III. Management studies vs. economic studies (Poznań 2007)

Introduction

We assume that action is a primary concept. Nothing happens in the social life without people and beyond them. Action is a category of processes helping control reality (the original), describe it according to our knowledge (representation models) and shape it according to our ideas and desires (master models, oriented towards values and goals). In nature, processes are not intrinsically actions, they occur randomly (probability) or according to relatively constant relations among the variables (principles).

The problems of economising in action are handled by economic studies, whereas the problems of driving – by management studies. Both economic problems and management problems are present in every action. Let us then consider and try to determine the relationship between economy and management.

1. Domains of the studies in question

1.1. The economic domain

Actions are performed by acting systems, which have hybrid structures, are open and variable. In every action, and every acting system respectively, we are dealing with the problems of economising and driving. Thus, the material scope of economic and management studies is materially unlimited – it concerns all the activities and acting systems. The problems of economising play a different role, depending on the attitude of actions and acting systems to the economic surplus and self-supply. Acting systems, intentionally oriented towards economic surplus in the conditions of self-supply, are referred to as enterprises. Economising is a fundamental process for them, hence economic problems and questions come to the fore. Without producing economic surplus and supply from the environment, no acting system will be capable of longevity[1]. Thus the problems and questions of economising are important for every action and acting system, also those intentionally oriented towards values and goals other than economic surplus, for example the household, country, armed forces, school, etc. They, too, must have economic surplus (to cover operational losses, reconstruct operational potential or maintain capability of change) and be supplied from the environment. Nevertheless, intentionally or objectively, they are not capable of producing economic surplus nor do they cover their costs solely from their revenues (i.e. they do not self-supply themselves fully).

Thus, the objective scope of economy is economising, i.e. acquiring, gathering, allocating, applying and utilising the limited energy of the action system to realise selected, various values and goals, in such a way as to effectively achieve the total benefit and economy of the action system as a whole consistent with the expectations[2]. In terms of subjectivity, economising does not restrict its domain solely to the interior of the action system, whatever it might be. The action system must manage its own (internal) energy, as well as the available energy of the environment.

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[1] Supplying the system from the environment may take place on various principles, depending on its causes and the links between system inputs and outputs. Self-supply means that at the only energy at the system input is that obtained through energy exchange that the system performs with the environment at its outputs. In the commodity economy, the only source of energy available to the enterprise at the input is the sale of goods and services at the output. Apart from self-supply, there are also other potential supply sources, such as non-returnable subsidy or appropriation.

[2] These expectations can be expressed in various ways, for example as maximisation, optimisation, minimisation, satisfaction.

The material and space-time scope of economy is universal – it is not limited. Each identified category of activities and acting systems is the object of economy. Thus, in terms of their attitude to economic surplus and supply, there can be profit-oriented systems, non-profit systems and mixed systems. In terms of their size, there are small (simple) systems and activities and large (highly complex) ones. In terms of space, economy deals with local and global activities and systems, while in terms of time – past activity, present achievements and shaping the future.

Predictably, such values and goals as beneficiality and economy must be somehow related to and situated among the overall values and goals of the acting system.

In light of the above-mentioned characteristics of acting systems (hybridity, openness and variability), the varied technical, social, natural, etc. issues are strongly related to economic processes. To sum up, it makes sense to use the term „economic science" (ES), „economics" or „economic studies".

1.2. The management domain

The situation is analogous with management. Driving behaviours of the action system consistent with the will and goals of the managing entity calls for shaping the psycho-social energy, that is authority. The objective scope of management is therefore causing (deciding), modelling, organising, directing and linking the action system, also in its relations with the environment, ensuring effective action. Deciding signifies authoritarian judgments and settlements. Modelling is shaping representation models and master models. Organising means shaping organisations, and therefore bringing about a situation where all the components of the action system and its environment contribute to its success[3]. Directing means driving human behaviours, without which no activity would be undertaken, and no other resources would be activated, applied and used. Linking is supervising and controlling the consistency of intentions with facts (implementation), but also adjusting, modifying, learning through feedback and feedforward, etc. All these activities comprising the nature of management make it possible to control the condition and situation of the action system, i.e. drive behaviours.

