, born in 1874, had previously studied at the University of Chicago as a geographer. When he became a lecturer in nature study and geography at the Ethical Culture School in New York City, he became more and more interested by photography and frequently went to Ellis Island to photograph the arrival of new immigrants, collecting a large amount of pictures. His interest subsequently turned to child labor and industries.

Fig. 1. The Pipe-Fitter, by Lewis Hine (*Survey Graphic*, October 1921: 164)

The *Survey graphic* was a common denominator for different groups who were interested in using visual items as a tool for social science. Commons and the institutionalists from Wisconsin were naturally associated with the Kelloggs since the Pittsburgh's project. Indeed, John Fitch, who took over the *Survey's* industrial department in 1911, became a very regular collaborator even after he left in 1919 to take a position of Professor in Industrial and Labor relationships at the New York School of Social Work. He contributed several articles in either the *Midmonthly* or the *Survey Graphic* during the 1920s and 30s. Likewise, John Commons wrote several articles for the twin journals and his social and economic thinking was well-represented in their pages. For example, two years after an article by Commons presenting the Huber Unemployment Prevention Bill and in which he introduced "the seasons" among the three causes of unemployment and called for some sort of planning, the *Survey Graphic* published an article on "Spring planting", dedicated to temporary unemployment and its evils in agriculture with the following diagram:

Fig. 2. An example of the use of statistical graphs in the Survey, here illustrating an article on “unemployment as waste” (*Survey Graphic*, April 1st, 1923, p. 12-13).

The drawing above compares the relative stability of labor demand in the industry with the huge seasonal fluctuations in agriculture, which is represented by a black mountain corresponding to the planting period (in April and May). On every curve, we see people climbing. The caption introduces the “Mahomet of industry” whose function is to manage labor demand in the industry so that it becomes compatible with that of agriculture where fluctuations, coming from nature itself and therefore unchangeable, cannot be corrected. The caption also insisted on the fact that this drawing was based on actual statistics provided by the US department of labor. The picture, therefore, offered a “scientific” case for governmental planning.

The inclusion of economic thinking and more specifically institutionalist ideas took many forms in the *Survey Graphic*. For instance, the entire April 1929 issue was dedicated to « Unemployment and the Ways Out » with interventions of former students of Commons, William Leiserson and Summer Slichter.¹⁵ In May, the theme of the month’s issue was the report on Recent Economic Changes, which included an article by Wesley Mitchell. In 1930, the whole November issue was on credit. Several articles from prominent economists and institutionalists such as Arthur Burns, Walton Hamilton, Gardiner Means and Adolph Berle were published

¹⁵ Mention should be made also to the participation of Mary Van Kleeck, on whom more will be said below, in this issue.

throughout the 1920s and 30s. Of particular interest for Kellogg was economic planning. We mentioned that an early interest had been developed through the writings of Commons, Mitchell and other institutionalists such as Tugwell and his mentor Simon Patten but as the unemployment figures grew (actually before the stock market crashed in October 1929) there were more and more articles advocating government planning often looking at Soviet Union, “the country where unemployment does not exist”, as an inspiration for experiments in planning (see below section 4 as well). Interestingly, the *Survey* illustrator Hendrik Willem Van Loon used a striking visual representation to illustrate an argument, partly inspired by Simon Patten, made by Samuel S. Fels on the necessity of planning. Van Loon used two wheels of wealth he called “the rocket-motor of the wage-earning market” (fig. 3 and 4 below). The caption of the first figure read “We saw it turn in reverse – unemployment, reduced earnings, reduced spendings, reduced sales, reduced production, more unemployment – that was the sequence – the situation worse at every revolution” and the second “We need to turn it the other way around – enhanced earnings, increased purchasing power, increased production, a new and energizing sequence, leading on at every turn to more earnings and larger living” (in Fels 1933: 200-1).

Fig. 3 and 4. “The Rocket-Motor of the Wage-Earning Market” by

The *Survey* and its graphic companion generated a strong interest among artists and social scientists alike and even for some of those who seldom wrote for it, like Columbia Professor Rexford Tugwell, the display of economic facts in visual form rang nicely with their own program for political economy. Tugwell had arrived at Columbia University in 1920 to take charge of a new course called “An Introduction to Contemporary Civilization”. It was a course common to the departments of History, Philosophy, Government and Economics. Hence, most students were not looking for careers in economics and several of them were quite reluctant toward the discipline. This course was perfectly suited to Tugwell whose background was far from that of a traditional economist.¹⁶ Tugwell's views on pedagogy were deeply influenced by those of the philosopher John Dewey. In his opinion, students should be taught through real-life experiences, not through pure theory. One of Tugwell's tutors for the civilization course, Roy Stryker, was to personify Dewey's idea of teaching as experiencing.¹⁷ Stryker often brought illustrations from magazines and newspapers in the class to raise his students' interest. In addition, “he would take them to Wall Street and Park Avenue, through night courts, banks produce markets, jails, garment factories, and slaughter houses. He moved them excitedly, back and forth, among the text, his pictures, and the streets, until finally they were able to draw their own connections between economic theory and the real world”.¹⁸ Once, he even took some students to the country side, showing them how to milk a cow. His class at Columbia was sometimes called “visual education” by his colleagues for lack of a better word.

Across the years, the original syllabus of Tugwell's course provided with the help of economist F. C. Mills, was reworked twice, the last time in 1924 “with the whole corps of instructors acting as an executive committee” (Tugwell, Munro and Stryker 1925: viii-ix). It is in

16 Tugwell had been trained at the Wharton School of Business in Philadelphia under Simon Patten. At Wharton, Tugwell was close to radical economist Scott Nearing whose socialist positions made Wharton's board of trustees rather upset. Following Nearing's dismissal in 1915 and Patten's departure in 1917, Tugwell, who had begun doctoral studies, left Wharton. For three years, he lived a peripatetic life, moving to Seattle then to Paris. Studying psychology, he became more and more skeptical over economics. He shortly contemplated leaving the academic world when he received an offer from Columbia University where he completed his Phd in 1922.

17 Stryker was a native of Kansas who had shortly studied chemistry at the Colorado School of Mines but without proper funding, he left the university and served in the infantry during WWI. After resuming his studies at the Colorado School – wearing chaps and boots, he was considered a kind of cowboy, there – he was able to move to New York a few years later when he was granted a loan by a banker friend, yet he chose economics instead of chemistry. Stryker had no formal training in the discipline but was an avid reader of the *New Republic* and the *Nation*. Working in New York as a social worker, he also used to read the *Survey* (See Doud 1963-1965).

18 Robert J. Doherty, introduction to Anderson 1977: SI.

this context that the need for a manual was felt by the team of instructors as a way to stabilize their teaching practices. Thus, Tugwell aided by Stryker and Thomas Munro, a philosopher of art and former student of Dewey, produced *American Economic Life*.¹⁹ The result was a thick volume with a rich iconography – tables, photographs, charts, maps and organizational diagrams – published first as a textual aid to the Civilization course and then disseminated to a much wider public. The volume was Tugwell’s own contribution to the development of the “experimental economics” he advocated in various methodological articles (Tugwell 1924, 1928). What he had in mind with this expression was an economic science that set upon discussing and analyzing the problems of contemporary America, instead of concentrating on the vain practice of trying to establish natural laws through an overly abstract and technical discussion of value theory. He advocated “a more realistic and understanding analysis and explanation of the working forces in our civilization so that the real needs of men may be visualized and met” (Tugwell 1924: 376). To a large extent this program with its intensive use of visuals and its reliance on Dewey’s philosophy as a methodological guide, was quite similar to Kellogg’s *Graphic Survey*. Hence, it is not surprising that many pictures and charts that ended up in *American Economic Life* were taken from the *Survey* and its graphic companion which Stryker, who had been employed as a social worker when he arrived in New York, read and collect thoroughly (Doud 1963-1965).

