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## QUANTIFICATION AS CONFLICT. WITOLD KULA'S POLITICAL METROLOGY AND ITS RECEPTION IN THE WEST

### Abstract

Units of measurement appear as media of social conflict in Witold Kula's seminal study on metrology. Given the current discussions around political epistemology, Kula's treatment of metrology is telling. He turns the supposedly neutral auxiliary science of weights and measures into a matter of concern. The reception of his concepts in the West is outlined (history of historical metrology, the Annales school, and the history of science), and the potential of this social history of measurement in times of accelerated data production is evaluated.

**Key words:** Witold Kula, weights and measures, Annales School, economic historiography, academic diplomacy

The village assembly of Zederman north-west of Krakow was “particularly unyielding in metrological clashes”.<sup>1</sup> In the year of the French Revolution, the peasants complain about the way their taxes are collected. By this time, they could take recourse to a royal decree defining the standard measures of the Warsaw system:

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<sup>1</sup> W. Kula, *Miary i Ludzie*, Warsaw 1970; quoted after the English edition: *Measures and Men*, translated by Richard Szeleter, Princeton 1986, p. 135. Kula frequently refers to reports of the inspections of the estates of the Crown, which began in 1564. This quote is from a later edition of these reports: *Lustracja województwa krakowskiego 1789*, krakowski, proszowicki and ksiąski districts, eds. A. Falniowska-Gradowska and I. Rychlikowa, Cracow 1962, vol. 1, pp. 130, 131–132. I thank Jan Surman and the anonymous reviewers for important advice.

According to the decree, the castle should take from us the *osep*, oats and rye, by the royal bushel struck, but they take it heaped. They have seized our communal bushel and will not let us have it back.<sup>2</sup>

For centuries, volumetric measures played a key role in extracting the dues. Metric units mediated between people and political authorities. Everything depends on the way grain is poured into the open vessel: Is it done from the height of the knee or the shoulder? Is it subsequently adjusted to the rim as a struck measure or does it have to be heaped? Anxieties arose, since there was no way to control the correctness of the employed measure. The communal bushel is kept from the villagers in the example, making it impossible to account for the abstract matrix employed against them. The objective, legislated infrastructure of measurement lies beyond their control. The villagers are caught in one of the vestiges of industrialisation.

The economic practices and political concerns of the villagers of Zederman form the core of Witold Kula's interests. He is best known for his theory of feudalism along liberal Marxist lines, which obtained him a professorship in Warsaw shortly after the Second World War in 1950. He partook in the golden age of Polish economic history and was, like several of his colleagues, part of the *Annales* school. In 1970, he published a book on historical metrology — the science of weight and measures — that gave the discipline a new impetus and influenced Western narratives in the wider field of history of science and economics.

Kula investigates measurement as a medium of political conflict, where generations of historians have focused on factual values. His metrology may thus serve as an example of how to politicise a previously neutral field of study. Firstly, this departure from the older tradition of historical metrology will be outlined and compared to Kula's advocacy of metrology as a comprehensive science of quantification (time, extension, value). Secondly, some remarks on reception will trace how this method was received in the West. A special occurrence in this process is the internationalisation of metrology in a society, bridging the iron curtain.

The paper focusses solely on the reception of Witold Kula's classic book on metrology and its influence in Western European scholarship. Because of this focus, this article will not do justice to the rich context of Polish economic

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<sup>2</sup> W. K u l a, *Measures and Men*, p. 135. The Warsaw system was introduced by a royal decree of December 6th, 1764. The system was later replaced by the new Polish measurement [system] introduced on January 1, 1819. The traditional Polish systems of weights and measures were older and superseded by those of surrounding conquering nations. Metrication occurred towards the end of the 19th century (between 1872 and 1876). Cf. F. C a r d a r e l l i, *Encyclopedia of Scientific Units, Weights and Measures. Their SI Equivalences and Origins*, Berlin 2003.

history in Warsaw, his theory of feudalism, and many influences surrounding Kula's work, especially Nina Assorodobraj-Kula's. Although considerably altered by its translation to the West, the conception of political metrology may prove to be of renewed interest for a history of data and the governmental role of metric units.<sup>3</sup>

### 1.1. FRAMING HISTORICAL METROLOGY

In Kula's view, metrology — the science of weights and measures — should be more than just “a science enabling us to understand historical sources”.<sup>4</sup> This is said with respect to Joachim Lelewel, who is better known as a Polish national figure and revolutionary emigré. But Kula refers to his work as an expert historian and author of several numismatic treaties, which mirror the restricted scope of auxiliary sciences.<sup>5</sup> This rich tradition of metrology and numismatics in the narrower sense is very rarely quoted by Kula. Alexis-Jean-Pierre Paucton, a French protagonist, who laid new foundations by reweighting ancient coin in 1780, is mentioned only in passing. Friedrich Hultsch's monumental handbook is relegated to footnotes.<sup>6</sup> Patrick Kelly or August Boeckh, who inaugurated metrology as a discipline in their respective countries find no mention at all.<sup>7</sup>

Most crucially, the divergence from the strong antiquarian tradition is marked by a shift towards practice. Metrology is not the study of ancient relics. Weights and measures were in constant use and mediated relations between village and

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<sup>3</sup> P. Lazarsfeld, *Notes on the History of Quantification in Sociology — Trends, Sources and Problems*, “Isis” 52, 2, 1961, pp. 277–333; W. Espeland, M. Stevens, *A Sociology of Quantification*, “European Journal of Sociology” 49, 3, 2008, pp. 401–436; E. Aronova, C. v. Oertzen, D. Sepkoski, *Introduction: Historicizing Big Data*, “Osiris” 32, 2017, pp. 1–17.

<sup>4</sup> W. Kula, *Measures and Men*, p. 328.

<sup>5</sup> W. Kula, *Historical Metrology*, in: *Problemy i Metody Historii Gospodarczej (The Problems and Methods of Economic History)*, 1963, pp. 338–364, p. 338; J. Lelewel, *Numismatique du moyen-âge considérée sous le rapport du type*, 2 vol., Paris 1835; J. Lelewel, *Etudes numismatiques et archéologiques*, Bruxelles 1841.

<sup>6</sup> A.-J.-P. Paucton, *Métrologie, ou Traité des mesures, poids et monnoies des anciens peuples et des modernes*, Paris 1780; F. Hultsch, *Griechische und römische Metrologie*, Berlin 1862.

<sup>7</sup> P. Kelly, *The Elements of Book-Keeping. Comprising a System of Merchants' Accounts. Founded on Real Business*, 2. Edition, Philadelphia 1803; P. Kelly, *The Universal Cambist and Commercial Instructor. Being a General Treatise on Exchange*, London 1811. Kula's reference works begin with the 20<sup>th</sup> century: G. Bigourdan, *Le système métrique des poids et mesures. Son établissement et sa propagation graduelle, avec l'histoire des opérations qui ont servi à déterminer le mètre et le kilogramme*, Paris 1901; J. Hage1, *Maße und Meßeinheiten in Alltag und Wissenschaft*, Stuttgart 1969; P. Burguburu, *Métrologie des Basses-Pyrénées*, Bayonne 1924.

local authority. This is true for all the other traces systematised and verified by auxiliary scientists: Parchment, sigils, genealogies, and old handwriting were directly instrumental in the exertion of political power. For the French case Kula points to the advent of a new profession that aided the aristocrats:

Their castles now saw a new type of employee at work — the feudistes, men skilled in paleography, able to decipher old documents and sufficiently cognizant of law for their investigation to yield, each and every time, a verdict favourable to their employers. Among them — horror of horrors — was Gracchus Babeuf! He learned a good deal about feudal laws in this manner, and his knowledge would one day be put to a scarcely foreseeable use.<sup>8</sup>

The term “feudist” emerges in rural French administration around 1660 for itinerant experts of feudal law.<sup>9</sup> In contrast to the seigneurs or abbesses, these experts could make sense of old documents and treaties. Some would offer to rearrange the archive at the same time as the administration. Surveying and map making was an indispensable part of their services. They were decried as “technicians of the feudal reaction”. For the history of administration they were “explorers and inventors” when it came to basing rural government more firmly on written law and documents.<sup>10</sup>

Metrology in this context meant surveying and determining local standards. It promises augmented personal income to landowners and a new method of perpetual and just restructuring of land tenure. Instrumental in this is a new measuring device, the graphomètre-trigonométrique. Thus Babeuf publishes it together with a mathematician while introducing himself as “archiviste-feudiste”.<sup>11</sup> In the likely conflict of lords and peasants over the dues, the

<sup>8</sup> W. Kula, *Measures and Men*, p. 91. Cf. his reference A. Pelletier, *Babeuf feudiste*, “Annales historiques de la Révolution française” 36, 179, 1965, pp. 29–65.