The material and space-time scope of management – like in the case of economics – is universal. We manage the whole of any activity and its system both in a specific situation (location in a given time) as well as the situation in a given space-time (the ratio of own potential to the potential of the environment). Like with economics, management is strongly related to other issues inherent to social systems. To sum up, it makes sense to use the term „management science" (MS), „management" or „management studies".

2. The scientific system

2.1. Foundations of the scientific proces

Of key significance is the attitude of the subject of the scientific process to its object. The subject may perform three kinds of scientific operations with regard to the designated object. It may cognise it (cognition and as a result – cognisance), assess it (rating and valuating, and the result – assessments and evaluations; axiology) and decide about it (act with regard to it in a normative, directive manner). Principally, the object of these operations may be anything, however taking into account the relationship with reality, these objects may be referred to as originals (objects existing as components of reality) and models (representations of originals).

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[3]Organisation is the opposite of entropy, it is a necessary prerequisite for the efficiency of a given action. Without a certain level of organisation, the action system will not achieve any goal. Organisation means restricting the freedom of behaviour of the individual components in favour of the whole, consolidating and stabilising the whole. It is one of the things which make it at all possible to conduct the scientific examination of such systems in categories other than stochastic and statistical ones.

This arbitrariness is, nevertheless, restricted by the scientific nature of the process: not every cognitive, axiological and normative operation with regard to a given object carries the attributes of scientificity [the criteria of scientificity and components of the scientific system in social sciences are discussed in more detail in: 2) Witczak H., (2006), pp. 135 - 151; 3) Witczak H., (2006), pp. 605 - 615].

One needs to know what (cognisance - knowledge) and know how (capability of applying knowledge) in order to be able (fitness to shape the object, i.e. apply knowledge). Being able to do something means having the ability of evaluating cognitive knowledge, against other knowledge and practicability, as well as capability of valuating this knowledge in terms of the possibility, purposefulness and feasibility of using it. This requires axiology, starting from defining the problem of applying cognitive and axiological knowledge. Only having laid that foundation (cognitive and axiological) can we move on, if we wish to be scientifically consistent, to shaping reality (the normative scientific process). The starting point of this process is defining the shaping objective, solving the problem of shaping the original using scientific principles.

At the root of the scientific process lie scientific doctrines, of economics and management respectively. A doctrine is a decision of the subject of the scientific process to take up a position on the principles of conducting the scientific process. This doctrine is also a function of the existing paradigms, the subject's culture and other variables.

Can, therefore, management science and economic science have the status of complete sciences, combining the dimensions: cognitive, axiological and normative?

2.2. Outcomes of the scientific proces

It is quite commonly believed that economics and management discover and formulate laws regarding economising and driving. It is also thought that economics is a complete science, whereas management is normative only.

Laws express relatively permanent and unambiguous relationships between variable data. As a result, by resorting to laws we can undertake and conduct scientific and non-scientific operations[4], for example shape the reality of enterprises. According to this latter approach, laws (used as master models to shape reality) are of normative nature, they determine the rules which decide which variables govern other variables. In acting systems, the variables are, or include, people. They set the direction of actions, and thereby direct change, by shaping relationships among the variables. That is why we are talking about the laws of behaviour or laws of human action or system operation. The laws of behaviour and action (the laws of social mobility) are in actual fact such arrays of variables which represent directed change, including the flow of energy and resources. They are assertions referring to how the dependent variable (-s) is/are driven by independent variable (-s) in social systems. Whereas in natural systems, the components of which are not people, we are dealing with the laws of natural mobility (nature), in other words: specific relations among the variables whose subject we do not know. However, in our actions we must respect these laws (comply with them) and use them skilfully.

There is only a tiny, but exceedingly important detail: we must know all these laws, be able to apply and use them. Without such potential at our disposal, we are doomed to shaping reality on pre-scientific or non-scientific principles.Cognitive and axiological studies on a given subject are, therefore, key sources of normative science on this subject. Without the knowledge of „what, where, etc. **was, is, will be**" (scientific procedure and cognitive knowledge) as well as the knowledge of „what, where, etc. **was, is, will be valuable** – i.e.

[4]Non-scientific operations – activities undertaken and conducted outside of the realm of science.