Accordingly, most of the photographs and cartoons from *American Economic Life* were about people whereas in the only other textbook which can compare to it, Leon Marshall and Leverett Lyon's *Our Economic Organization* (1921), visual items and photographs were mostly photographs of landscapes and factories, showing the progress of industrialization.²⁰ On the other hand, in *American Economic Life*, poverty, loneliness, hardship felt by the “Smiths and Browns and Joneses” and their problems were at centre stage and given real faces through Hine’s photographs (see for instance fig. 5).²¹

19 According to Tugwell, Munro “did not help much” (Tugwell 1982: 1950). Stryker, on the contrary, collected dozens of photographs and diagrams which were included in the book. Most charts were drawn by Mrs. Stryker from data her husband had collected. Stryker's work remained confined to visualization, as he did not participate in the writing of the book at all.

20 Leon Marshall and Leverett Lyon's *Our Economic Organization* was published in 1921 and was used at the University of Chicago where Marshall had been appointed head of the political economy department in 1918 as an introductory textbook. A second edition was made in 1928. Though mainly verbal over roughly 500 pages, *Our Economic Organization* contained a few diagrams, as well as a few pictures. Diagrams were mostly maps and organizational charts. Statistical charts, on the other hand, were sparsely disseminated throughout the book.

21 In his methodological piece on experimental economics, Tugwell made clear that modern economics should take as its subject the economic and social problems faced by the common men and women, the “Smiths and Browns and Joneses” (Tugwell 1924: 375-8).

Fig. 5. Sobbing woman (Source: Tugwell & al. 1925: 53)

Among Lewis Hine's photographs were portraits of workers looking fiercely in direction of the photographer. The rhetoric of visual images, usually serving liberal purposes, came from the interaction between the picture and its caption. The latter did not really describe what was actually in the picture but provided a narrative to put it in context. A devastated neighborhood was accompanied by these comments: "An alley such as this represents the great failure of industrial life. What desirable qualities in men and women could possibly develop there?" (Tugwell & al. 1930: 122). Sometimes, the caption was more ironic. For example, to illustrate the act of economic choice, Tugwell and Stryker had a picture showed a rich woman with her daughter and a waiter in a fancy restaurant (Ibid.: 551). A similar treatment applied to the statistical charts included in the book. The captions accompanying them were not mere descriptions of the relations they helped visualize but short narratives often stressing their human consequences. For instance, under a chart showing seasonal variations, the student would read: "Planting and harvest require many times the men and horses used during the rest of the year.

What to do with them the rest of the time is a problem” (Ibid.: 452).²² A map of a couple of blocks in Radburn, NJ was accompanied by the comment that: “children have no streets to cross in going to school” (Ibid.: 468).

Hence, in *American Economic Life* as well as in the pieces written by social scientists for the *Survey*, visual items were to display economic and social facts, such as poverty, waste of resources and concepts such as planning. They were not intended to act on their own, although they had a power of suggestion unequalled by the text of articles, but offered a different perspective. Likewise, they were not intended to replace other kinds of facts, such as statistics, but to complete and sometime dramatize them. Visuals, photographs in particular, seemed to offer a way to make the public, that is the readers, *experience* social facts in a way that graphs, statistics were unable to do. What Stryker did at Columbia by transplanting the classes in the streets and factories of New York, Hine and others’ photographs and visuals were to do for the masses of readers of either the *Survey Graphic* or *American Economic Life*. It is in this very favorable context that a new method for visualizing social statistics created in Europe by Otto Neurath and his team was introduced in the United States.

3. Otto Neurath's pictorial statistics cross the Atlantic

The history of the ‘Vienna method’ of pictorial statistics, also known as Isotype, created by Otto Neurath and his team in the Vienna *Gesellschafts-und Wirtschaftsmuseum* (Social and Economic Museum) at the end of the 1920s is now well-known. Since Robin Kinross’s 1979 Phd Thesis, there has been a fast growing amount of interesting works on this area by scholars with various backgrounds: philosophy of science (for example: Cartwright, Cat, Fleck & Uebel 1996; Uebel ed. 1991), economics (Leonard 1998, 1999), art history and design studies (Lupton 1986, Vossoughian 2008, Kraeutler 2008). According to Leonard (1999, p. 467), “the basic principle [of Neurath’s Isotype] was that one symbol meant a given number – for example, 1 million soldiers – and larger and smaller quantities were represented by, respectively, more and less symbols. Conveying quantitative information by symbols was deemed superior to doing it by the more common geometric means of curves and areas », by means of other visual methods or by text.”²³

22 Note that the chart reproduced here as fig. 2 from the *Survey Graphic*, which conveys the same message was included in Tugwell’s textbook (Tugwell & al. 1925: 361).

23 Born in 1882, Otto Neurath was a social scientist trained as a historical economist in Berlin under Ferdinand Tönnies, Gustav Schmöller and Eduard Meyer, a specialist in antique history. After he completed a Phd in 1906 titled

Commentators of Neurath's Isotype project have focused – somewhat mistakenly we will argue – on the European context, presenting the Isotype movement as an emanation of the Red Vienna *Zeitgeist*, and paying little if no attention to its circulation in the United States. However, as we have seen in the above American social scientists were for their own methodological and practical reasons very much interested in the visualization of social and economic facts. On the side of Neurath there was an early and strong interest in disseminating his method by setting affiliates in other countries. At the beginning of the 1930s, he had developed or was developing teams in USSR, Netherlands, Germany and had plans for England and USA as well. The United States were of particular interest for him since by that time one the most important source of financing of the Vienna team was an American client.

It all began as a family affair. At the end of 1928, one Waldemar Kaempffert, who was a successful author of popular science essays and science editor for the *New York Times* was chosen as the first director of the Chicago Museum of Science and Industry (MSI in the following). He also happened to be Neurath's cousin.²⁴ In his assignment, Kaempffert was supposed to oversee the planning and design of the MSI that was to be built and he embarked on a European tour, London first, then Paris, Munich and Vienna, to get acquainted with the best practices of European industrial museums. It was the occasion to reunite with his cousin Otto Neurath and Kaempffert spent two months in Vienna, most of the time at the Social Economic Museum.²⁵ Following this journey, Kaempffert began to work with Neurath's Vienna team, asking for advices and ordering charts and pictorial statistics. From Neurath's side, the Chicago

“Zur Anschauung der Antike über Handel, Gewerbe und Landwirtschaft” (The views in antiquity concerning commerce, trade and agriculture), he went back to Vienna and became a teacher in economics until the beginning of World War I. During the war, Neurath was named Director of the German Museum of War Economics in Leipzig. After the war, he was embarked in the Bavarian Revolution. When the Revolutionary government fell, Neurath was pointed out as a socialist and barred from the university. He then became director of the Social and economic museum in Vienna, founded in 1925. It is in this context that Neurath developed a method to present visually social and economic statistics and facts to the public. He began to gather a team of artists and social scientists to help him in this task. When visual artist Gerd Arntz joined the team in 1928, they were able to develop fully what they were calling the “Viennese method of pictorial statistics”. For further biographical details, see Cartwright, Cat, Fleck & Uebel (1996), Paul Neurath (1996) and Vossoughian (2008).

