The Model Method in Economic History

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I. Growing interest in the model method in economic history.

In his article « Unité et diversité des sciences de l'homme », Fernand Braudel, one of the pioneers of the model method in economic history, wrote in 1960: « The model method is nothing more than a new name for what is clearly a classical method of reasoning. After all, as Moliere's Monsieur Jourdain talked in prose without realizing it, all of us use a model method without being aware of the fact. In fact, we find a model in all man's sciences. A geographical map is a model... History also has its models. How could it close its doors upon them? ».[1]

Distinct progress in the applied use of the model method in economic history can be observed since Braudel's announcement. It suffices to name Braudel himself, the studies of W. Kula, R. W. Fogel, of H. Van der Vee, F. Mauro and of many other historians, or to mention the example of the so called quantitative history of J. Marczewski and his group, or the comparative studies of economic growth by S. Kuznets, B. F. Hoselitz and other economists.

The increased use of models in economic history is connected with the specific development of this discipline. It was always greatly influenced by political economy, that is the discipline in which the concept of models was most frequently applied. This could not have taken place without influencing the development of economic history, particularly because economists

[1] F. Braudel, *Écrits sur l'histoire*, Paris 1969, pp. 91-92.

temselves began to use historical material to an ever greater extent in constructing and adapting models.

As experience to date demonstrates, the operation is not at all simple. It emerges that the direct usefulness of models derived from political economy is rather limited for the study of the economic past, for time presents one of the main research coordinates for its historian. The economic historian must constantly bear in mind that he is interested, above all, in dynamic processes and thus should always be aware of the time factor in constructing models. It is necessary to emphasize that this does not concern time in general (the latter is used in pure economic models and models used in the natural sciences), but so-called dated time, that is located at a definite place in the flow of time. Historians cannot neglect this kind of time which is measured in years or shorter intervals, decades, or centuries.

On the other hand, the historian influenced by the development of historical studies which have traditionally paid principal attention to «events», has to overcome this limitation. The struggle against « histoire événementielle » as the basic form of historical narrative has found a major ally in model analysis. The model method according to Braudel « would in this manner overcome the tendency of our discipline to take interest in particular things, a tendency which is always inconclusive ».[2]

Perhaps it might be generally stated, that among the various aids which facilitate the struggle with «histoire évenementielle», such as quantification and its consequences, « modelization » is the principal. With models which permit us to detach particular phenomena from their surroundings and look into the wider structures, economic history has entered a new stage. Through models, which from a logical standpoint are general statements concerning the relations between phenomena, the historian is forced to record on a broader perspective the effects of his theoretical thinking. The model discloses the most important relations and the main forces causing the changes. However, while political economy and likewise sociology are concerned with permanent structural relationships, mainly with reference to contemporary time (a relatively short period), economic history in its observations must, in varying degree, take into consideration also the dynamic of processes.

II. Types of models in economic history.

Economic historians have often tried to reach some appreciation of the 'model' in historical research. F. Braudel describes the model as a « simplified scheme », « bundles of explanations », or more specifically as « hypo-

[2] *Ibid.*, p. 92.

theses or explanation-systems solidly linked by equations or functions: this is equal to that or determines that ».[3] In these cases, he has in mind a model conceived as a collection of defined statements. However, when Braudel speaks of « long-term structures » with which these sets of hypotheses are concerned, he has in mind the relationship of these hypoteses to reality. W. Kula writes: « The construction of a model is a very delicate task and is always open to debate. It requires the abstraction of certain elements and the bypassing of others ».[4]

When we juxtapose this type of definition and the models more closely analysed by economic historians, we come to the conclusion that in every case such schemes, bundles of explanations, hypotheses or, in other words — models —, pertain to certain objects (conceived in a broad sense, of course) wich differ from real objects in that they lack certain of their properties. In addition, whether or not a definite factor or a series of factors act or do not act on a given object is also a property. Such objects are deprived of certain qualities which in reality exist, and can in terms of economic history be called ideal types.

It is not necessary to emphasize that the concept of a real object (this appears particularly clearly in history concerned with objects which can no longer be observed directly) always refers to definite knowledge K, on the basis of which the construction of an ideal type is effected. The concept of historical reality is not alike for all historians if only because of their different interpretation of this reality.