<sup>9</sup> M. Friedrich, *Les feudistes. Experts des archives au XVIIe siècle. Recherche des documents, généalogie et savoir-faire archivistique dans la France rurale*, “Bibliothèque de l’École des Chartes” 171, 2013, pp. 465–515.

<sup>10</sup> M. Friedrich, *Les feudistes*, p. 466.

<sup>11</sup> There was an irretraceable manuscript “L’archiviste Terriste”. For the most complete list of mentions V. Advieille, *Histoire de Gracchus Babeuf et du babouvisme. D’après de nombreux documents*. 2 vols., Paris 1884, vol. 1, p. 480. G.[F.N.] Babeuf, *L’archiviste-Terriste, ou traité méthodique de l’arrangement des archives seigneuriales et de la confection et perpétuation successive des inventaires, des titres et des terriers d’icelles, des plans domaniaux, féodaux et censuels*, Paris 1786. [no copy could be located as of now.] The most telling example of Babeuf’s competence in ordering estates is his “eternal cadaster”, already dedicated to the democratic force. G.[F.N.] Babeuf, *Cadastre perpétuel, ou Démonstration des procédés convenables à la formation de cet important ouvrage, pour assurer les principes de l’Assiette & de la Répartition justes & permanentes, & de la perception facile d’une contribution unique, tant sur les possessions territoriales, que sur les revenus personnels. Avec l’exposé de la Méthode d’arpentage de M. Audiffred, par son nouvel instrument, dit graphomètre-trigonométrique. Dédié à l’Assemblée nationale*, Paris 1789.

role of the feudist was to go back to the sources, and to uncover forgotten licence from the documents in the archive. Kula suspects that if there were no old rights to be pointed at and reinstated, one could demonstrate how the measures in use had been larger in the past.<sup>12</sup>

Kula does not only show the “ami du peuple” among the legal advisers of the feudal reaction. He portrays the auxiliary sciences as active tools of feudal governance. This is quite exactly the opposite of how traditional historical metrologists situate their objects within a continuum of neutral established facts at the basis of history. Kula advocates a more partial perspective. In practice, the written arsenal of rules may serve the authorities. It may at the same time be turned around, as the peasants take recourse to the written record as well, both sides trying to put the stability conveyed by symbolic representation to their personal advantage. In this sense, measures are not a simple tool of the aristocracy. They are a medium of class struggle, a formulation that recurs within Kula’s texts on the topic.

Because of this eminent role in government, Kula raises metrology and its “fellow-auxiliaries” to a new status of “a variant of history”.<sup>13</sup> For all the discreet detail provided by the auxiliary sciences emerges directly out of juridical practice—ruling and dues, succession and values, measures and units. It is only the archive, the transposition from legal fact to historical fact which deprives the documents of their political dimension. Kula goes on to spread the roof of metrology over the more dignified sub-disciplines of chronology and numismatics. Again, the conceptualisation of a coin as material heritage and source of historical information in numismatics is too short sighted for him: “indeed, money is a social phenomenon, and must be studied as such.”<sup>14</sup> He does not, however, refer to an established numismatist in this passage, but to François Simiand of the French historical school of economics. Krzysztof Pomian argues that this disciple of Henri Bergson and Émile Durkheim had a considerable influence on the *Annales* authors in general.<sup>15</sup> With view to money Kula

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<sup>12</sup> “The feudistes had two courses open to them: either to ferret out in the old documents rights that had fallen into oblivion, for example, an absolute right to extract corn-grinding dues, or a disused toll, or to make out a case for increasing the dues that were still being enforced. If the latter way was tried, then there was clearly a temptation to demonstrate that the measures, which had formerly been used to assess the dues, had been larger than those currently in use. This, too, led to historical metrological studies, albeit tendentious in their very conception.” W. Kula, *Measures and Men*, p. 91.

<sup>13</sup> W. Kula, *Historical Metrology*, p. 359.

<sup>14</sup> *Ibidem*, p. 338.

<sup>15</sup> K. Pomian, *Impact of the Annales School in Eastern Europe [with Discussion]*, “Review (Fernand Braudel Center)” 1, 3, 4, 1978, pp. 101–121; F. Simiand, *La monnaie, réalité sociale* “*Annales, Sociologiques Serie D*”, fasc. 1 (1934), pp. 1–58. On the Marxist continuum of money and measures cf. F. Engster, *Das Geld als Mass, Mittel und Methode: das Rechnen mit der Identität der Zeit*, Hannover 2014.

specifies, “[i]ts functions [...] is by no means identical in all culture; and it is this variety of function that we should seek to apprehend.”<sup>16</sup>

Kula’s political metrology would comprise the measurement of area, length, size, value and time, since it subsumes chronology — the auxiliary science of time reckoning systems, calendars, the hour, of festivities and debt cancellation.<sup>17</sup> Yet again, none of the impressive scholars of chronology from Scaliger to Ideler are quoted. To explain chronological investigation he references Henri Hubert’s and Marcel Mauss’ account on people whose economic and social life is reversed by the calendar: They live in competitive trade during summer and transform to mutual aid in winter.<sup>18</sup> All in all his version of an enhanced metrology has two allies: It looks at the initial juridical function and maintains a proximity with the systematic investigations of anthropology.

This new metrology is quite openly a political project for Kula. It would have to treat relevant concepts on the level of number, units and systems of measure in the fields of length, weight, time and value. All these parameters of data formation should not be investigated as self-sufficient notation, but “they provide foci of sometimes bitter class struggle”.<sup>19</sup> Privileged epistemic objects are firstly historical relics and material heritage in museum collections. Secondly, the Bible and theological discussions of “just measures” are drawn upon. Just like the theory of “just price”, the assizes of bread or regulations to determine accurate amounts of bread are a given in economic history.<sup>20</sup> It is the third corpus of sources which sets Kula apart: symbolical meaning, iconology, phrases and slogans, superstitions and practices, instruments and anxieties — all is valuable as source of information on the socio-metric structure of societies.

All too often metric systems go unnoticed as historical artifacts, especially since the global establishment of the metric and the imperial British system of measures in the 19<sup>th</sup> centuries. It is due to their all-encompassing scope that the problems of measurement “dwindle into a vanishing point from social life.”<sup>21</sup> This is one of the formulations in which Kula bridges not only the East and the West, not the lords and the peasants, but what holds them together: Kula

<sup>16</sup> W. K u l a, *Historical Metrology*, p. 339.

<sup>17</sup> “Chronology and numismatics, as we see them, form constituent parts of a wider auxiliary science of history, namely metrology.” W. K u l a, *Historical Metrology*, p. 339.