²⁴ Kaempffert was the family name of Neurath's mother.

²⁵ On Kaempffert's trip to Europe and Vienna in particular, a few details are given in Pridmore (1996, p. 30-31) and Vossoughian (2008, p. 104-05). In a letter from Kaempffert to Neurath dated 4 October 1928 where he mentioned his imminent departure for his European tour and his coming to Vienna, Kaempffert wrote: “your museum would remain the only one of its kind. In effect, what we have in mind is a fusion of the German [Munich] Museum and the Gesellschafts-und Wirtschaftsmuseum. As you see, I have to throw myself at your feets and learn from you as much as possible because in matters of sociology and economy I do not understand anything more than a police agent doing his round on the Kärnterring” – the Kärnterring was a busy street in Vienna (MSI collections, Institutional Archives, Correspondence, file Gesellschafts-und Wirtschaftsmuseum [GW in the following]).

connection was not only a sizable adding to the Museum revenues, but it also offered an opportunity to open an affiliate Isotype workshop in Chicago or with help from the MSI. Neurath would make a few stabs in that direction.²⁶ The first one dated from the first months of 1929 when Neurath asked his cousin to translate and forward an application to a Rockefeller founding to create an International Institution for Pictograph Education.²⁷ This document is very interesting because it defines precisely the task of the *Gesellschafts-und Wirtschaftsmuseum* as envisioned by Neurath, that is: “an institution established in Vienna for the social education of the people, [that] has undertaken the task of collecting illustrations of every type for the purpose of visualizing complex or abstract conceptions and principles”. In the plan of the projected institution, Neurath made clear that it had three tasks (without prioritizing them): it was a place where scientific research would be undertaken, it was a museum where the collection of educative materials would be done and it was also an engine for disseminating knowledge to teaching institutions such as schools, colleges and universities.

As the Rockefeller foundation was not interested, Neurath made another try, this time he appealed directly to his cousin's influence on Julius Rosenwald, owner of Sears & Roebuck and the philanthropist who founded the MSI: “I am looking for 4000\$ to create a US department at the *Gesellschafts-und Wirtschaftsmuseum* in Vienna; we may also make a double of the US department [in Chicago]. But it might cause you to be too exposed?”²⁸ At that time, Kaempffert was already having his own problems with some of the trustees and the proposition was not fully endorsed even if the MSI did pass a six months renewable contract with the Vienna Museum that guaranteed a placing of order of at least 500\$. Moreover, Kaempffert introduced Neurath to several people, magnates and philanthropists who were traveling to Europe. Among the latter was Edward Filene, director of the Twentieth Century Fund and a close collaborator of the *Survey* associates.

When Kaempffert resigned from the MSI in 1930 to take back his former position at the *New York Times*, it did not slow down the collaboration between the MSI and Neurath's team since, before leaving, Kaempffert had hired Rudolf Modley, a former member of the Vienna team, as Curator of Social Sciences. Modley had been introduced to Kaempffert as Neurath's

26 Neurath to Modley, MSI collections, Institutional Archives, Correspondence, file GW June 6th 1931 and June, 24th 1932. In total, from 1930 to 1933, the MSI would paid a little less than 3000\$ to the *Gesellschafts-und Wirtschaftsmuseum*. In several letters, Neurath mentioned that the MSI orderings caused a major boost in the Museum activity.

27 MSI collections, Institutional Archives, Correspondence, file GW; 16 February 1929.

28 MSI collections, Institutional Archives, Correspondence, file GW; July 22nd 1930.

former assistant.²⁹ Hence, Kaempffert obtained Modley's appointment as curator of the Social Sciences and Economics Division right after his arrival in the Summer of 1930 with a monthly salary of 300\$. However, Neurath's involvement with the MSI was called into question in 1932. The MSI was then experiencing increasing financial difficulties because of the economic recession and it was forced to close non-essential activities and to reduce the payroll.³⁰ As a consequence, the Social Science and Economics Division was closed by the end of 1932 and Modley lost his job. In May 1933 Neurath was informed that orders to the Vienna museum would cease.³¹ Even though Neurath's collaboration with the MSI did not end on a happy note, it did provide a first introduction of his work in the US, since several panels produced by the Vienna team were put on show in the Coal Exhibition that opened in 1933 and possibly at the Chicago World fair of 1933-1934.

Neurath's method did gain a more significant exposure in the US through another media: the *Graphic Survey*.³² Only two years after the publication of *Gesellschaft und Wirtschaft: Bildstatistisches Elementarwerk* (Neurath 1930), the first major achievement of his Viennese team, Neurath's first American piece appeared in the March 1932 issue of *Survey Graphic*.³³ Neurath's article, like several other contributions to this issue devoted to economic planning, was an outgrowth of the World Social Economic Congress held in Amsterdam in August 1931.³⁴ This

29 "Modley pictorializes the U.S.", *Survey Graphic*, September, p. 468-39. Modley (1938, p. 659): "Dr Modley was formerly Assistant to the Director of the Social Museum in Vienna". This is confirmed by letters exchanged between Neurath and Kaempffert in February and March 1930. Neurath introduced Modley as such: "Our assistant-director, the Dr. Rudolf Modley, has planned to go to Chicago in July in order to study economics and sociology at the University. At this occasion I would like, if you think it is appropriate, that he established a link between US institutions and the Gesellschafts-und Wirtschaftsmuseum, and in particular that he discusses with you about the sending of the charts and the making of large maps. He could perhaps work with you as a volunteer? He is clever, capable to adapt and sociable" (MSI collections, Institutional Archives, Correspondence, file GW; 27 February 1930).

30 Most of the capital of the MSI was constituted by stocks of Sears and Roebuck donated by Rosenwald, the value of which dived after 1929. Details on the downsizing scenarii envisaged at the time are to be found in the MSI archives (

31 Hayford to Neurath, May, MSI collections, Institutional Archives, Correspondence, file GW, 4th 1933: "the situation is such that we will not be ordering any charts of any kind for several months. This might run into a year and a half or two years".

32 One should also mention one work made in English by the Soviet branch of the Vienna Museum on the first five-years soviet plan for reasons of propaganda : The struggle for five years in four. This very nice volume made of seventy plates in color in letter format seems to have reach the US, at least some copies did, including one that we consulted at the Regenstein Library on the Chicago University campus.

33 On the early history of Neurath's pictorial statistics and the making of Neurath (1930), see Ihara (2007) and Nikolow (2008).

34 The proceedings of the Congress were published as *World Social Planning. The Necessity for Planned Adjustment of Productive Capacity and Standards of Living*, ed. By M.L. Fledderus, International Industrial Relations Institute, The Hague, 1931. Neurath's original article was in German, but an English abstract had been published at the time. the full article has been translated recently (Neurath 2004). According to a letter from

meeting was important in framing the issues left-wing thinkers had to face in the first years of the Great Depression. While many radicals supported Roosevelt's economic policies, there were still doubts among them on the need to more radical measures. The presence of Soviet social scientists at the Congress, who presented to a Western audience the USSR experiment in economic planning in a very positive light, drew a lot of attention on the Congress.³⁵ Though it is not clear whether Kellogg, who attended the conference, and the *Survey* unconditionally embraced this new stream in radicalism, they devoted increasing magazine space to its proponents. Among the attendees who committed themselves to the far left views was congress chairman Mary van Kleeck. An influential activist and reformer, Van Kleeck had been Director of Industrial Studies at the Russel Sage Foundation since its creation in 1907 and regularly contributed to the *Survey*. She was very impressed by Neurath's work and supported actively the inclusion of his paper in the March issue.