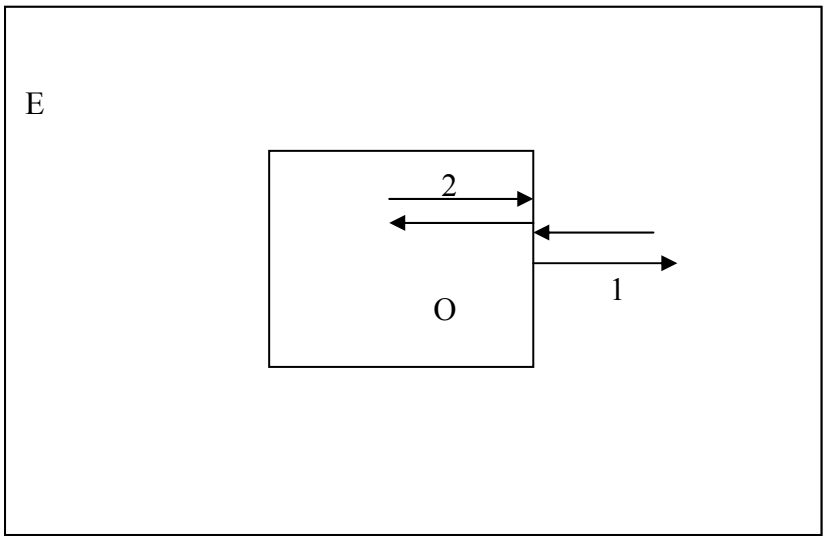
hasvalue" (scientific procedure and axiological-cognitive knowledge), it is impossible to shape reality in a scientific manner (scientific procedure and normative knowledge).

2.3. Cognitive, axiological and normative processes of science

2.3.1. Cognitive scientific process

The first step in cognition and cognizance is exploration, including detection, that is discovering that „something exists" („it is"), acknowledging that there is an object-based existence (desigants) [A similar approach is presented by T. Parsons and E.A. Shils, differentiating four levels of theory: ad hoc classification systems; taxonomies; conceptual structures; theoretical systems. See: Frankfort-Nachmias Ch., Nachmias D., (2001), pp. 53-56].

Man, treated as the scientific subject equipped with a definite cognitive repertoire (personal and supportive), placed in an environment which is by all means isotropic, cannot perform any recognition and cognitive determination within it. His cognitive power equals zero precisely because of the perfect homogeneity, no information comes from the environment, none of its objects can be designated, as it is not distinguishable from among the others. When a component of the environment changes, with regard to the previously complete isotropy, its fluctuation will occur and it will differentiate itself from the environment. Such change can be registered by the subject (if it is capable thereof), there will emerge information received by the subject, „something" or „it" will be designated at the macroscopic level[5](Fig. 1).



wherein: **E** – environment; **O** – designated object.
Fig. 1 An object emerging out of the environment
Source: own work.

The first type of cognitive operations (designation – interactions marked 1 in the figure) involve referring the object to its environment. Registering any change in the hitherto perfectly uniform environment of the observer (the subject of the scientific process), carries information for the observer but also calls for changes of energy in this environment.

The observer's cognitive capacity would be complete, if they were able to recognise any changes. The observer exploring a black body (complete isotropy in terms of radiation) would

[5]The macroscopic level – information about the object as a whole treated somehow superficially, without the information about its interior (unrecognisable without additional cognitive operations directed at the interior).

perceive such change, provided that they had an appropriate registration system, that is a radiation detector, and they were aware of it[6]. A change of radiation in a given space-time of the environment would be noticeable against, or in reference to, the radiation of the rest of the environment. In other words: if a given fragment of the environment changed in terms of radiation, and were recognised as such, it would only be through differentiation. „If a fragment of the environment is distinguishable in terms of radiation (A) from the rest of the environment, it means that there is an electromagnetic change (B) taking place there". Such designation and determination results from concluding through relations between variables: if A (explanatory variable), then B (explained variable). Still, we have only grasped the macroscopic existence, we know nothing more. To move on in the defining process, we need to perform more extensive scientific operations than just designation, it is necessary to identify, which is impossible without taxonomy and explanation. It is necessary to perform scientific auxiliary operations in mode 1 (see figure 1), full exploration in mode 2 (examining the interior of the object) and explore feedback and feedforward mechanisms in the relations between the object and its environment.