<sup>18</sup> H. H u b e r t, M. M a u s s, *Etude sommaire de la représentation du temps dans la magie et la religion*, in: *Mélanges de l’Histoire des Religions*. 2<sup>nd</sup> ed., Paris 1929, pp. 189–229. Cf. W. P i a s e k, *Anthropologising History: a Historiographic and Methodological Case Study of Witold Kula*, Torun 2018.

<sup>19</sup> W. K u l a, *Historical Metrology*, p. 359.

<sup>20</sup> H. W i t t h ö f t, *Über Korn und Brot—Geld und Münze Rechte Zahl und aequalitas als gerechter Preis in Mittelalter und Neuzeit*, “VSWG: Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte” 93, 4, 2006, pp. 438–479.

<sup>21</sup> W. K u l a, *Historical Metrology*, p. 340.

investigates the neutral zones of quantification not to promote their opposite, but to approach an ethnology of the quantitative. For this metrology has to “leave the narrow hidebound methods” of an auxiliary science.<sup>22</sup> Measures are neither neutral nor autonomous. They are “replete with abundant and concrete social meaning. [T]o reveal it, should become the main objective of historical metrology”.<sup>23</sup>

## 1.2. PRE-METRIC MEASURES

One of the most remarkable results concerning the cultural emergence of ubiquitous commensuration is Kula's chapter on early measures before exact numerical definition. Imprecise and informal measurements govern everyday practices before metrication. Again, we do have to speak of a conscious methodological choice. By seeing measuring systems as the cultural link between people and their environment, Kula has recreated the intellectual universe of pre-metric times—an endeavour that may be read as a tenacious but unagitated form of solidarity, or what Ferdinand Braudel has observed as Kula's way of “patient theorising” from a host of different sources.

Pre-metric measures are “expressive of men and their work”.<sup>24</sup> A block of salt hewn in the Wieliczka mines nearby Krakow is a standard unit formed by three forces: It is as large as possible, such as to keep it stable and most of it shielded from dirt during shipping. But it is not too large, such as to keep it transportable. Finally, it is shaped by custom regulations.<sup>25</sup> All over the world, pre-metric units are limited by performance.<sup>26</sup> For practitioners it is evident what a cart or “charrette” would circumscribe: The unit stood for the load that two oxen could pull in mediaeval France.<sup>27</sup> Richard K. Pankhurst adds a distinction common to Ethiopian measurement systems, which is “expressed in the Amharic term [...] *cēnāt*, i.e. the amount carried by a beast of burden, and the [...] *sēkem*, the amount carried on human shoulders”.<sup>28</sup>

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<sup>22</sup> *Ibidem*, p. 359.

<sup>23</sup> *Ibidem*, p. 358.

<sup>24</sup> W. Kula, *Measures and Men*, p. 123; B. Garnier, K. Pomian, (eds.), *Les Mesures et l'Histoire. Table ronde Witold Kula 1984, (Cahiers de Métrologie)*, Paris 1984, pp. 37–53; D. North, *Kula, Witold: Measures and Men, Review: “The Journal of Economic History”* 47, 2, 1987, pp. 593–595; J.-M. Servet, *Note de lecture*, “Revue économique” 1, 1989, pp. 111–118.

<sup>25</sup> W. Kula, *Measures and Men*, p. 7.

<sup>26</sup> S. Gudeman, *Economics as Culture. Models and Metaphors of Livelihood*. London 1986; T. Crump, *Anthropology of Number*, Cambridge 2012.

<sup>27</sup> J.-C. Hocquet, B. Garnier, D. Woronoff (eds.), *Introduction à la Metrologie Historique*, in: *Metrologie Historique*, Paris 1989, p. 90.

<sup>28</sup> R. Pankhurst, *A Preliminary History of Ethiopian Measures, Weights and Values — (Part 3)*, “Journal of Ethiopian Studies” 8, 1, 1970, pp. 45–85, p. 45.

These are typical examples for pre-metric measures, which Kula portrays in great detail. His word for these units is “znaczeniowy”, an adapted adjective from “znaczenie” which stands for “meaning” or “significance”. Szreter translates with “representational measures”, in a later article with “functional measures” and uses “anthropometric” when the connection to the body is stressed, although he admits to the danger of confusion with the ethnographical practice of measuring the body itself against a ruler.

In a review, Michael A. Osborne groups the “representational” measures in three categories. Those which are determined “by the needs of life and work”.<sup>29</sup> They had “some elements of agreed-upon convention but were not usually standardised”.<sup>30</sup> In this sense, contracts could contain a copy of the measure used to determine the circumference affected by the treaty. Then he observes the appearance of more generally known and approximated amounts taken from “human and animal labour” as an important development from this. As most abstract form of representational measurement real units of labour emerge, as for example “loaves of bread used to pay agrarian labourers”.<sup>31</sup>

For Kula, the pre-metric measures are almost indexical traces of working conditions. The units are silent brokers mediating between animals and locations, between people and substances, lending themselves to an archaeology of efforts. And what is more, they convey the conditions of production: Circular measures of land, for example, can only be conceived of, where space is ample and imagined as a void. And indeed, they occur in the colonial setting of New Spain.<sup>32</sup> From Portugal to Russia, the European surface measures indicate either land ploughed in one morning or day, or the amount of seed needed for the area. In an agrarian setting, these types of measurement prove superior to a mere linear measurement. The most interesting dimension of a field is not its extension but lies with its yield. The amount of workforce or seed employed is telling, because they both differ with the quality of the soil, with its steepness or flatness or fecundity. So the *Morgen*, the *journée*, or *giornata* estimate the *productivity* of a unit of land. Yield is the most important information for those reduced to subsistence as well as for those planning to extract a toll or a tenth. Kula presents rural quantification as a superior system for local economies, which is why he uses the term “representational measures”.

The metric system he presents as a mere convention. It loosens the representational link between persons and things and divides the units from the

<sup>29</sup> M.A. Osborne, *Witold Kula. Measures and Men [Review]*, “Isis” 80, 3, 1989, pp. 504–505.

<sup>30</sup> *Ibidem*, p. 505.

<sup>31</sup> *Ibidem*, p. 504.

<sup>32</sup> W. Kula, *Measures and Men*, p. 29; M.C. Stampa, *The Evolution of Weights and Measures in New Spain*, “Hispanic American Historical Review” 34, 1949, pp. 2–24.



procedure of work. This makes them conventional, idealised, neutral, but by no means less communicative: Metric measures connect although their mode of representation suggests disentanglement. Multiple are the forces behind this transformation. During the first decades of its introduction, the metric system was the carrier of a revolutionary rationalism. In the *cahiers de doléances* strong claims for metric reform had been voiced (“One King, One Law, One Weight, One Measure!”).<sup>33</sup> Expectations were high to improve justice, transparency and equality in taxation and trade alike. Kula traces the shattering of these plans, and hints at the fact that the metric system mirrors a different layer of economic functionality compared to the agrarian measures. At the same time, when the word “market” gains an abstract meaning<sup>34</sup> and trade is largely internationalised, the practices of quantification lose their rural functionality and adapt to the now dominant economic relations.<sup>35</sup> During feudalism measures were used to manipulate revenue, which gives measures a rough and crucial meaning: “Thus everything conspired to produce conflict about measures.”<sup>36</sup> Metrological depletion of the people, as described by Kula, is remarkably close to the manipulation of coinage and the *seigniorage* that Joseph Vogl has listed as one effect of sovereignty (“Souveränitätseffekt”).<sup>37</sup>

The transition from non-metric to feudal, and from feudal to decimal measures is not just a change in administration or economic structure. The change in the governance of weights and measures is directly indicative of a revolution in the juridical sphere. While Kula credits the metric system with the closing of a space beyond the law, he deplores the loss of the representational units. Rural quantification has its precision in the measurement of yield, performance and lived time as opposed to the comparably arbitrary extensions, surfaces, or gravity. Feudalism stands for the sovereign use of measures, while the decimal system of the French Revolution was introduced with the code civil and went along with new rights for citizens. In Kula’s view, the prerequisite of

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<sup>33</sup> W. Kula, *Measures and Men*, p. 185.