Unsurprisingly, Neurath's article contained several lively pictographs. In particular, a map of the United States, chosen as the cover illustration (fig. 6 below), offered a fine example of what was the "Vienna method" of presenting statistics at its best. The map was made to convey the message that "over half of the world supply's" of several key commodities "comes from the USA" in a visually compelling way. These commodities were (from left to right) automobiles, films, oil, steel, copper, corn and cotton. Each column was made of ten units, each one counting for 10% of the world production and figured by a standardized picture of the good. The bottom part of each column, the part which was visually on the US territory, corresponded to the proportion which was produced within the United States, while the top part above the geographical frontier went for the production of the rest of world.

Kellogg to Neurath, the piece published in the *Survey Graphic* was a mix between a transcription of his speech at the Congress and two other papers by Neurath, one of which had been initially intended for the *New York Times* (Kellogg to Neurath, February 18th 1932, Survey Associates Records [SAR in the following], University of Minnesota, Microfilm 42).

35 See Selmi & Hunter (2001) and Alchon (1992).

Fig.6. Cover of *Survey Graphic*, March 1932

Kellogg, added a short laudatory introduction to Neurath's article. "Dr. Neurath", he wrote, "has gone back to picture writing to give democracy its key. He limns the earth, and the fullness and discrepancies thereof, not with Kipling's brushes of comet's hair but with those techniques of visualization that have made famous his Social Economic Museum in Vienna" (Neurath 1932, p. 621). The piece itself, titled "World Planning & the U.S.A.", developed the argument that the current crisis was not due to a shortage of commodities but to the nations' inability to allocate efficiently an embarrassment of riches. The visual representations displayed

eight, in total supported Neurath's thesis by underlining that there were enough resources to support an “enormous human expansion”. Hence, Neurath vindicates in his text that “Malthus was wrong”. These points were made using a map that visualizes three economic dimensions (fig. 7 below). First, the actual level of population in each continent was figured by men in black, with each man for a hundred million people. A second symbol was attached to these men to account for the different levels of economic and technological development of these populations: the feudal mode of production was represented by hammers, the primitive mode of production by bows and arrows and cogwheels for those living in industrial nations.³⁶ Third, the unused resources which could sustain further population were figured by blank symbols of men. From the map, one could see that while Western Europe and Eastern Asia had reached their maximum human expansion, although Asia could still raise its level of productivity, all other regions including the USA could sustain much more population on their resources if only their use was carefully planned. Planning was therefore the only way out of the crisis.

Fig 7. “World Planning and the USA”, *Survey Graphic*, March 1932, p. 421

36 It should be mentioned that the three different levels of development account for different levels of productivity.

This apology of planning as well as the creative means Neurath used to make his point found a strong echo on the other side of atlantic. Mary van Kleeck and Mary Fledderus, the co-organizers of the Amsterdam Congress, were enthusiastic about Neurath's version of socialism and planning and took the lead in the enterprise of "americanizing" Neurath. By the end of 1932, van Kleeck intensively lobbied members of various organizations in New York to promote Neurath's pictorial method. To one of her correspondents, Mrs. Henry Ittleson, she lauded Neurath's work as: "what is needed to get the facts of the whole situation before the people so that public opinion will be not confused as at present by all the details of war debts, tariffs, prices, costs of living and the like".³⁷ In January 1933, Neurath made his first trip to the USA to present the project of a new kind of Museum, the Mundaneum, he had co-designed with Paul Otlet and was trying to develop.³⁸ At this occasion, a New York committee headed by van Kleeck was organized to "establish a workshop where clients [could] order anything from a chart to an entire exhibit" (Neurath 1933, p. 458). She reunited prominent members of social work organizations in April 1933, including Ann Brenner, art editor of the *Survey Graphic*, and Edward Filene, whom Neurath had met in Vienna a few years before. The committee was planning to create a branch of the Mundaneum, the Institute for Visual education, in the United States, a project very similar to the one for which Neurath had applied to the Rockefeller foundation in 1929. Neurath was to supervise the branch and come to the US as a consultant for the committee. The project was advertised in an article Kaempffert (1933), who attended several meetings, wrote for the *New York Times*. Wesley Mitchell of the National Bureau of Economic Research and Alvin Johnson of the New School for Social Research were also contacted and both would later participate in the diffusion of the method.

Neurath's former assistant, Rudolf Modley, who was also in New York looking for a job, contacted the committee early in 1933, hoping to get involved. Yet Van Kleeck did not consider him a reliable person to promote the Vienna Method in the United States. On March 10, she wrote a letter to Neurath expressing her doubts over the former MSI curator, whom she saw as a businessman more than as a devotee willing to promote visual education as a universal language. She complained that Modley "did not believe in the international aspect and did not wish to work

37 Van Kleeck to Ittleson, December 14th, 1932, SAR, *ibid*.

38 The joint project with Paul Otlet is discussed in great detail in Vossoughian (2008), see also Rayward ed. (2008). However, Vossoughian does not mention Neurath's article and his 1933 trip to New York. Indeed, to our knowledge this trip has never been mentioned in the secondary literature.

on that basis.” Modley “felt that the drawing of pictorial statistics was exactly like any other statistics, namely that you presented the facts quite apart from any social philosophy back of them.”³⁹ Indeed, Modley made a similar point in letter he sent a few weeks later to Ann Brenner: “I had the impression that Miss van Kleeck considers 'Bildstatistik' as a means to broadcast a ‘message’. I think of it merely as a wonderful new method of visual education, just as the radio is in acoustic education – adaptable to good and bad.”⁴⁰

Their opposition signaled a deeper methodological divide between Neurath and his associates on the one hand and his former assistant, on the other. Neurath and his team were developing systematically the Vienna method of pictorial statistics, a process that culminated in the publication of *International Picture Language* (Neurath 1936). Neurath was persuaded that Isotype as he was now calling his method was a new kind of language, a picture language universal by nature, and, to be effective, the symbols and signs used by the picture language had to be completely standardized: the same exact visual symbol had to be used for signifying exactly the same meaning (for example, corn) all over the world, by all men. Modley who, by now, had been living in the USA for several years and had prolonged contact with potential clients of an American unit of production of visual statistics believed that an attempt to standardize completely pictorial statistics was not realist (Modley 1937: 130-37). Indeed, while he followed to a large extent the visual principles enacted by Neurath and his team, he was also convinced that it was necessary to compromise a bit to develop the use of pictorial statistics in the USA.

Following the publication of a second article in the September 1933 of *Survey Graphic*, several individuals expressed their interest in the Vienna Method to members of the committee and the moment seemed ripe for pushing further the production of pictorial statistics *à la* Neurath. However, bringing Neurath permanently to the US was seen as increasingly difficult: there was no money to employ him on a permanent basis and a visa permitting him to work was impossible to get without this. In December 1933, Modley confessed to Brenner that he did not believe the guidance of Neurath necessary or even suitable. According to him, there was “no necessity to bring anybody from Europe to select or transform statistics or to direct the production” as “[c]harts of equal or better quality [could] be produced here immediately”. The organization he proposed would be “self-supporting and at the disposal of all who desire to make

39 Van Kleeck to Modley, March 10th, 1933. SAR, *ibid*.

40 Modley to Brenner, April, 3rd 1933. SAR, *ibid*.

use of it”.⁴¹ At the next committee meeting (April 6, 1934), it was now clear that, although Modley would still collaborate with the Institute for Visual Education to some extent, his project was different from the one van Kleeck and the majority of the committee envisioned.