In other words, an ideal type is a scientific construction which is created as the result of neglect, oversight or « suspension » of a certain part of knowledge K, which constitutes the starting point of our model procedure. Thus, for example, the concept « XVIth century European economy », depending on the extent of such omissions, or in other words, depending on the number of idealizing assumptions adopted, and the contents of such assumptions, can, theoretically speaking, be represented as an ideal type in an infinite number of ways. Although there has been little conscious modelling as yet, we can say in advance that every description of this economy found in literature is a description of some kind of ideal type. The fact that such unconscious use of the ideal type construction, in particular from the standpoint of scientific explanation, is of little interest, is another matter.

In assuming models to be sets of statements which pertain to ideal types, we partially answer the question raised by E. Sestan at the XIIIth International Congress of Historical Sciences in Moscow 1970, when citing

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[3] *Ibid.*, p. 64.

[4] W. Kula, *Analiza modelowa w historii gospodarczej* (Model Analysis in Economic History), « Historyka », vol. I, Warszawa 1967, p. 42.

Max Weber he questioned the connection between the conceptual « ideal type » and the « model » concept.[5]

Our reply requires however one comment. Namely, in terms of economic history, for economic historians a model is not only a set of statements relating to an ideal type, but is sometimes only a part of those statements. In other words, statements constituting the ideal type but not the statements which relate its behaviour. Thus, for example, Schumpeter's « entrepreneur » (on that taken from H. Kellenbenz studies on XV-XVIIIth century Germany as well) as well as the behaviour of this « entrepreneur » are both models.

If we characterize, as generally as possible, a model in economic history in the following manner:

$$(x)\,[T^i(x) \longrightarrow a_1, \ldots, a_n(x)]$$

which means: for each x, if x is T then x is $a_1, \ldots, a_n$ — where T^i signifies the ideal type from among a set of possible types of a given kind, while $a_1, \ldots, a_n$ is the varied behaviour of exactly that ideal type, in that case it can be stated that the concept of the model in economic history (according to historians' practice) pertains only to the first part of the formula, that is to $T^i(x)$ (to the assumption that T^i is an ideal type), or to the entire formula given.

In the first case we are dealing with a model in a limited sense, and in the second in the true, that is, broader sense. Historians often speak about use of the model method when they are merely constructing an ideal type or types. For example, they talk about types (models) of economics, of enterprises, peasant farms etc. However, very often this kind of procedure ultimately leads to the use of the ideal types thus constructed in further research.

Such a situation exists, for example, in the interesting research of A. Wyczański on the Polish agrarian structure in the XVIth century.[6] In his work on the gentry farm in the XVIth century, which is based on a study of numerous sources, Wyczański constructs a model of a typical farm which is characterized in a quantitative form (extend of area, size of labor force, volume of production, etc.). In terms of the type of model it could be said, that what is significant here is that the model is described in a quantitative manner, though not solely so, in contrast to models which could be called qualitative. An example of a qualitative model is the model of the Polish economy of the XV-XVIIIth centuries presented by W. Kula in 1962 in the «Economic Theory of the Feudal System». The construction of a qualitative model does not at all signify a restriction on the qualitative observation of

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[5] E. Sestan, *Storia degli avvenimenti e storia delle strutture*, Mosca 1970, pp. 22-23.

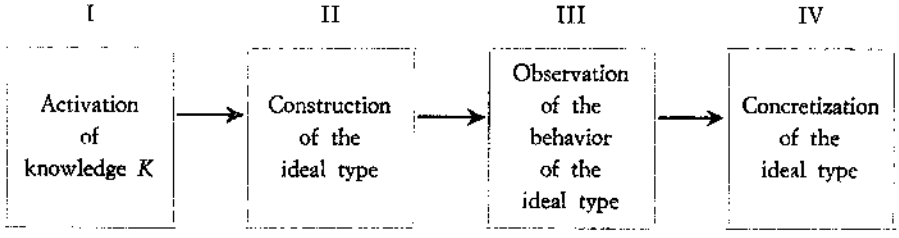
[6] A. Wyczański, *Studia nad folwarkiem szlacheckim w Polsce w latach 1500-1580* (Studies of the Gentry Farm in Poland in the years 1500-1580), Warszawa 1960.

its behaviour. The results of adopting a defined model can obviously be analysed in a quantitative manner, as in the case in Kula's work. It is not necessary to emphasize that the construction of a quantitative model is not attempted when there is not the appropriate material available.