Not all assertions concern the relations between dependent and independent variables in the sense of causing motion, so they are not all laws of motion. With regard to the material scope, we can talk about assertions concerning components, structure and systems, which makes it necessary to make assumptions on the initial scope of the object under examination. The initial component of the scientific process may for example be the enterprise, links between enterprises create a structure, while the market is considered the socioeconomic system. Some other time, man is a component of the enterprise, his links with the objects of work create the structure of the labour process, while the job position is the labour system.

2.3.2. Axiological and normative scientific processes

The above-mentioned laws, provided that they meet the criteria of a definition, have the status of cognitive laws, binding explanatory variables with explained variables. In laws of normative nature, on the other hand, we are dealing with relations between variables on the principle: dependent variable – independent variable in the meaning of causing motion (a different function). Wishing to cause changes in a chosen object of reality (original) in a scientific manner, we must first determine what they should be (a postulate regarding the master model of change – a normative postulate). Initially, this postulate may also be of a macroscopic nature: „it should be, it should happen" (a conceptual master model). It provides a differentiation between what is (the original, the current status) and what should exist (the postulate, the desired status). How do we know what the desired status should be? We ascribe a certain value to it, preferred out of the possible, purposeful and feasible values. This value must be higher not only from the other values, but also from the threshold value, capable of knocking the subject out of its equilibrium (the threshold motivational value).

The normative procedure is, therefore, impossible without assessments and evaluations (axiology)[7]. Some believe that axiology may not be the subject of scientific consideration with regard to social systems, due to the extreme subjectivity and the psycho-social nature of cognition, meta-axiology and deciding on assessments and values (normative axiology). Such an approach effectively means that the research field is arbitrarily closed for science. What is

[6]M. Skłodowska – Curie's body received radiation, of which she was initially unaware, although, certainly, this can hardly be considered a case of scientific detection.

[7]We are not discussing here other-than-scientific sources and principles of assessment and evaluation, for example those based on will (whim). Assessments and evaluations are performed in every scientific process (cognitive, axiological and normative), but the domain of science dealing directly and mainly with assessments and evaluations is axiology. Hence, we can talk about axiological-cognitive, meta-axiological and axiological-normative studies.

more, it is also tantamount to accepting that solely pre-scientific and non-scientific principles of cognition, axiology and deciding on the acting systems should be used[8].

The third (not in any particular order) category of laws are the laws of axiology. They determine, as long as they meet the criteria of a definition, the relations between evaluating variables and evaluated variables. In the axiological and cognitive approach, the formula will take the following form: If A (evaluating variable), then the value of the given object is B (evaluated variable).

3. The essence of the relationship between economics and management

Summing up, we will say that the category domains of the scientific process with regard to the subject's attitude to the object of the scientific process (here: management and economics of acting systems) are as follows:

1) cognitive process – knowledge regarding the object,
2) axiological process – values related to the object,
3) normative (decision-making) process – control over the object, particularly over the original (reality, practice of acting systems).

Using the above scheme, we can interpret the completeness of economics and management as cognitive, axiological and normative sciences.

Scientific processes in economics concern energy and resources in terms of the material scope, whereas in terms of the objective scope – the economic processes of action systems. For example, cognition and cognizance in economics involve reaching the following categories of cognitive scientific economic knowledge.

1) About energy and resources, as well as economic processes in action systems. Cognition includes discovering such regularities as shaping the relation between the marginal cost and average cost in the enterprise.
2) About assessments and values related to resources and economic processes in those systems. The consequences include cognising such values as: utility value, exchange value, value gained (income), value lost (cost), goodwill.
3) About master modelling and master models related to energy and resources as well as economic processes within those systems, i.e. scientific transformation of already existing action systems into postulated ones. Economics, here, cognitively indicates on what principles the master models of energy, resources and economic models should be constructed, what the content of those master models should be and how to realise them.