Consequently, two different organizations promoting the Vienna Method developed. On the one hand, the Mundaneum also known as the “Institute for Visual Education”, an international institution based in the Netherlands and headed by Fledderus and Neurath, promoted both a visual esperanto and the message intended by Neurath, of which planning and socialism was a part. Its American branch was headed by van Kleeck with a bureau that included at least one economist, Alvin Johnson.⁴² On the other hand, Modley created a non-profit organization, Pictorial Statistics, Inc., that offered to conceive and produce every types of pictorial statistics, though its specialty was those made according to the Vienna method, for all kinds of media, such as articles, books, advertising leaflets, pamphlets, etc. Despite Neurath's coming to the United States three times to present his work – in October 1936, October 1937 and February 1939 –, the publication of several articles and books in English (Neurath 1936, 1939), Modley's unit developed much more rapidly in the following years. Pictorial Statistics, Inc. attracted a lot of attention from the American social scientists. Its list of directors and members contained names of several prominent social scientists and economists, such as Wesley Mitchell who was in from the beginning. He was later joined by the sociologists Robert Lynd and Paul Lazarsfeld.⁴³ Already in January 1935, the company was able to enlist several public agencies and institutions, such as the Mississippi Valley Authority, the National Resources Board and Time Inc. as regular clients. Modley rapidly gained a wide reputation in the USA as the main proponent and producer of pictorial statistics. In 1938, the *New Yorker* dedicated a short piece to account for the success of “Modley's little men”. Significantly, the journalist puts Modley and Neurath on a par as to their role in inventing a new type of pictorial statistics: “It's Doctor Neurath's (and Mr Modley's) theory that the strain of present-day purpose is a little too much for the average man, and that if you want to be sure he grasps an idea you'd better resort to picture” (Anon. 1938). At roughly the same time, an historical survey on the graphical representation of statistical data was stating that “the most rapidly growing system of graphic representation with the drive of vigorous

41 Modley to Brenner, December 7th 1933, SAR, *ibid*.

42 Johnson's presence can be explained by the fact that he had been in contact with van Kleeck for a long time through the *Encyclopedia of Social Sciences*. They were both part of the editorial board. See Mary van Kleeck papers, Series II Correspondence, Box 26, file Jonhson and Box 28, file Seligman.

43 Survey Associates Records, University of Minnesota, Box 154, Folder 1198. Lazarsfeld, Lynd and Mitchell had positions at Columbia University.

propaganda behind it is the “Vienna method” (Funkhouser 1937, p. 350). Yet the American reader was more likely to encounter Modley's version of it, rather than the original.

4. Visualizing the economy in the Roosevelt Administration

Although, as we have seen, the “Vienna method” of pictorial statistics and the creative use of visuals, most notably photographs, by American social scientists had different origins and followed different patterns of development, the individuals who were behind these two strands of visualization nonetheless shared certain common points of interests: the rejection of classical political economy and the belief that visualization should play an important theoretical role in the new social and economic science they envisioned. One strikingly similar aspect was the idea that visualization would provide a more direct access to economic and social facts than alternative means of communication such as text or mathematical relationships. The consequence was that, quite self-consciously for Neurath, less so for others like Tugwell and Stryker, visuals were deemed to be a better and more neutral language for conveying economic and social knowledge than alternatives. It was probably this promise that drew so many institutionalist economists and social scientists to develop an interest for visual tools such as pictorial statistics, photos and to a lesser extent other visual methods such as graphs.

The interest for visual representations of the social and the economy was developing in other layers of the American society as well. Roosevelt and the New Deal administration were aware that their proposed reforms might draw skepticism among certain groups within the American population. Indeed, after the first hundred days, Roosevelt was confronted to growing political difficulties and his administration looked for ways to make people understand the real point of the reforms that were engaged and the real consequences they had for the “Smiths and Browns and Joneses”. It is in this context that the Roosevelt administration began to embrace the visuals techniques developed by the social scientists. This would prove a bonanza for those like Modley who were in the business of visualizing economics and the economy.

When Tugwell, who had been close to Roosevelt when he was Governor of New York, was named under-secretary of Agriculture, quit from Columbia and went to Washington, he was naturally involved in creating a new kind of “political propaganda”. It is indeed for this very purpose that Tugwell, a little while after confronting Stryker with the bare fact that he would

never finish his Phd, hired him in the summer of 1934 at the Agricultural Adjustment Administration (AAA).⁴⁴ What he wanted Stryker to do was in a lot of ways similar to what the latter had done for the *American Economic Life* textbook: to compile all kinds of images, graphs, surveys on the American Agriculture from as many sources as possible (Doud 1963-65).

When he returned to Columbia, not only did Stryker continue to work on the project more or less for free but he also convinced students to work for him. A few months later, Tugwell was able to provide him with a full-time assignment and a budget at the Resettlement Administration. This was the beginning of the famous photographic project that was later transferred to the Farm Security Administration (FSA) – a project that has been well studied by art historians (Fleischhauer & Brannan 1988; Lesy 2002; Finnegan 2003; Mora & Brannan 2007).⁴⁵ The job description from 1935 is interesting because it shows that it was supposed to be much more than just shooting and collecting pictures. At the origins, the FSA project was not a purely photographic one, pictorial statistics and charts were also involved and Stryker was to “direct the activities of investigators, photographers, economists, sociologists, and statisticians engaged in the accumulation and compilation of reports... statistics, photographic materials, vital statistics, agricultural surveys, maps, and sketches necessary to make accurate descriptions of various phases of the resettlements Administration, particularly with regard to the historical, sociological, and economic aspects of the several programs and their accomplishments.”⁴⁶ Of this vague if gigantic program, Stryker did only implement a tiny part – the accumulation and compilation of photographic materials. It may have been different, though, and it is not clear how it became so, perhaps it was simply because Stryker was more interested by photography than by anything else.

The recruitment of Theodor Jung in 1934 or 1935 in the FSA project was a significant episode in what one may label as a missed opportunity. An Austrian émigré, Jung had made a living as a draftsman for the *Chicago Times* in the 1920s when the economic slump caught him. Fired in 1932, he went back to Vienna where he attended lectures on printing graphics and got acquainted with the Viennese method of pictorial statistics.⁴⁷ Worried by the turn of political

44 Except for one paper he co-wrote in the mid-20s, Stryker did not really go anywhere with his graduate education in economics. Interestingly this paper was on the visual representation of statistics. It was published in the *Journal of the American Statistical Association* in 1927.

45 These works mainly address aesthetic issues. Only in Cara Finnegan’s essay, the American economy and society occupies a more central position in her argument of how the FSA photographs transformed the conception Americans had about poverty.