Beside models in a narrow and broad sense, and qualitative and quantitative models, it is possible to identify a series of other types of model, deriving from the different criteria adopted.

When such criterion is the end for which we construct the model, the result is either descriptive models (which give hypothetical series of events $e_1, \ldots, e_n$ in time $t_1, \ldots, t_n$) or causal models which attempt to show the causes of the observed events. Regarding the objective of the model, one could also discuss models showing development cycles or more static models, that is, more diachronic and more synchronic models.

A particularly wide range of models becomes evident if we consider the kind of knowledge K with which the researcher approaches the construction of the model, or the knowledge that he applies in order to construct that model. For a clearer presentation of this problem it is worth giving a scheme of model procedure in economic history:



It is obvious that the way of treating the first step mentioned above will substantially affect the subsequent steps of procedure. For this reason, the classification of models from the standpoint of knowledge K appears to be particularly instructive. Of course, as we have indicated, the decision as to the degree and character of idealization depends on this knowledge.

Among the components of such knowledge, both of the following emerge as fundamental:

(1) Methodological consciousness;

(2) Historical knowledge of the epoch examined.

Both types of knowledge components have an influence on whether the model used by the researcher bears an instrumentalist or realistic character. In methodological terms the instrumentalist position recognizes laws and theories solely as «putting-in-order» tools (also possibly as predictive tools); it does not concern itself with whether, on the basis of the adopted scientific

knowledge, they have reference to reality, that is, reality possessing certain qualities — reality simplified in some way. As is known, Max Weber is considered a representative of the instrumentalist treatment of ideal type; on the other hand, as an examination of « Das Kapital » clearly shows, Karl Marx was an adherent of a realistic approach.

Economic historians who are dedicated to the disciplines of historical thinking associated to a greater or lesser degree with time and space, are not followers of the instrumentalist treatment of models. Although some of them might support this type of methodological position, constructions detached from researched historical reality would in general be foreign to them. In such a case it would be possible for someone who was methodologically an instrumentalist to construct a realistic model, while the realist with an inadequate knowledge of reality could also supply a model which it would be impossible to recognize as anything other than a type of research tool detached from reality.

F. Braudel stresses, that in constructing a model, first of all the limits of realism are defined by time frames. In order not to become a fictional and historically useless construction, the model should not exceed certain chronological limits. This awareness led Braudel to introduce the concept of very long, long, medium and short time. Only periods of defined length can be joined into defined wholes. In principle, the closer periods are to the present the shorter they will be. Braudel says that time periods for which a given model valid, ought to have a certain « consistence ».

It is necessary to mention separately some other types of models met in economic history. There are, for example schemes based on more or less adequate knowledge, which in each case constitute a kind of pattern of a defined scientific procedure. A model in this sense is not a description of a real object in its simplified version, but is also a simplified research tool which concentrates attention on the material to be examined and on the means by which the research is to be effected. This pattern, for example, is the entrepreneur decision-making model proposed by H. Daems in his work published by Centrum voor Economische Studien of Louvain University. The originator of this concept indicates the factors, particularly the motivations, which it is necessary to consider in order to acomplish the reconstruction of the entrepreneur decision-making procedure.

III. The realistic approach. Analysis of examples.

One of the most developed model analyses in economic history is to be found in the work of W. Kula on the economic theory of the feudal system which has already been mentioned.

For the author, the Polish economy of the XVI-XVIIIth century provides the ideal type. In order to construct this ideal type, as a starting point, the author uses certain statements concerning the theoretical functions of all economic systems. Among such functions, Kula includes the formulation of rules for controlling the size of the economic surplus and its utilization, in regard to both the short and the long term. He refers to these statements when studying the behaviour of his ideal type, namely the Polish economy of the XVII-XVIIIth centuries.

In construction the ideal type, Kula considers only the following 'properties' of XV-XVIIIth century Polish economy « suspending » others: 1. the overwhelming predominance of agriculture; 2. the existence in the countryside of only peasant and gentry farms; 3. peasant serfdom; 4. the predominance of the corvée in the structure of peasant rents; 5. handicraft production existing only within the framework of landownership or guilds; 6. the legal freedom for economic decision-making by the gentry; 7. a pronounced tendency to luxury consumption by the gentry; 8. the existence of economically powerful states within accessible transportation range; 9. the lack of state intervention in economic life.