<sup>34</sup> M. Dommann, *Markttabu*, in: Chr. Dejung, M. Dommann, D. Speich Chassé (eds.), *Auf der Suche nach der Ökonomie. Historische Annäherungen*, Tübingen 2014, pp. 183–207, p. 188.

<sup>35</sup> “The measure given to it is unrelated to its maker or its user. The mass production of commodities is intended for vast, remote, and diverse markets. Each of them will have a measure of its own. Commodities cannot bear the measure of the country of origin if it be unintelligible to the buyers, nor of the country of destination, for those will be many and varied. The dimensions of such a product cannot be expressed in any measure that ‘belongs’ to some particular locality or nation. No measure can enjoy favoured treatment in a market situation. Each must be abstract, just as market value is — or rather, conform to the abstract character of the market.”  
W. Kula, *Measures and Men*, p. 123.

<sup>36</sup> W. Kula, *Measures and Men*, p. 16.

<sup>37</sup> J. Vogl, *Der Souveränitätseffekt*, Zürich-Berlin 2015, p. 69f.

metric decimalisation is “the equality of men before the law and the alienation of the commodity.”<sup>38</sup> Measures are thus a practical format echoing working conditions and at the same time a contractual format organising and mediating social hierarchies effectively without words.

All in all, Kula observes the effects and affiliations of measurements as being highly political. This is why he wants to enhance the expertise of the auxiliary sciences into ethnographical approaches. Metrology becomes a new roof for investigations into the governmentality of time, surface measures, moneys, and even bushels.

## 2. FADING TO THE WEST

Today, there are few historical works touching on the history of economics and measurement which do not pay tribute to Kula on the first pages, from Kathryn Olesko to Michael Gordin, from Ken Alder to Grame Gooday, from Aashish Velkar to Héctor Vera.<sup>39</sup> But all these studies integrate Kula’s metrology in one or the other way into a larger picture of scientific, technological or economic development. Political Metrology as projected by Kula would encompass the study of the matrix highly industrialised societies use for orientation, communication, and valuation. This is never quite realised in the West, as the three main strands of reception show: (2.1) Historical Metrology: Although Kula uses the label of auxiliary science, the reception of his work throughout the Western community of historical metrology was rather reserved. The reviews from this field of high specialisation for the most part engages in boundary work. (2.2) International Organizations: Kula himself was vice-president of an international association dedicated to metrology, which bridged the iron curtain. But even in this special connection to the West, traditional approaches to metrology prevailed in an otherwise remarkable act of scientific diplomacy. (2.3) Annales School: The international network of economic historians, which constituted

<sup>38</sup> W. Kula, *Measures and Men*, p. 123.

<sup>39</sup> K. Olesko, *The Meaning of Precision: the Exact Sensibility in Early 19th-Century Germany*, in: *The Values of Precision*, M.N. Wise (ed.), Princeton 1995, pp. 103–134; M. Gordin, *The Measure of all Russians. Metrology and Governance in the Russian Empire*, “Kritika: Explorations in Russian and Eurasian History” 4, 4, 2003, pp. 783–815; K. Alder, *The Measure of All Things. The Seven-Year Odyssey that Transformed the World*, London 2002; G. Gooday, J. Sumner (eds.), *By Whose Standards? Standardization, Stability and Uniformity in the History of Information and Electrical Technologies*, London 2008. (= History of Technology 28); A. Velkar, *Rethinking Metrology, Nationalism, and Development in India (1833–1956)*, “Past & Present” 239, 1, 2018, pp. 143–179; H. Vera, *A Peso el Kilo: Historia del Sistema Métrico Decimal en México*, México City 2007.

several international societies, spearheaded by members of the Annales School which of course provided favorable conditions for Kula's reception in France.

## 2.1. HISTORICAL METROLOGY AND THE EXCOMMUNICATION OF CONFLICT

The reception of Kula's metrology within the community of western auxiliary scientists is a reserved one. Harald Witthöft, author of a monumental seven-volume handbook on historical metrology, and Jan Gyllenbock with his more recent encyclopaedia of measures remain silent, although both of course quote Kula on occasion.<sup>40</sup> Ronald Zupko, one of the most prolific writers on Western European metrology, denies the problem at hand:

True, Kula's emphasis does elucidate a wide series of sociological phenomena, but metrological inequalities were more of an economic impediment than a cultural impasse. Unfortunately, Kula does not explore this critical issue. Finally, more emphasis is needed on the scientific and technological aspects of metrology and less on the sociological.<sup>41</sup>

Scientific rigour and competence is evoked to re-isolate measurement from social effects in this reception. In other reviews, an overdose of influences is attested to Kula. This reestablishes a boundary between measurement and questions of dues, extraction and equivalence. Douglass North employs another strategy and presents himself as a cliometric historian. He regrets to find this numeric approach neglected in Kula's theorising and insinuates backwardness:<sup>42</sup> "Kula, unfortunately, is simply not aware of this literature; and therefore his study is much less interesting than it might have been, especially since he is concerned with all of these issues."<sup>43</sup> While North stands for a renunciation of simple rational choice models, and was awarded a Nobel Prize for making institutions thinkable within a neoclassical discipline, his summary of *Measures and Men* still retranslates the Marxist setting into the language of (liberal) economics:

Kula also focuses on the class struggle between lords and peasants, in which the lord took advantage of asymmetric information to exploit the peasant. Yet asymmetric information and consequent exploitation of this asymmetry by one party to the exchange is not confined

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<sup>40</sup> J. Gyllenbock, *Encyclopaedia of Historical Metrology, Weights, and Measures*, Basel 2018; *Handbuch der historischen Metrologie*, 8 vols., H. Witthöft (ed.), St. Katharinen 1991–2007; L.D. Armstrong, *A Guide to International Recommendations on Names and Symbols for Quantities and on Units of Measurement*, Geneva 1975.

<sup>41</sup> R.E. Zupko, 'Measures and Men' by Witold Kula and Richard Szeleter, "Technology and Culture" 29, 1, 1988, pp. 141–142.

<sup>42</sup> D.C. North, 'Measures and Men' by Witold Kula, "The Journal of Economic History" 47, 2, 1987, pp. 593–595, p. 594.

<sup>43</sup> *Ibidem*.

to class struggle between lords and peasants (nor is the asymmetry as one-sided as Kula implies); it is a ubiquitous feature of any exchange in which it is costly to measure various valuable dimensions of a good or service.<sup>44</sup>

Lords and serfs disappear. All that remains are individual actors with different amounts of information. Historical conflict is turned into a necessary, constant imbalance. North does not hesitate to commensurate each and everything into the fold of an economic model.

But even without this deliberate reductions of the critical dimension that Kula established around measurement: Some dimensions of the text are impossible to translate, because of the particular proximity of activism and education in Poland. In some of his letters to Richard Szezter, Kula addressed his translator as “cat”. Before working at the Faculty of Education of the University of Birmingham, he had survived the Warsaw Uprising and still answered to the code name from this time. Although both were not acquainted in Warsaw, this obviously constituted a strong epitext for the book. In Kula’s self-stylisation, this particular blend of counterculture, underground journals, and national private schooling is of paramount importance.