46 Quoted from Hurley (1972, p. 36).

47 These biographical elements are taken from Mora and Brannan (2007) and especially Doud (1965: 4-6). Interestingly, in his interview with R. Doud, Jung mentioned that he was a reader of the *Survey Graphic*, “a very

events in Germany and Austria, he decided after a year passed in Vienna to go back again to the US.⁴⁸ He was hired by one the Roosevelt alphabet agency, the Federal Emergency Relief Agency (FERA), where his main assignment was to prepare pictorial graphs and charts of unemployment statistics. Though resembling Neurath's work, the pictographs included in these pamphlets did not really adopt the standardized pictorial method developed by Neurath and his team. On the example shown below (fig. 8), taken from a US Works Progress Administration survey (Palmer and Wood 1936), the drawings on the left representing reasons for not working are not self-explanatory.⁴⁹

Fig. 8. Pictorial Statistics produced by the Roosevelt Administration (Source: Palmer & Wood 1936)

According to Neurath's principles, they should have been substituted by symbols integrating two different dimensions (humanness and disability, humanness and old age, etc.) to

good and important magazine”.

48 In Vienna, Jung followed « as a guest student » courses on « various method of reproduction, ...off-set, gravure, letter-press, setting type and so forth nas so on ». he considers that it had « a very decisive and important influence » on him. He was also taking pictures in the streets of Vienna « after the manner of Atget ». (Doud 1965: 4).

49 The WPA emanated from the FERA and the materials published in 1936 were in fact made in 1934 and 1935. In Palmer & Wood (1936) as well as similar studies published by the WPA in 1936, pictorial statistics are mixed with other types of visuals, such as graphs and photos – most of them made by the Stryker's team.

represent different groups of people: the disabled, the retired, etc.⁵⁰ In addition, pictographs representing black people would not fit Neurath's standards. Indeed, it is meaningful that men and women can be distinguished easily among white people but less so among colored ones. On the whole, the figure was not as visually integrated and efficient as the Viennese representations, because it did not provide an immediate and unambiguous information to the eye: It is, for example, no so easy to appraise the share of men, women and colored people in each category at a glance. While Theodor Jung had never been one of Neurath's collaborators, he was perfectly aware of the existence of his museum in Vienna and very appreciative of the work done there.⁵¹ However and even if he ever felt the need to defend Neurath's visual principles he would not have been in position to do it at the FERA, in the face of the statisticians that were raised in a different tradition.⁵² In 1935, he showed some of his photographic work to Stryker who hired him on the spot, both as a photographer and a graphic designer for the publications and exhibits that his unit would organize. However, he did not really find his place in Stryker's team. Jung took about two hundred pictures and it does not seem that he was ever involved in producing pictorial statistics of any kind for Stryker.⁵³ He was finally fired in 1936 and Jung resumed his work at the AAA (the new name of the FERA), "doing graphics, designing booklets, doing layouts" and then as art director for the *Consumer's Guide* (1937) and later as book illustrator for the War Food Administration (Doud 1965).

Besides the FERA and the WPA, several other public agencies were having recourse to pictorial statistics and other visual materials to present Roosevelt's economic policies and their

50 Neurath's principles are explained in details in Neurath (1936: 27-65). He provided several specific examples of how to integrate two dimensions into one symbol.

51 « It seems to me that somewhere in this country there should be a museum that is dedicated to the social and economic life of contemporary America which would consist not only of the photographs, which would be a very important part of the exhibit, but also possibly models, diaramas, pictorials statistical charts, and of course captions to show what America is like today, its composition racially for example, by industry, what percentage of the people are in various industries, where they come from, groupings within or income groups by various levels and then examine how the various income levels live, what their income is, how they spend it, what they do with their time... The idea I actually got from, in Vienna there is such a museum. It's called Gesellschafts-und Wirtschaftsmuseum which means a museum of society and economy" (Doud 1965: 22-3).

52 This tradition can be grasped through the manuals of Willard C. Brinton, statistician, graphic consultant and engineer. The best known is Brinton (1914), but for our purpose Brinton (1939) is even more interesting since it was made and published at a time where pictorial statistics were already widespread in the US. Brinton classified them in two different groups: « Graphic narrative » (chapter 1), « Pictorial Unit Bar Charts » (chapter 14) and « Maps with symbols », Indeed, Brinton did not discriminate between the kind of Pictorial statistics made by the WPA and those from Neurath or Modley. Moreover, he did not reproduce a single item from either one or the other, preferring instead to provide examples from the Bureau of Labor or other governmental sources (including one from a WPA study). He was clearly unsensitive to Neurath theory of visualization statistics.

53 He did some layout and lettering work for Stryker but no more than that (Doud 1965: 11-12).

consequences in an interesting and entertaining way for the general public. The example of Jung and his work for the FERA also showed that these agencies often used their own artists to the consternation of Neurath and Modley's team⁵⁴ and mixed pictorial statistics with other types of visuals such as charts and photographs – the latter often made by Stryker's group.⁵⁵ Modley himself was able to size a growing share of the governmental demand. An early and notable example from 1935 is a booklet he designed for the Committee for Economic Security (a division of the FERA). Almost without text, it consisted of a little more than a dozen pictures, all pictorial statistics à la Neurath, each one covering an entire page (letter format) with a caption in the opposite page. The pamphlet which was part of the campaign to promote the creation of a national social security program was as close an illustration of Neurath's theory of pictorial statistics as one can get. To communicate the message that American people needed a social security program, it used a language that combined visuals and statistics rather than text.

54 Neurath was aware of the potential of a patent for Isotype graphic language, but was never able to turn this thought into a concrete plan. To summarize, Neurath was depressed by the fact that the pictorial statistics without his intellectual control were wrong from a theoretical point of view, while Modley's critique was directed at their often poor aesthetics.

55 This was indeed the case with the WPA 1936 studies. Other examples of such local production of pictorial statistics we have been able to trace are publications from the Tennessee State planning commission (1940) and *Rich Man, Poor Man*, a pamphlet co-edited by the left-wing and pro-planning economist Stuart Chase who participated to the New deal administration. In his 1937 book, Modley mentioned several other institutions including the Work Progress Administration, the Pennsylvania State Department of Labor, the National Education Association or the US Department of Labor who were using the Vienna method of pictorial statistics.

Fig. 9. Pictograph created by Modley's company for *The Need for Economic Security in the United States*, a booklet supporting the creation of a social security (Source: Committee on Economic Security 1934: chart IV).

Modley's pictorials are following Neurath's rules quite closely: contrary to what we have seen in fig. 8, in Modley's pictograms two visual symbols (man and basket) have been integrated into one isotype picture to symbolize (one million) men on relief. On another page, the symbol of man is given a cane to figure an elderly, likewise the unemployed is an almost exact copy of the symbol invented by Gerd Arntz in the *Gesellschafts-und Wirtschaftsmuseum*. The other telling aspect is the inclusion of this work into the political propaganda machine of the Roosevelt administration. In this perspective, it seems that the Roosevelt administration was particularly interested in the fact that the power of images could, at least to a point, overcome illiteracy which was still strong in the poverty-stricken areas of rural America. Indeed, there were several booklets

made by the Rural Electrification Administration such as *Electric Power on the Farm*, subtitled: “The Story of Electricity, its usefulness on farms, and the movement to electrify rural America” or the guide edited for REA cooperatives (REA 1939) where images and pictorial statistics are used as substitutes for words (which are printed in large legible lettering) for those incapable of deciphering them efficiently.