The author then examines the behaviour of this ideal type over a short and long time span. For the short-range analysis, one of his primary subjects is the observation of the behaviour of feudal « enterprises » — peasant and gentry farms. He examines these « enterprises » separately as well as in their mutual relationship. The Polish peasant farm of the late feudal period is characterized as a subsistance parcel producing only the necessary product and allowing for simple restocking, which is a conclusion worth noting. The peasant and the gentry farm appear then as ideal types. And so beside W. Kula's analysis of a basic ideal type (the Polish economy of the XVI-XVIIIth centuries) we have a certain number of ideal types functioning within the framework of this basic type. Kula observes the behaviour of the peasant and gentry farm, showing the visible tendencies toward market phenomena (the monetary sector). In this respect, he formulates the important thesis, that the agricultural incomes of both peasant and of gentry farms were to a greater extent dependent on the quantity sold than on the level of prices.

In the part dedicated to the long-range dynamic, Kula examines this dynamic first of all through tendencies which resulted from the study of short-range behaviour, as well as through a study of the internal factors influencing the Polish economy. Of these tendencies, Kula holds the most important to be the peasant's desire to obtain surpluses and the contrary desire of the gentry. The inclusion of external factors signified the widening of the ideal type to include properties whose influence had previously been suspended. It is worth pointing out that central to the author's reasoning is the thesis of the existence of norms in the social structure and the thesis

of the rational character of the individuals engaged in farming during the feudal epoch.

Let us pass next to the « intercontinental model of European overseas expansion » in the XVI-XVIIth centuries proposed by F. Mauro.[7] The author takes as an ideal type the economic system of Western Europe in the XVI-XVIIIth centuries, between the Renaissance and the Industrial Revolution, which he calls « commercial capitalism ». He excluded from this system the features of medieval economy as well as the properties of industrial capitalism. In « pure commercial capitalism » there is no feudal property in the countryside or handicraft in towns. Only two classes are in operation, merchants and workers. The control of production and of profits are concentrated solely in the hands of merchants. In this situation, the force which keeps the system itself going and simultaneously brings about its development is international commerce, in particular intercontinental commerce. The author relates his ideal type to all parts of Europe which either obtained goods from the four continents, Africa, South America, North America, Asia, or exported goods to them. From the standpoint of the division of labour, Mauro divides the territories examined into the climatically temperate (Europe, part of the Americas), tropical, densely populated (Europe, Asia, Africa) and less populated. These variations, together with the complementary character of the territories are the basis of interzonal exchanges. Markets are influenced to a greater extent by buyers rather than by sellers. The principal form of competition is the competition in the sphere of production, above all between alternative products, for example, between temperate pastel and tropical indigo, and between the same products coming from different territories, as for example spices from Asia, Africa and America. Mauro also indicates that the territories examined can be divided into dominating and dependent regions, while the whole system is directed by Europe, buying and selling at will.

Holding that each of these great zones was a unit and that that they were to a degree complementary, the author draws up a squared table in which the lines represent the exporting zones and the columns the importing zones. He also devises a schematic planisphere in which the nature of these same exchanges are shown by the directional arrows. The next step would be to identify the quantities represented by the currents established between the different zones. The completion of the table immediately raises the problem of the documentary sources. A further step in the function of this model is the introduction of the element of long-term variations.

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[7] F. Mauro, *Towards an «Intercontinental Model»: European Overseas Expansion between 1500 and 1800*, « The Economic History Review », 2nd ser., vol. XIV, no. 1, 1961, pp. 1-17.

Although the ideal type constructed by Mauro takes reality as a starting point, one may doubt whether it is in fact not too far removed from it; that is whether use of the ' pure commercial capitalism ' in circumstances where the main economic sector continues to be agriculture, will provide any results of scientific value. Despite these doubts, Mauro's model permits a closer examination of certain secular trade mechanisms.