The two probably conflicting hearts of Kula’s research are fashioned impressively in terms of his private intellectual genealogy. His ancestry is divided into a Marxist and a cosmopolitan branch. One side, he claims, is proletarian: peasants, who had to toil away in the mines of the Basin de Dabrowa. Worse, his father was sent to Siberia, from where he returned as autodidact.<sup>45</sup> At the Society for Courses of Higher Learning (Towarzystwo Wyzszych Kursow Naukowych), where his mother and father were both inscribed, Kula would tutor for the classes of Natalia Gąsiorowska, who had been a member of the communist party since 1918. At this independent university, that the intelligentsia organised privately to provide teaching in the Polish language,<sup>46</sup> Kula claims to have listened first and foremost to the oldest and most silent participants of the course (“mûet et agé”).<sup>47</sup> After the war, he describes himself as participant of a fourth university, the “university of the people”.<sup>48</sup> While this all

<sup>44</sup> *Ibidem*.

<sup>45</sup> W. K u l a, *Mon ‘éducation sentimentale’* [*Moja edukacja sentymentalna*, transl. Thérèse Douchy], “Annales. Histoire, Sciences Sociales” 44, 1, 1989, pp. 133–146. (Published as obituary, augmented version of the original speech given in honor of this 60th birthday, 27. April 1976), p. 134.

<sup>46</sup> Another important factor is academic language cf.: J. S u r m a n, *Universities in Imperial Austria 1848–1918: A Social History of a Multilingual Space*. West Lafayette 2019. The University of Warsaw became Russian in 1869, from 1905 to 1915 the TWKN was the central Warsaw institution for higher learning in Polish.

<sup>47</sup> W. K u l a, *Éducation sentimentale*, p. 141.

<sup>48</sup> *Ibidem*, p. 140.

shows a strong commitment to a certain demographic, it is worth mentioning that Kula's purely proletarian roots appear to be somewhat contested.

But the second side of his intellectual heritage is fashioned in a different manner. He claims to have read Shakespeare in a German translation at the splendid library of his other grandfather. Of trans-imperial Jewish descent from a rich Hamburg merchant family, these books imbue his childish phantasies with tales of heroism, idealism and probably stand in for a less openly advertised liberalism. All in all, the autobiographical note on his "éducation sentimentale" deploys a whole zodiac of luminaries. It shows an expertise of writing in unforgiving political regimes native to Warsaw. Inevitably this epitext of political threat, activism and upheaval is lost in the translation in any language.

## 2.2. SOCIETIES AND METROLOGICAL INTERNATIONALISM

Kula's active role in many international scientific societies can be considered a precondition of his wide reception in most Western European countries. The very field of historical metrology yielded itself to a particular initiative. A newsletter of the History of Science Society from 1974 features Witold Kula as vice-president of a scientific body dedicated to historical instruments and units of weight: The International Committee for Historical Metrology (ICHM).<sup>49</sup> Attempts to organise the systematic study of old weights and measures through collaboration date as far back as 1955. In this year, the proposal was made to an international congress of historians in Rome.<sup>50</sup>

Under the auspices of Zlatko Herkov of the Yugoslavian Academy of Sciences and Arts several projects were planned, such as metrological anthologies, a bibliography, an archive of the society, and a central library. The costs were divided between several European academies and some museums of technology. Within the Austrian Academy of Science, the scientific division declined a metrology branch and it was relegated to the Commission for Economic, Social and Urban History.<sup>51</sup> Within the setting of the cold war, the ICHM,

<sup>49</sup> It was founded already in 1973. Soon it had 46 members (38 regular and 8 corresponding), from 18 countries: 14 European, 2 Asian (Israel and Japan) and 2 American (Argentina and United States). An active search for members from the U.S.S.R. seems to have had few results, but due to the strong tradition of auxiliary sciences in Eastern Europe the main contributions came from these parts of Europe.

<sup>50</sup> Archive of the Austrian Academy of Sciences /papers Alfred Hoffmann/Metrologie/ Bulletin Scientifique du Conseil des Academies des Sciences et des Arts de la RSF de Yougoslavie. Section B: Sciences Humaines 9(18), no. 10.–12. October 1973.

<sup>51</sup> During the time of Albert Hoffmann's presidency over the ICHM it covered the costs of the regular meetings of the steering committee, with the help of the Austrian National Bank. Hoffmann attended the exercises of the Seminar for Economic and Cultural History (Seminar für Wirtschafts- und Kulturgeschichte) at the University of Vienna. He spent the second world war

although clearly staged and of diplomatic importance, maintained a degree of liberty, just as has been said about the International Congress of Historians: “It was neither state initiated and funded, as were many of the Cold War cultural organisations, nor did it entail a specific transnational episteme.”<sup>52</sup> Nevertheless, some of the academic diplomacy found an eerie counterpart on the level of the object of research which had Central European dimensions:

Departing from the dictum that traffic merchandise knows of no political or state boundaries, it could easily be proven that individual domestic measures were linked with measures of neighbouring regions. There had been ample evidence that one could speak of systems of measures that were based on a common pre-measure as it were, or which had come into being in the course of centuries through a conforming of commercial measures to the traffic of merchandise. It was likewise possible to prove that around the old Viennese measures there had gathered measures of Austrian, Hungarian and other neighbouring countries, with which they constitute a Central European system of measures. On such grounds as these, the inference was made that studies of such a system would overlay the possibilities of the activity of but one institute, and that they ought to be organised on an international basis.<sup>53</sup>

Zlatko Herkov was an adamant proponent of a metrological cure against the cold war’s rift through Europe. In 1976, the centenary of the Central European system of measures was celebrated by a congress of no less than 360 participants in Hungary.<sup>54</sup>

Yet, the International Committee for Historical Metrology aimed far beyond this. Witold Kula’s contributions seem to focus on the French metric system or the decimalisation. This bespoke an attempted Western universalism, as opposed to the Central European politics of unity. An active search for members from the U.S.S.R. seems to have yielded negative results.<sup>55</sup> Japan, Australia were represented in the network at a later date.

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as an archivist in Upper Austria, but returned to the university as first chair for Economic and Social History (Wirtschafts- und Sozialgeschichte) in 1961. E. Zöllner, *Nachruf auf Albert Hoffmann*. Offprint from the Almanach der ÖAW 133 (1983).

<sup>52</sup> M. Berg, *East-West Dialogues: Economic Historians, the Cold War, and Détente*, “The Journal of Modern History” 87, 1, 2015, pp. 36–71, p. 38.

<sup>53</sup> Archive of the Austrian Academy of Sciences/papers of Alfred Hoffmann/metrology/ZL.30325/83/ Bulletin Scientifique du Conseil des Academies des Sciences et des Arts de la RSF de Yougoslavie. Section B: Sciences Humaines 9 (18), No. 10–12, October 1973, p. 1. Some doubts were raised as to the viability of this thesis Cf. K. Ulrich, *Das Klafter- und das Ellenmaß in Österreich*, “Blätter für Technikgeschichte” 32/33, 1971/72, pp. 1–34.

<sup>54</sup> Commission for The History of Science and Technology of the Hungarian Federation of Technical and Scientific Societies MTESZ organized it in Budapest. Archive of the Austrian Academy of Sciences/papers Hoffmann/ ZL.30325/83/Metrologie/Bericht vom 12. Mai 1976.

<sup>55</sup> Archive of the Austrian Academy of Sciences/papers of Alfred Hoffmann/ZL.30325/83/ Letter to Kedrov.

The other vice-president next to Kula was chosen from the cradle of interested metrological universalism: Paris. But René Taton did not only represent the French capital. He became John Needham's successor as president of the Union of the History and Philosophy of Science, Division of Science, The Science Museum, London.<sup>56</sup> As Maxine Berg emphasised for the International Economic History Association, these scientific organisations sported a recurrent set of historical luminaries, many of whom knew each other from Paris. Not only did Kula spend two years in Braudel's seminar there. West Germany was very often represented by the economic historian Hermann Kellenbenz, who studied with Braudel too, while the GDR sent Jürgen Kuczynski.