The photographic work undertaken under the supervision of Stryker was even more integrated in the administrative machine since it operated as a specific department in the FSA, permitting therefore a more integrated visual policy. After firing Jung, Stryker did concentrate solely on the photographs and the various ways in which they can be made available to the public. This limitation fit well with Stryker’s tastes as well as Stryker’s and Tugwell’s philosophical background, for photographs were vivid whereas graphs and other tools such as the pictorial statistics of Neurath and Modley’s teams were only working at a more abstract level. Indeed, as Stryker recalled in Doud’s interview: “Tugwell’s only advice to me, only direction to me – he never said, 'Take pictures'. He said 'we need pictures'. He never said to take them. He said 'Remember that the man with the holes in his shoes, the ragged clothes, can just be as good a citizen as the man who has the better shoes and the better clothes.’” What seemed important for Stryker was less the possibility of theorizing opened by visualization, but to provide vivid facts that would show the life of the million of anonymous faces of men and women that were invisible to Washington and New York leaders alike. This feeling resurfaced at times in the book Stryker co-wrote in 1973 on the FSA. One of the few captions that exemplified Stryker’s state of mind about the project summarizes neatly his populist intent: “Not a single shot of Wall Street and absolutely no celebrities” (Stryker and Wood 1973)

However, it should also be made clear that Stryker genuinely believed in the power of images to make people aware of basic economic truth.⁵⁶ Accordingly, he took great care that the photographers did not go without some kind of social and economic education on the ground and he seemed convinced that this training would eventually show on the pictures. Two kind of training were provided. First, when a photographer was scheduled to go on an assignment where he would meet some specific economic and social issues that should be described and analyzed through pictures, Stryker would take the photographer for a few days and discuss with him about the economic and social context of his assignment. One telling example is provided by Carl

⁵⁶ In Doud’s interview, he refers to the photographs as “lightning-rods”, capable of electrifying the minds of the viewers.

Mydans who was scheduled for a several months journey in the agricultural areas of the southern states where economy rested principally on cotton growing. As Stryker understood that the photographer, a genuine New Yorker, did not know anything about this context, Stryker took Mydans with him “and we talked almost all day about cotton. We went to lunch, and we went to dinner, and we talked all night. He talked about cotton as a commercial product, the history of cotton in the South... how it affected areas outside the USA...” (cited in Lesy 2002, p. 115-16). Another case was Gordon Parks, who having won a fellowship went to Stryker to work for him. Stryker asked Parks to go in several places in Washington (without camera) such as theaters, department stores and drugstores. As an African-American, he was often refused access to these places and harshly treated. As a result, Parks said “I came back roaring mad and I wanted my camera and he said ‘For what?’ And I said I wanted to expose some of this corruption down here, this discrimination. So he says ‘Well you sit down here and write me a little paper on how you intend to do this.’ So I wrote several papers and brought them in, but he kept after me until he got me down to one simple little project...” (cited in Lesy 2002, p. 117). The second kind of training was to provide photographers with detailed shooting scripts and suggestions of what to look for. These were often supplemented with a sometime heavy correspondence by mail, telex, and less often phone conversations. As a result, all the photographers were aware of the social aspects of their work, “expressing some sort of social awareness or social responsibility rather than the aesthetic aspect of photography” and did not regard the whole project as propaganda.⁵⁷

In the following image (fig. 11 below), Stryker’s caption alludes to the power of images to convey economic concepts to their readers. One can however wonder whether the meaning of this picture is as clear as Stryker believed. While he saw in the proud attitude of the big man that took centerstage an expression of the domination of capital over labor, figured by the men in the background, others interpreted the economic meaning of the picture in different ways. The same picture was indeed used in two essays published in 1938 and 1941. In the first one, Archibald MacLeish’s *Land of the free* the framing excluded most of the other characters, the consequence was that the picture was completely filled with the big white man who stood as the ultimate American free man and agricultural entrepreneur. In the second one, *Twelve Million Black Voices* (1941) by the African-american writer Richard Wright, the framing was similar to the one selected by Stryker. However, Wright’s text showed that his interpretation of the picture had little

⁵⁷ Doud (1965). See also Gordon 2006. Several examples of these scripts have been reproduced in Fleischhauer and Brannan eds (1988) and Mora and Brannan (2006).

to do with that of Stryker. According to Wright (1941: 31): “the conduct of whites toward us hour by hour, a conduct that shows we possess no rights commanding respect, that we have no claim to pursue happiness in our own fashion, that our progress toward civilization constitutes an insult, that our behaviour must be kept firmly within an orbit branded as inferior, that we must be compelled to labor at the behest of others, that as a group we are owned by the whites, and that the man lines on our part warrants instant reprisal.”

Fig. 10. (Source: Stryker 1973)

The powerful rhetorical aspects of the FSA photographs were particularly perceptible in the close relationship Stryker's team maintained with the *Survey graphic*. This collaboration began as early as 1935 when assistant editor Florence Kellogg asked the Resettlement Administration for “those fine photographs by Ben Shahn, Rothstein, Walker Evans showing types of white and black sharecroppers and how they live”.⁵⁸ The pictures were integrated in the process of writing. For instance, Florence Kellogg would tell Stryker: “We have a good article on the not so white parts of 'the nation's white spot,' Nebraska. Will you trust me with a selection of whatever your people have taken in Nebraska?”.⁵⁹ Sometimes, the inquiry was less precise, asking for “anything that shows a decentralized industry” or “anything that shows family groups in adequate, well planned environments”. More generally, the Kelloggs kept Stryker informed of possible new articles to be included and would ask for a selection of relevant pictures. Later, the FSA began to propose certain subjects to the periodical. For instance, Arthur Rothstein came to New York to discuss with the editors the possible inclusion of a photo report he made with Virginia Cocalis about Health work conducted by the FSA. As the inquiries show, the use of the FSA photographs in the *Survey* served rhetorical purposes and the pictures were carefully selected to match the argument contained in the articles. This rhetoric could affect the layout and the aspect of the photograph, which could be reframed to provide dramatic effects. Lange's “Migrant Mother,” for example, was displayed with a darker tone that emphasized her despair.⁶⁰

However, as time went by it seems that the project somehow lost theoretical focus. The policies of the FSA were now often only a pretext to have the photographers pursue the grand project of Stryker. As the photographer and close friend to Stryker Arthur Rothstein recalled: “As it went over the years, Roy became more and more fascinated with making a pictorial record of life in the United States... He wanted to photograph everything.”⁶¹ What Stryker and the FSA project lost on the theoretical ground, it seemed to gain on the side of dissemination of its pictures. When the FSA photography project began in 1935, it placed nearly two hundred images per month in newspapers and magazines; by 1940 the numbers had grown to a hectic fourteen hundred. Because of this, Stryker hired Ed Roskam, artist and photographer, to manage the files

58 Kellogg to Stryker, December 2, 1935, Survey Associates Papers, Box 168, Folder 1261.

59 Kellogg to Stryker, July 21, 1938. Ibid.

60 See Finnegan 2003, p. 99.

61 Rothstein had been Stryker's student at Columbia and was linked to the project from 1934 on, both as a photographer and as a graphic designer (cited in [give reference]).

in 1939.⁶² At the same time, the FSA project was also catching the eye and attention of social thinkers and writers. Already in 1937, the most prestigious photographer of the FSA, Walker Evans had taken a year off to complete a sociological project with the journalist and essayist James Agee. The project would be published after a lot of difficulties and without much public recognition (at that time) in 1941 as *Let us praise famous men*. The latter was a clear extension of the FSA project in that it endeavored to provide a social and economic analysis of the agricultural situation through the study of three tenant families with whom the authors spent several months. In this study, the authors claimed that the images were as important as the text and should be read in parallel.⁶³ Besides this well-known example, a string of graphical essays and novels would carry Stryker's vision to the core of American public and culture. The first was the volume by Archibald MacLeish, *Land of the Free* (1938), which we mentioned earlier, it would be followed by several others such as *Forty Acres and Steel Mules* (1938) by Herman Clarence Dixon, *Home Town* (1940) by Sherwood Anderson and *Twelve Million Black Voices* (1941) by Richard Wright. In all these cases, the photographs were borrowed from the FSA files and were used in parallel of an essay discussing a specific social and economic problem. Another striking example of the impact of the FSA photographs was the visit of John Steinbeck, who was at the time looking for materials for a new book project that would turn out to be *The grapes of Wrath*, made in Washington in 1938. Here, he spent several days looking through Stryker's files. After this, he went to a FSA migrant labor near Bakesfield for several weeks. Indeed, when the book would be turned into a movie the year after (1940), its producer Darryl Zanuck was to make sure that its look would be as close as possible as that of the FSA pictures. However, all these essays drawing from the same source conveyed very different social and economic meanings calling into question Stryker's belief that pictures were able to carry unambiguous interpretations of economic and social facts.