Let us examine the assessment process and values in economics using the example of the meta-assessment of cost (recognised as value lost). It consists in determining the significance, role of cost and, ultimately, ascribing a meta-value to the cost (a value itself) in a given object, given situation or – if at all possible – the enterprise as a category. It is expressed in assessing cost as a universal meta-value, in such categories as: superior value, priority, equivalent value, subordinate value. Finally, the examples of master modelling and materialising the master models of energy, resources and economics include the scientific

[8]It is hard to accept this viewpoint. The assessment whether a given price is higher or lower is a necessary precondition for the evaluation, whether it is good or bad from a certain point of view (axiological-cognitive decision). This, in turn, forms the basis for generating a postulate with regard to the desired master model of the price level, i.e. a decision about the price, etc. When making this decision, we are not moving in the sphere of alchemy, or mysticism, or any other domain whose existence is debatable (one of such issues is how many devils one can fit on the head of a pin – do they fit, or do they not fit? Are there fewer, or more? etc.).

determination of the postulated outlay models; how to optimise and realise them as application models, as well as implement them so that the originals of the outlay system (the actual expense) are consistent with the master model. The problem here stems for example from: 1) determining the desired master model in space-time $(tp)_0$, and implementing it in $(tp)_n$; 2) the emergence of new opportunities for and pressure to implement the master model in the period between $(tp)_0$ and $(tp)_n$; 3) the prerequisite of having cognitive knowledge on the specific implementation principles or developing it while it is being shaped. All this requires specific scientific knowledge on shaping expenses as well as the practical skills to apply and use it[9].

Management can be subjected to similar analysis. The object of cognition and cognisance, here, involves driving the action system, assessment and values related to driving this system as well as shaping the driving process. It refers to all the activities which together constitute driving: causing, representative and master modelling, organising, directing as well as feedback and feedforward linking. One can develop similarly the other scientific processes in management: valuation as well as master modelling and implementing master models.

Management focuses on any outcomes, or rather on all the outcomes anticipated by the acting entity, including the economic outcomes. This means that from the manager's point of view economic outcomes constitute a subset in the set of outcomes. An economically-oriented manager aims at bringing about a situation whereby action of the system is primarily beneficial and economical. With such focus, the beneficiality and economy of the action system are key, or superior, goals for the manager. Therefore, the manager chooses such activities and systems of causing, modelling, organising, directing and linking (thereby shaping the management subsystem in a given acting system) to effectively achieve beneficiality and economy of action.

Economising has a narrower objective scope and effective scope. Firstly, it applies to the energy- and resource-related dimension of any action system, being but one of the overall set of dimensions. Secondly, it focuses on the beneficiality and economy of the action system, selected outcomes of the set of outcomes. The economist examines each action from this point of view, including management. This is because management, as a process and subsystem in the action system, can also be beneficial and economical to a higher or lesser degree.

This concept is illustrated by a four-field matrix, applying two variables: scope of focus within the action dimension continuum (from the energy- and resource-related to any dimension – the Y-axis), and the scope of focus within the outcome continuum (from beneficiality and economy to any outcome – the X-axis). Moving clockwise from the beginning of the coordinate system (zero), we get four fields (Fig. 2).

[9]Cognitive knowledge about a factor blocking or eliminating the gene responsible for breast cancer does not in any way mean that we can do it for prophylactic or therapeutic purposes in a living woman. Likewise in social systems, the knowledge about the link between the marginal cost and the average cost does not automatically lead to being able to achieve the desired relationship in the enterprise in a complete and reliable, prophylactic and therapeutic way. Variability, openness and hybrid nature of this system pose additional problems for the science of economics and management.