Ferdinand Braudel seems to have presided over everything at these international research bodies.<sup>57</sup> Berg emphasises the extent to which the International Congress on Economic History depended on Kula to integrate the Russian delegation, while he was still acceptable to the Western (European) interests. These international gatherings may have furthered the frequent translations of Kula's main works into Italian, English, French, Spanish and even Portuguese.<sup>58</sup> Enigmatically, there is hardly any translation into German.<sup>59</sup> This is particularly surprising for the case of the GDR, since Kuczynski and Kula worked on agrarian and developmental economics along liberal Marxist lines and meet on frequent occasions. Within Poland, Tadeusz Lepkowski classifies Kula as "historien-penseur", suggesting a lack of diligence. He fascinated, irritated and provoked, was drawn to large questions and "activités de l'intelligentsia polonaise libérale progressiste."<sup>60</sup>

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<sup>56</sup> Founded in Oslo 1928, it has convened regularly and organized congresses around the world until this day, with Paris (1929) and London (1931) being the most famous ones for the clash of Marxist and capitalist versions of the history of science. Joseph Needham (1972–1974) and René Taton (1975–1977) were the presidents during the foundation of the sister society on weights and measures.

<sup>57</sup> M. Berg, *East-West Dialogues: Economic Historians, the Cold War, and Détente*, "The Journal of Modern History" 87, 1, 2015, pp. 36–71.

<sup>58</sup> W. Kula, *Miary i Ludzie (Measures and Men)*, Warsaw 1970, translated to English 1986, Spanish 1980, French 1984, Richard Szeleter worked on the English translation with grants from the Alfred Jurzykowski Foundation Inc. and Louis A. Robb Fund of Princeton University Press. W. Kula, *Historical Metrology*, in: *Problemy i Metody Historii Gospodarczej (The Problems and Methods of Economic History)*, 1963, p. 338–364. 2nd Polish edition 1983. Translations: English 1963, Italian 1972, Spanish 1973.

<sup>59</sup> A. Pufelska, *Der bessere Nachbar? Das polnische Preußenbild zwischen Politik und Kulturtransfer (1765–1795)*, Berlin 2017; One notable exception: W. Kula, *Geschichte und Ökonomie: Die 'Langen Zeitabläufe'*, in: *Geschichte und Ökonomie*, H.-U. Wehler (ed.), Köln 1973, pp. 255–272.

<sup>60</sup> T. Lepkowski, *Necrologie. Witold Kula (1916–1988)*, "Acta Poloniae Historica" 60, 1989, pp. 321–325.

In France, the translations seem to have been correlated to the history of the metric system and thus the revolution itself.<sup>61</sup> Yet the claim to attempt a social reading is well received in the French reviews among all others: “déceler le contenu social que recouvrent ces différences”.<sup>62</sup> Jean-Claude Hoquet praises the “live magistral”, but presents Kula mainly as historian of the pre-metric measures.<sup>63</sup>

### 2.3. ANNALES OR THE POVERTY OF CONCEPTS

Political implications develop not only through choice of topics, but are intensified by using a critical angle. Reconsidering concepts like the “firm” and “longue durée” was congruent with the Annales School's emphasis on the slow but decisive forces of economic change. Kula reflects on the basic concepts of economics and draws attention to the incongruity of the “firm”. He maintains that the majority of the people on earth still make a living in agrarian subsistence economies and live far from firms. In the light of this attentiveness to the Global South, a more appropriate way for the analysis of European situations would be to work with a basic notion like “production unit”. Far better than a firm, it may comprise estates, households, and probably even bureaucracies.<sup>64</sup> There is no doubt that Kula understood his study of the agrarian economy of Poland up to the 18<sup>th</sup> century as a field of inquiry of higher relevance than any study of the city centres might have yielded. The Polish peasants stand for the most globally spread situation of economic gain.

Undoubtedly, Kula's intense work on the transition from feudalism to capitalism leaves no doubt that agrarian Poland serves as blueprint for economic

<sup>61</sup> “Il faut donc remercier l'éditeur d'avoir pris l'initiative d'une traduction dont l'entreprise s'est échelonnée sur près d'une quinzaine d'années et don't l'heureux aboutissement peut s'inscrire dans le cadre du bi-centenaire de la 'Grande Révolution'”. W. K u l a, *Les Mesures et les Hommes. Éditions de la Maison des sciences de l'homme*. Translated by Joanna Ritt, text reviewed by Krzysztof Pomian and Jaques Revel, Paris 1984; B. G a r n i e r, K. P o m i a n (eds.), *Les Mesures et l'histoire. Table ronde Witold Kula 1984. (Cahiers de Métrologie)*, Paris 1984.

<sup>62</sup> Y. M a r e c, *Sciences et société. Un ouvrage fondamental: Les mesures et les hommes de Witold Kula*, “Annales historiques de la Révolution française” 259, 1985, pp. 117–121.

<sup>63</sup> J.-C. H o c q u e t, *Métrologie: W. Kula, Les mesures et les hommes, trad. du polonais par Joanna Ritt*, “Annales de Normandie” 35.1 (1985), pp. 96–98.

<sup>64</sup> “Theoretical analysis of the pre- and semi-capitalist peasant holding as a type of ‘firm’ is of great and timely importance. The relevance of the problem is being enhanced for scientists today by its real-life urgency, in a world the majority of whose total population live in ‘underdeveloped’ countries. In such countries the majority of the inhabitants make their living, in fact, in small agricultural units, tenuously linked to markets, with families working and consuming at subsistence level. Peasant ‘subsistence farming’, to use the conventional term, is without doubt the most widespread organizational form of production activity on our globe.” W. K u l a, *Micro-analysis, Part I: Historical Studies of Production Units*, in: *The Problems and Methods of Economic History*. Translated by Simon and Richard Szeleter. Aldershot 2001 [1963], pp. 71–113, p. 81.



conditions of the Global South. In Agnieszka Pufelska's view, this makes Kula a precursor of a global history long before its modern rise with Jürgen Osterhammel.<sup>65</sup> But this particular conceptual readjustment from "firm" to "production unit" is not owed to an elite knowledge of international relations. It is telling of a certain methodological solidarity. Thinking on a global scale does not necessarily need the investigation of non-European countries, as global history, postcolonial theory, or transnational and entangled perspectives suggest. Rather Kula wants to discover what has driven this unification of the metric system, to which brutal European dominance was a mere corollary.<sup>66</sup>

Of course, his concerns for peasants do not end here. Kula contributes with Eric Hobsbawm to an issue in honour of Daniel Thorner, specialist on rural India.<sup>67</sup> He quotes Georges Niangoran-Bouha, an Ivorian scholar, on the famous Akan gold weights.<sup>68</sup> Fittingly, the migration of Polish peasants is documented not only in the pivotal contribution of Florian Znaniecki to the Chicago School of Sociology, but by Kula's edition of such letters, recovered from a Russian censorship bureau.<sup>69</sup>

In retrospect, Kula's partiality for the peasants was described in a different tonality too. Jacek Kochanowicz and Anna Sosnowska have recently hinted at the proliferation of positions for economic history after 1945. This particular subfield of academics maintained elective affinities with the ruling Marxist parties. The generation of postwar scholars was united not only by the Warsaw Uprising, but by available positions in economic history and the new availability of feudal archives.<sup>70</sup> Due to the nationalisation of agriculture and the

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<sup>65</sup> A. Pufelska, *The Transition from Feudalism to Capitalism and the Problem of Temporalization – on the 100th Anniversary of Witold Kula's Birth*, in: *Philosophy of Globalization*, C. Roldán, D. Brauer, J. Rohbeck (ed.), Berlin 2018, pp. 287–297.

<sup>66</sup> W. Kula, *longue durée*.