H. Van der Wee concerns himself to a greater extent with the relationship between commerce and economic growth. He has constructed a dynamic model of the growth of XII-XIII century world commerce.[8] An ideal type in this model is provided by the economic development of Europe, examined as an effect of the action of one single factor, namely international commerce. Commerce is seen as the stimulator of that development. It permits a more effective use of production factors (natural recources, labour, capital) and in this manner affects the growth of national income. To be sure, suspending the action of other factors in this way and dealing only with commerce is the consequence of utilizing specific knowledge of historical reality. A basic conviction is that periods of economic growth and prosperity are also periods of the development of international commerce. Actually, it could be argued that observation of economic growth from the angle of the commercial factor alone does not provide a sufficiently isomorphic picture of XVI-XVIIIth century European economic structure and dynamic.

The successive stages of the author's treatment entail the drawing of a « qualitative picture » of the development of commerce and of the monetary situation. There is also the construction of a « theoretical model » based on a theory which takes into consideration the division of the economy into two sectors, the traditional and the dynamic, as well as the relations between the economic situation and supply and demand. The model is completed by a system of equations based in the relationships between the various economic data.

We have applied a similar procedure in our study of the birth of capitalism in Europe in XIV-XVIIth centuries.[9] In analyzing economic growth in the XVI century (with the assumption that economic growth is a function of investment and that investments are a form of accumulation), we distinguished these models of the formation of accumulation which are characteristic of different countries. These are as follows:

$$\Delta A = \Delta A_t + (A_p \longrightarrow A_k) + \Delta A_f \qquad \text{English}$$

$$\Delta A = \Delta A_t + [A_p \longrightarrow (A_k + A_f)] \qquad \text{French}$$

$$A = (A_p \longrightarrow A_f) + A_t \qquad \text{Polish}$$

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[8] H. Van der Wee, T. Peetres, *Un modèle économique de croissance interséculaire du commerce mondial (XII^e-XVIII^e siècles)*, « Annales ESC » 1, 1970, pp. 102-126.

[9] J. Topolski, *Narodziny kapitalizmu w Europie XIV-XVII wieku* (The Birth of Capitalism in Europe in the XVI-XVIIIth Centuries), Warszawa 1965.

where A_f signifies accumulation accomplished within the framework of the feudal economy (rural), A_t is accumulation in handicraft, A_k is capitalist accumulation as the result of primitive accumulation (A_p).

Observation of these ideal types illustrates their differing consequences in economic growth. The Seventeenth Century zones of dynamic growth, moderate growth and of economic stagnation (also the ideal types) are the results of different developments in the field of accumulation and investment. One of the assumptions basic to this reasoning is the empirical fact of the relatively greater capitalist accumulation dynamic as opposed to feudal accumulation.

Another example of the use of a model is provided by the attempt to explain the growth of Western Poland's economy in the second half of the XVIIIth century.[10] The ideal type in this instance is an individual (and also a social group) acting rationally, in the attempt to satisfy a changing range of needs. The extent of economic activity (EA) was adopted as a function of the relationship of a range of needs (N) to the income level attained by a given individual or social group:

$$\triangle AE = f\left(\frac{J}{N}\right)$$

A highly interesting example of model analysis conducted in a qualitative as well as a quantitative manner are the studies which analyse economic growth in its historical development. The leading work here is S. Kuznet's study of modern economic growth.[11] After defining economic growth as increase in per capita or per worker product, most often accompanied by an increase in population and usually by sweeping structural changes, the author studies the economy of the last two centuries as an ideal type characterized by certain dominant attributes, and especially the wider application of science to economic life, together with new intellectual qualities. The shaping of the internal relationship between the factors affecting economic growth is observed by Kuznets on the basis of statistical material. The connections which occur here are presented by Kuznets in the form of equations.

IV. The instrumentalist approach. Analysis of examples.

As we have said an instrumentalist model is a model which is either explicitly treated as research tool (and in such case it does not have adequate reference to reality) or is too abstract, as F. Braudel would say, and slides too freely upon the waters of time and space.

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[10] J. Topolski, *Model gospodarczy Wielkopolski w XVIII wieku* (Economic Model of Western Poland of XVIIIth Century), « Studia i Materiały do Dziejów Wielkopolski i Pomorza », vol. 20, 1971, pp. 57-71.

[11] S. Kuznets, *Modern Economic Growth*, New Haven and London 1966.