Pictorial statistics encountered a similar fate. Widely adopted by American propagandists – both within and outside the Roosevelt Administration – it gradually lost its relation to social sciences and became a convenient tool to be used not only by social workers, but also stockholders, businessmen and customers as yet another tool of communication and propaganda.

62 Roskam would contribute to the lack of thematic focus of the last years of the FSA project, most notably by inducing the photographers to take more urban pictures and less agricultural ones.

63 “The photographs are not illustrative. They, and the text, are coequal, mutually independent, and fully collaborative.” (Agee and Evans, 1941: XV)

A striking example of this transformation is the use of pictorial statistics by the American Petroleum Institute, an emanation of the ruling petroleum companies. Every few years, the Department of Public relations of the Institute edited a small book called *Petroleum. Facts and Figures*, which detailed the functioning and the growth of petroleum industry. While the first four editions were austere documents of two hundred pages replete with figures and technical discussions on the issues of transportation and production of petroleum, the fifth edition was much more vivid with more than forty pictorials from Modley and his team, underlining efficiently the statistics and transforming a long discussion into a much more condensed and visual one. The operation was a success and pictorial materials were also widely used in the subsequent editions of *Petroleum Facts and Figures*. However, the evolution of their use and of their form also provides a typical example of the degeneration in terms of intellectual content of pictorial statistics after the 1930s. In the seventh edition published in 1941, Isotypes and schematic drawings are no more integrated in the text, but presented in a small section of about ten pages which opens the book. The intent of the editor is quite clearly to offer a visual summary of the content of the book containing the main figures destined to the too lazy or the too busy man and woman. And in the first postwar edition, published in 1947, pictorial statistics disappeared altogether to be replaced by the more traditional tables, bar charts and graphs. The lesson however was well learned: the bars and charts were brightly colored and the figures were enhanced by stylized and colored items of the petroleum industry or using its products such as tractors, trucks, factories, automobiles, refinery, oil well, etc. Visuals were now acting as ornaments, there did not carry any scientific content.

Another telling example of the disjunction between the form of pictorial statistics invented by Neurath and its scientific program is the famous guns vs. butter diagram (fig. 11 below) from Paul Samuelson's *Economics*.

Fig. 11. Alternative choices between butter and guns (Source: Samuelson 1948: 19).

Published in 1948, the latter became the leading introductory textbook for a whole generation. From an aesthetic point of view, this figure owed much to the Vienna method. However, the theoretical intent could not be more opposed to it. In Samuelson's text, each symbol represented a hypothetical quantity – if the nation wants to produce x units of guns, it simultaneously cannot produce more than y units of butter. The whole guns vs. butter diagram was thus meant to represent something, a production possibility, which did not exist except in the mind of the economist – whereas according to Neurath's theory of visual language, a symbol was always meant to represent an actual quantity of something existing in the real world. Moreover, while Neurath's representations often contrasted human poverty with the abundance of available resources and advocated economic planning, Samuelson's figure used war planning as a striking metaphor to increase the student's awareness of the scarcity of resources and the individual choices that had to be made accordingly. On the whole, Samuelson's economic conceptions, though sympathetic to government intervention in many ways, represented the culmination of the “classical” economics Neurath was opposing from a methodological as well as from a political point of view. Yet, the presence of the guns vs. butter diagram in *Economics* was anything but surprising. Its editor, Mc Graw Hill, besides being the dominant scientific publisher had also been a major medium for the diffusion of pictorial statistics à la Neurath, with its own team of designers and artists (Modley 1937: 162).⁶⁴

⁶⁴ On the context surrounding Paul Samuelson's textbook and its role in changing the place of visual representation in economics, see Giraud (2010).

5. Concluding remarks

Starting in the 1920s as separate attempts to diffuse economic information to various audiences – most often untrained in economics –, the movement toward visualization culminated after the 1932 election of Roosevelt when the realization of radical politics became plausible and therefore required further promotion. However, the scientific intent was lost in the process and what began as a research program in social sciences evolved toward a propaganda vehicle with little objective and scientific content. By the end of World War II, it was clear that the Neurath-Modley and Stryker-Kellogg-Hine-Tugwell programs for transforming the social sciences by integrating visuals into the theory and practice of social scientists had failed miserably. It is not that the visual tools they created or renewed were abandoned. On the contrary, they were now considered by social scientists, essayists, marketers and political propagandists alike as a way to communicate their ideas to a larger public. As such, the visual materials have been widely used during the 1930s and the war and often in ways that strained their scientific intent. The consequence was that, while Neurath, Kellogg and others believed that visualization carried the promise of a more objective and neutral social science, it was now evident that visuals were especially efficient as a propaganda medium. In this perspective, Samuelson's approach exemplified the dominant post-war attitude toward visuals: they were now used as tools to present economics in a simplified form, but their limitations precluded their use as a creative engine for science.

Moreover, the various projects we have depicted in this paper have had little influence not only on the way economics was practiced after WWII, but also on the way it interacted with its various audiences. After all, if there was one common thread between all these journalists, philosophers, artists and social scientists beside their political engagement as left-wingers, it was their skepticism over the autistic aspects of classical economics. They thought to some extent that the Great Depression and 15 years of Roosevelt's legislature would precipitate the end of an economic theory they judged too disconnected from the "real world". The immediate postwar period would prove them wrong by erecting a new neoclassicism in the discipline while getting rid of the "old" institutional economics (Morgan & Rutherford 1998; Yonay 1998). At the end of the 1950s, the kind of economic thinking which was articulated in *American Economic Life*

would be totally ruled out of economics. Indeed, not only economics but the whole conception of scientific organization would change in the late 1940s, rendering prewar projects obsolete. The reorganization of postwar science by Vannevar Bush, who advocated simultaneously scientific laissez-faire and a massive funding by government agencies, was strictly opposed to the views of those who thought science should be redirected to public interest. When Senator Harley Kilgore suggested that science should be planned to serve national needs, he was supported in the *New York Times* by Waldemar Kaempffert, who eventually testified before Washington committees.⁶⁵ Of course, we know that Bush won and that the kind of science he defended diverged drastically both in content and in the way it was communicated to the public from the views of Dewey, Tugwell, Neurath or Kellogg. Yet, by educating visually a large portion of the US population and influencing most graphic designers working for academic publishers, this movement incidentally paved the way for the development of the visual economics textbook as we know it today.

⁶⁵ See Hollinger (1990: 901).

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