<sup>67</sup> P. Lamant, L.E.J. Hobsbawm, W. Kula, A. Mitra, K.N. Raj, I. Sachs (eds.), *Peasants in History. Essays in Honor of Daniel Thorner*, Oxford 1980.

<sup>68</sup> G. Niangoran-Bouha, *Weights for the Weighing of Gold. One of the Aspects of African Philosophical and Scientific Thought before Colonisation, First International Congress of Africanists (mimeo)*, Accra 1962; cf. D. Paulme, *Systemes ponderaux et monetaires*, "Revue Scientifique" 5, 1942, pp. 219–226; R. Mauny, *Tableau géographique de l'Ouest Africain au Moyen Age d'après les sources écrites, la tradition et l'archéologie*, Dakar 1961, pp. 410–419.

<sup>69</sup> There are several outstanding editions of letters written by Polish peasants from emigration: W.I. Thomas, F. Znaniecki, *The Polish Peasant in Europe and America*, Boston 1918; W. Kula, N. Assorodobraj-Kula, W. Kula, *Writing Home: Immigrants in Brazil and the United States 1890–1891 [Listy emigrantów z Brazylii i Stanów Zjednoczonych]*, New York 1986.

<sup>70</sup> Kula himself reports otherwise, for in Niasvizh (pl. Nieśwież), where the main bulk of these archives was kept, there was no order for retrieval of information in place yet. W. Kula, *Éducation sentimentale*, p. 137.

subsequent dispossessions the manorial administrations did not take care to save all family papers and these fell to the state and its allies in academia.

On the opposite side of the spectrum Fernand Braudel, who can be considered as personal friend, lauded Kula for exactly this inclusion of social dissent mediated through numerical instruments:

Witold Kula is one of the few who have not let their vision become obscured by the highs and lows of price curves and by the crises, the distant correlations, and the unifying trends of the market... To use one of Kula's metaphors, one must keep looking down into the well, into the deepest water, down into material life.<sup>71</sup>

Kula maintained strategic cooperations with the Annales School, who published the only monographic treatment exclusively on Kula to appear in Western languages until recently.<sup>72</sup> A shared interest in measures, moribund feudalism, and reflections on long temporal adjustments made this alliance seem natural. A key text was Navel's thorough investigation of two acres of land in the Normandie over time seems to have been an important initiation for the general esteem these topics held in the Annales School.<sup>73</sup>

Both sides celebrate the *rencontre* in Lübeck, where the Nazi regime established a special camp for high ranking or notorious prisoners of war like the sons of Stalin and Léon Blum. Some of Lefebvre's and Marc Bloch's students met at this Oflag too: most notably Henri Brunschwig and Ferdinand Braudel. The latter recalls how next to groups of British Air Force Pilots and French clergy the defenders of Warsaw, among them Kula, entered the camp.<sup>74</sup>

<sup>71</sup> F. Braudel, *Afterthoughts on Material Civilization and Capitalism*, trans. Patricia M. Rannum, Baltimore 1977, pp. 41–42.

<sup>72</sup> M. Herling-Bianco, *Witold Kula et l'historiographie polonaise du XXe siècle*, in: B. Garnier, K. Pomian eds, *Les Mesures et l'histoire. Table ronde Witold Kula*, Paris 1984, pp. 37–55.

<sup>73</sup> H. Navel, *Recherches sur les anciennes mesures agraires normandes. acres, vergées et perches*, Caen 1932. Reviewed by Marc Bloch: *Le témoignage des mesures agraires* [review], "Annales d'histoire économique et sociale" 6, 27, 1934, pp. 280–282. The Annales Journal dedicated a special issue to this case study IV/1932.

<sup>74</sup> "Von 1940 bis 1945 war ich französischer Kriegsgefangener in Deutschland, zunächst in Mainz und danach von 1942 bis 1945 in einem ‚Sonderlager‘ bei Lübeck, wohin mich meine lothringische Aufmüpfigkeit gebracht hatte. [...] Als in Lübeck alle französischen Offiziere jüdischer Herkunft eintrafen, war das ein ungewöhnlicher soziologischer Anschauungsunterricht. Und als später 67 Geistliche aller Konfessionen kamen, die man in ihren früheren Lagern für gefährlich gehalten hatte, war das ebenfalls eine seltsame Erfahrung. Die Kirche Frankreichs entfaltete vor mir ihre gesamte Typologie, vom Landpfarrer bis zum Vinzentiner, vom Jesuiten bis zum Dominikaner. Es gab aber auch andere Freuden und Erfahrungen, zum Beispiel das Zusammenleben mit den tapferen Verteidigern von Warschau, unter ihnen Alexander Gieysztor und Witold Kula, oder eines Morgens die massenhafte Ankunft von Piloten der Royal Air Force." F. Braudel, *Wie ich Historiker wurde* [1972], in: *Geschichte als Schlüs-*

Yet the connection of Polish economic history with the *Annales* journal and the surrounding historical project date back beyond this memorable scene. Before the Second World War Jan Rutkowski, who held the first chair in economic history at the law faculty of Poznań, received reviews and published in the French *Annales* journal. There was the Bujak school from Lwów (1921) and three institutes in Warsaw working in the field. From 1931–1939 they furnished articles for the “Annals of Social and Economic History/Roczniki Dziejów Społecznych i Gospodarczych” published in Poznań.<sup>75</sup>

So it seems reasonable to conclude with Patryk Pleskot that Kula was part of a “supra-provincial” intellectual community.<sup>76</sup> The closer he worked with the international group of economic historians, the more detached he might have become from his own historical surroundings in Warsaw. If there was any doubt, Krzysztof Pomian has conducted a citation analysis that shows French authors and British and Australian statisticians as most frequent references.<sup>77</sup> For Kula the idea of the *longue durée* signified a welcome token of vitality — “un signe précieux de vitalité.”<sup>78</sup> Yet his own development of the concept of longterm change tends towards quantification. The long temporal arc is indispensable, be it called progress, development, or *croissance* — “choisissent le

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*sel zur Welt. Vorlesungen in deutscher Kriegsgefangenschaft 1941*, P. Schöttler (ed.), Stuttgart 2013, pp. 147–183. [Frz. Orig.: *L'histoire, mesure du monde*] p. 158. With thanks to Friedrich Cain, Erfurt, for drawing my attention to this encounter.

<sup>75</sup> Immanuel Wallerstein's world system analysis developed in close contact with Marian Małowist. J. Kochanowicz, A. Sosnowska, *Economic History of Pre-industrial Poland: An Obsolete Subject?* in: *Where is economic history going? Methods and prospects from the 13th to the 18th centuries*, F. Ammannati (ed.), Florence 2011, pp. 153–172.

<sup>76</sup> P. Pleskot, *Does Historiography need to be provincial? International circulation of ideas as exemplified by the cooperation of Polish and French historians in the period of the Peoples Republic of Poland*, in: *Thinking about Provincialism in Thinking*, K. Brzechczyn, K. Paprzycka (ed.), Rodopi 2015, pp. 141–154. (= Poznań Studies in the Philosophy of the Sciences and the Humanities 100), p. 148.

<sup>77</sup> Pomian has undertaken an early citation analysis of Kula's “Problems and Methods of Economic History”. Only counting the non-polish authors it is a surprising medley of Marxism, *Annales* school and statistical economics. He quotes: “Karl Marx (44 entries), Marc Bloch (30), Ernest Labrousse (27), Vladimir Lenin (26), Henri Hauser (25), Simon Kuznets (21), François Simiand (21), Werner Sombart (20), Alfred Sauvy (17), Fernand Braudel (16), Earl J. Hamilton (16), Eli F. Heckscher (16), John Maynard Keynes (16), Max Weber (16), Lucien Febvre (15), Jean Meuvret (15), Adam Smith (14), Thomas S. Ashton (14), Colin Clark (14), John Harold Clapham (14), René Baehrel (13), Ludwig Beutin (11), Henri Pirenne (11). Of the total of 432 entries, over 40% are devoted to the members of the *Annales* school, and if we limit our list to twentieth-century authors only, then the part of the *Annales* school rises to over 46%.” K. Pomian, *Impact of the Annales School...*, pp. 101–121, p. 112.