One example of a model used in this sense is the concept of so-called quantitative history proposed by J. Marczewski.[12] Marczewski states that the starting point in working from the framework of traditional economic history is the construction of a model which would provide a set of equations showing relations and connections between economic categories derived from economic theory (such as national income, saving, national product etc.). The starting point for research in this case should not be the observation of reality and the construction of a simplified model (and ideal type) but the comparisons of historical facts to a series of *a priori* models then including the facts into the framework created by the model. In this manner, states Marczewski, one is able to compare the economy both of different times and areas. It is clear that the facts are drawn from « reality » but they are also only elements which fill out the model's parameters. A model which constitutes a tool that comprehends the economy in the latter relationship is called by Marczewski a « state accountance model ». It comprises a calculation of production, national income, income for repartition and a calculation of foreign exchanges. Atlogether Marczewski proposes 46 variables in 21 equations. Calculations are made on a national scale; the introduction of division into sectors and regions would, the author indicates, require turning to Leontieff's equations. This is an example of one of Marczewski's equations:

$$C + C_g + I + I_g + X = P + M + T_d$$

where C signifies household economy consumption, C_g signifies public consumption, I is private and I_g public investment, X is export, P is the national production, M is import and X is export whose value is supplement by customs duties T_d.

This model was used in several studies as a basis for describing the French economy of the XVIII-XXth centuries. In 1961, for example, J. Toutain described XVIIIth century French agricuture using Marczewski's model indicators. The model's instrumentalist character, which is not based on observation of the pre-Revolutionary French economy but which, in advance, accepted relationships based on theoretical assumptions, could furnish nothing more than series of statistical data, that overall provided a statistical picture which was not in isomorphic agreement with the reality fragment studied.

Max Weber's synthesis provides another example of an instrumentalist description of the economic past. Weber is, as is known, the creator of the instrumentalist conceptualized ideal type.[13] Used as a starting point, these serve Weber as a type of measure against which the reality examined may be compared. As is typical of yard-sticks, they are unchangeable and

[12] J. Marczewski, *Introduction à l'histoire quantitative*, Paris 1965.

[13] M. Weber, *Wirtschaftsgeschichte*, edited by S. Hellman, M. Palyi, München, Leipzig 1924.

yet Weber employs them to describe a very broad chronological period (from ancient times to the XXth century). As a result, we receive not a dynamic reconstruction of the past but a typological description of various forms of economic life. The only chronological caesura for Weber is the rise of modern capitalism. The same is true of the territorial criteria. Weber treats the economic past as a unit which allows for a many-sided typological classification in the perspective of time and space. Data concerning particular periods and areas are more or less merely accidental deviations from ideal types. For Weber the rationally functioning enterprise provides such a basic ideal type, in connection with which the concept of « rationalism » plays, in his view, a leading role. This rationalism succeeded only in modern capitalism. Hence, as we indicated, for Weber, the economic past is divides only into periods of precapitalism and of modern capitalism. Weber distinguishes between that capitalism which « appears in all historical epochs », and the epoch of capitalism during which the satisfying of basic needs became associated with rational, or so-called capitalist, enterprise (in Western Europe from the second half of the XIXth century).

Weber's ideal type, capitalist enterprise and the capitalist era, possess the following characteristics: private ownership of the means of production, a free market, rational technology, rational legal conditions, free labour market, and the circulation of securities. All this draws managers to the market, to chances and profitability. Weber provides an interesting analysis of the development of education which is essential for modern capitalist rational thinking, that is for the development of the appropriate theory of economic management.

It is possible to point out one other instrumentalist conceptualized model in economic history. We have in mind certain fictional models which permit us to place realistic models in a wider perspective. In such cases, the use of a fictional model for analytical purposes is to allow for the possibility of counterfactual interference. For example, in order to evaluate the economic results of some particular reconstructed historical activity an evaluation of some alternative activity which might have taken place in the conditions analised, or which is completely fictional in those conditions, is undertaken. The historian then asks: what would have been the effect if instead of undertaking activity *A*, that is the activity actually studied, activity *B* had been undertaken? This was the method used by R. W. Fogel in studyng the impact of the railroad on the American economy in the XIXth century. He used a fictional system of canals as a comparative model. A comparison of the costs of constructing canals with the costs of constructing railroads furnished him with a series of interesting references.

[14] R. W. Fogel, *Railroads and American Economic Growth*, « Essays in Econometric History », Baltimore 1964.