<sup>78</sup> F. Braudel, *La longue durée*, “*Annales, E.S.C.*” 13, 4, 1958, pp. 725–753, Kula quotes another author, probably in lipservice G. Gurvitch, *Discontinuité du social*, “*Annales, E.S.C.*” 3, 1953, pp. 347–861.

terme de croissance (growth), le moins irritant de tous au regard de la tradition positiviste, bien que choquant, à mon gré, car trop biologique.”<sup>79</sup> Yet the main proponent of this *longue durée* is surprisingly not Braudel, but the great statistical efforts of Simon Kuznets and Colin Clark, which led to the conception of the GDP. Of course, Kula rallies against a complacent method which cannot account for informal economies, where many exchanges never go through markets and prices. A large part of less developed economies simply falls out of sight and the conditions remain “undercounted”. But much rather than with planned economies or market capitalism Kula’s concerns lay with agrarian economies that were still “developing”. The reflection on methodological timescales is not the only link to his metrology.

Kula concludes that questions of wide scale and scope should be asked. Although the comparison across time and spaces is difficult, it is necessary, since the political domination of Europe and its economic structure has spread around the globe. The question he poses is particularly directed towards the *longue durée* of economic structures, where he includes data collection in global statistics, quantified economic history and the three models of capitalism, socialism and agrarian economies.

He draws on the history of economic models as much as on the history of quantification, which he points out as the most important area of large-scale comparison:

...il faut en conclure que les questions posées par notre génération d’historiens au passé, sont celles qui tourmentent notre présent. Si le problème fondamental de notre époque est celui de l’unification de la planète dans les cadres de la civilisation industrielle, peut-être le devoir de l’histoire consiste-t-il, de nos jours, à interroger le passé dans le dessein de découvrir ce qui nous conduit à cette unification? N’hésitons pas: mettons en cause les longues durées et les grands espaces.<sup>80</sup>

All in all, Kula projects a science of quantification that can account for the appearance of unified infrastructures of quantification. Measurement becomes more than just a remote field for specialists. It is the carrier system for the present unlucky state of affairs.

### 3. POLITICAL METROLOGY: SUMMARY AND OUTLOOK

Despite Kula’s efforts to change the perspective on measurement, historical metrology and the dedicated specialists working in the field of the auxiliary sci-

<sup>79</sup> W. Kula, *Longue durée*, p. 295.

<sup>80</sup> *Ibidem*, p. 313.

ences show no sign of enhancing their view on the subject. How long was the Roman foot? What is the correct equivalent of a drachme at a given time? This is why Kula's situated view on quantifying procedures is addressed as political metrology in comparison.

With all its agrarian predilection, it is perhaps no surprise that a vivid reception of Kula's version of metrology happened in the Yale agrarian studies unit. James Scott's idea of legibility rests on metrology and he quotes Kula in crucial passages.<sup>81</sup> In his scathing critique of bureaucratic hubris and grand planning schemes, rationalised (German) forest science becomes a prime example. It refashions woods according to measure into geometricised timber plantations. As time has shown, this iconic order makes the trees vulnerable. It stands for the failure of authoritarian high modernism.

In another advanced reception of Kula's political metrology, Simon Schaffer peruses through 3,000 years of the artificial practice of building equivalences. From the silent trade, where neither weights nor currencies guide the exchange of things, he progresses to ever more standardised, managed, and customised use of metric systems for valuation. In an homage to Bloch and Febvre he reconsiders public weighting rituals, like Newton's testing of coins as master of the mint. Piece by piece the credit and reliability of the metric system is thus established. His analysis takes recourse to Kula on several occasions.<sup>82</sup>

David Armitage and Jo Guldi have recently called for a renewal of the *longue durée* perspective with some urgency. But it is no longer the devastation by the catastrophes of the early 20<sup>th</sup> century which undermine the belief in short term political history. It is the future devastation of the Anthropocene that calls for a change of research perspective.<sup>83</sup> They quote Kula in passing and demand to bring into the fold all historical data available to analyse the advent of an overtly extractive lifestyle for the very few. The extent to which Kula already tried to include the early global statistics of Simon Kuznets and Colin Clark during his day might be recalled. Yet, any analysis of what the infrastructure of economic acceleration consists of might well be advised to remember the comprehensiveness of Kula's political metrology. It envisions metric units, temporal rhythms, currencies and data as sites of conflict. It has the advantage of considering both: The strong knowledge of standardisation

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<sup>81</sup> J. C. Scott, *Seeing Like a State. How Certain Schemes to Improve the Human Condition Have Failed*, New Haven 2008, p. 31.

<sup>82</sup> S. Schaffer, *Les cérémonies de la mesure: repenser l'histoire mondiale des sciences*, "Annales. Histoire, Sciences Sociales" 70, 2, 2015, pp. 409–435.

<sup>83</sup> D. Armitage, J. Guldi, *The Return of the Longue Durée: An Anglo-American Perspective*, "Annales. Histoire, Sciences Sociales". English Edition 70, 2, 2015, pp. 219–247.

and the weak knowledge of resistance towards commensuration.<sup>84</sup> His political metrology, which points at the neutral spheres of money and quantification for a decipherment of historical conflict, might even provide starting points for an analysis of the technosphere and its infrastructures, which seem unstoppable today.<sup>85</sup>

### Summary

Witold Kula's book on metric and pre-metric measures is considered a classic in the history of science and economic history. Firstly, this achievement is presented as a new and politicised approach to the longer tradition of metrology — the auxiliary science of weights and measures. It is recast into a general investigation of the social meanings of monetarisation and quantification. Secondly, the reception of Kula's work in Western historiography is revisited. Within the small group of experts in historical metrology, the acceptance was rather reserved. Contrary to this, the Annales School with its strong ties to Poland facilitated a more favourable reception. There is even a strand of metrological internationalism, which plays a mediating role in cold war academic diplomacy. The International Committee for Historical Metrology is described and situated within other more visible networks bridging the East and the West such as the Union of the History and Philosophy of Science or the International Economic History Association.

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<sup>84</sup> For a more detailed analysis of dimensions of weakness see: M. Epple, *The Theaetetus Problem: Some Remarks Concerning a History of Weak Knowledge*, CRC 1095 Working Paper 4, 2018, pp. 1–17. For the dialectics of political power and academic knowledge see: M. Ash, *Wissenschaft und Politik als Ressourcen füreinander*, in: R. v. Bruch and B. Kaderas eds.: *Wissenschaften und Wissenschaftspolitik. Bestandsaufnahmen zu Formationen, Brüchen und Kontinuitäten im Deutschland des 20. Jahrhunderts*, Wiesbaden 2002, pp. 32–51.

<sup>85</sup> "It traverses a multitude of scales and materialities, from synthetic compounds to vast mining operations, from digital networks and algorithms transforming the world via symbolic logic to food additives transforming human bodies (or those of their highly cultivated livestock). Conceptually, the technosphere is presented as an artificial but highly amorphous meshwork of hard-, soft- and wetware, which acts as much as a geological force as do the biosphere or any of the geospheres, with which it multifariously connects and intersects. It appears to have its own internal dynamic and to create its own path dependencies affecting the long-term future of the Earth." C. Rosol, S. Nelson, J. Renn, *In the Machine Room of the Anthropocene*, "The Anthropocene Review" 4, 1, 2017, pp. 2–8, p. 3.

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