It is clear that these types of fictional models do not have to be tied to the instrumentalist understanding of the model method.

V. « Concretization » of models.

That the ideal type, that is the model, which in economic history is an abstract picture of a defined fragment of the past which omits certain characteristics, can be subjected to a « concretization procedure » was demonstrated by J. Kmita and L. Nowak.[15] It can be regarded as a process for eliminating idealizing assumptions.

In this way, the ideal type is conducive to « getting closer to » unsimplified reality. Usually, in the course of this procedure the ideal type becomes divided into a greater number of more limited sub-types for narrower chronological segments or smaller territorial units. Frequently, the author of the model performs the « concretization » but sometimes, however he leaves this task to other researchers. The degree of « concretization » depends on the needs of the given study.

It is possible to distinguish at least four basic types of « concretization » in economic history studies.

The first of these could be called territorial « concretization ». The ideal type must be expressed as a model in such a way that it can be applied, as a subtype of a general type, for a defined territory. That, for example, is the way in which we attempted through « concretization » to apply Kula's general model relative to the total Polish economy in the XVI-XVIIIth centuries to Western Poland. In Western Poland agricultural predominance was not as absolute as was assumed in the general model.

Frequently the utility of such general models is debated without taking into consideration the possibility of territorial « concretization ». For example, W. Kamler[16] criticizes A. Wyczański because the latter's gentry farm, which we have already discussed, is « abstract » and has nothing in common with real gentry farms. Obviously the criticism is due to a misunderstanding, because in fact the possibility and even the necessity of effecting a « concretization » is basic to the inventions of the model method.

A second type of « concretization » has a chronological character. In this case, by eliminating certain idealizing assumptions, the chronological range of the ideal type (and model) is limited. Thus, for example, it was stated during a discussion of Kula's model, that it ought not cover the second half of the XVIIIth century because of the changes that took place during that

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[15] See J. Kmita, *Z metodologicznych problemów interpretacji humanistycznej* (From Methodological Problems of Humanistic Interpretation), Warszawa 1971, p. 192.

[16] M. Kamler, *Areał folwarku szlacheckiego w Wielkopolsce Zachodniej 1580-1655* (Gentry Farm Size in Western Poland 1580-1655), Przegląd Historyczny, no. 2, 1971.

period. A similar chronological « concretization » is produced when we relate the ideal type « feudalism » to the modern epoch in Poland. In this case we speak of feudalism in its corvée type only.

Quantitative « concretization » is the third type of « concretization » of models. It results from « filling out » the model with quantitative data. Such « concretization » is usually recognized as a successive stage of model analysis. It is treated as a scientific task which the qualitative model automatically demands and in such cases it acts as statistical verification. H. Van der Wee writes that « the elaboration of a theoretical model image in symbols and equations is not sufficient for going mote deeply in the problem studied. Hypotheses ought to be verified on the basis of reality with the aid of quantitative sources and with the help of econometrical techniques ».[17]

A fourth type of 'concretization' which to a certain extent encompasses the three preceding ones, is what might be called « source-concretization ». This concerns the filling in of the general model frames with concrete informations. After constructing his tables F. Mauro wrote: « These tables still have to be filled in, and this immediately raises the problem of documentary sources ».[18]

To conclude our remarks about models and their « concretization » it is necessary to point out that the procedure of « concretization » can be successfully applied only to realistic models. If the model is constructed on the basis of an adequate knowledge of reality, there always exists the possibility of bringing it even closer to that reality. An instrumentalist model does not have the properties to permit such an approach to fact. « Quantitative history » models, even in the case of the most accurate compilation of their mathematical equations are incapable of going beyond the statistical approach which contains only some characteristics of reality. In economic history of Weber's type « concretization » can lead only to the distinguishing of successive sub-models which take no account of the influence of ever « tightening » relationships. In other words, such concretization does not favour the explanation of the past and explanation is the historian's main task. Braudel clearly states the necessity of constructing realistic models in economic history — he writes: « In my opinion, studies must lead from reality to the model and conversely from the model to reality through a continuous and limitless process of patient correction and recorrection ».[19]

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17 H. Van der Wee, T. Peetres, *Un modèle économique*, p. 121.

18 F. Mauro, *Towards an « Intercontinental Model »*, p. 11.

F. Braudel, *Édrits sur l'histoire*, p. 72.