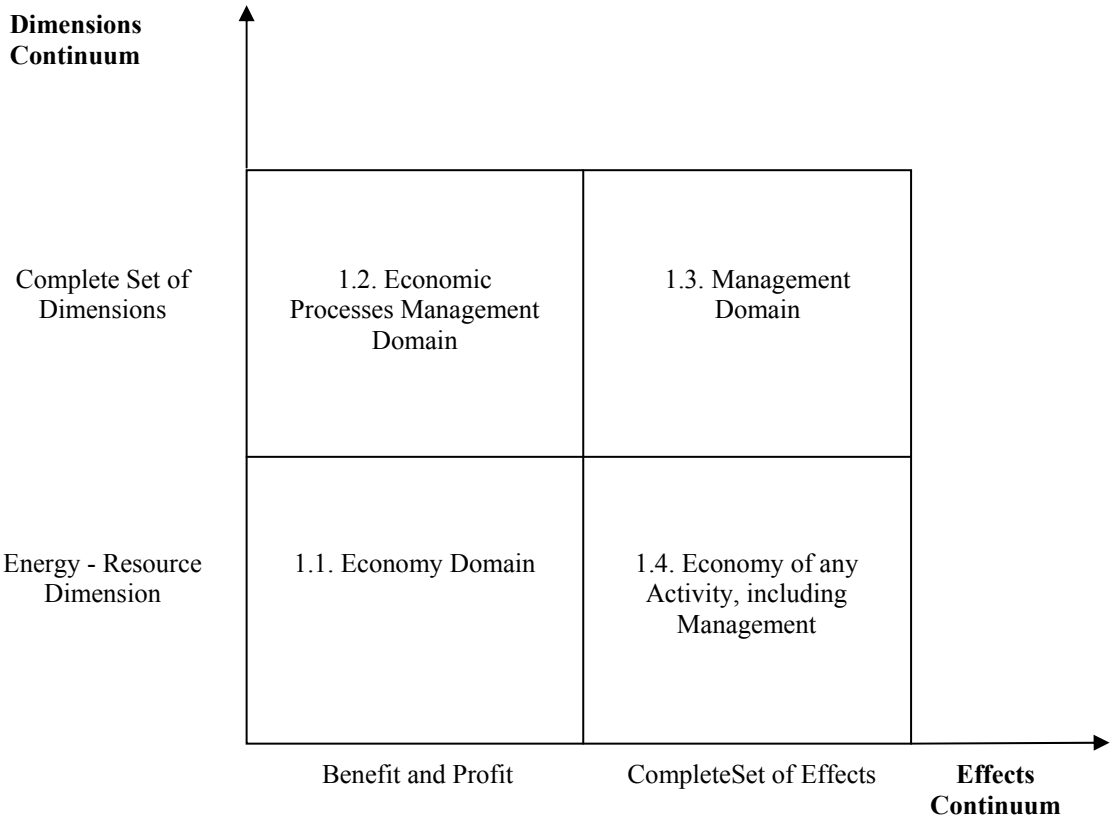


Fig. 2 Domains of management and economics
Source: own work

Field 1.1. – energy and resource-related focus of the action dimension /focus on beneficiality and economy of the action outcomes. This marks the core of economic processes, or the domain of economics.

Field 1.2. – focus on any action dimension /focus on the beneficiality and economy of the action outcomes. This marks the domain of managing the economic processes.

Field 1.3. – focus on any action domain /focus on any action outcome. This marks the core of the driving process, or the domain of management.

Field 1.4. - energy and resource-related focus of the action dimension / focus on any action outcome. This marks the economics of any action, including management.

Let us consider the relationships in question in the form of a matrix intersecting management and economy (tab. 1). Decisions (causative processes) concerning the acquisition of energy and resources for the action system sum up in a non-simple way with the decisions concerning other economy-related activities. As a result, we obtain the decision-making subsystem within the management system of economy as a whole. The appropriate approach to the remaining management activities will make it possible to determine the subsystems of modelling, organising, directing and linking, and ultimately – the management

system of economy as a whole, in the action system as a whole. This table may also be read in reverse order. For example, acquiring resources for modelling processes, etc.

Tab. 1. Management and economy

Management **Economic activities**	**Causing**	**Modelling**	**Organising**	**Directing**	**Linking**	**Synthesis of managing individual economic activities**
Acquisition	Causing acquisition	Modelling acquisition	Organising acquisition	Directing acquisition	Linking acquisition	Synthesis of managing acquisition
Accumulating	Causing accumulation					
Allocating	Causing allocation					
Applying	Causing application					
Utilising	Causing utilisation					
Synthesis of individual management activities in economy as a whole	Synthesis of causing in economy					**Economic management**

Source: own work

The hybrid nature, openness and variability of acting systems determine the fact that scientific processes apply both to ephemeral conditions and events, as well as those of permanent nature. It is, therefore, natural that economics and management pertain to the continuum: they attempt to assert and shape individual processes and phenomena (cases); discuss activities and systems constituting their subsets (assertions and shaping whose scope is limited to the subsets); and explore categories of activities and systems (the universal scope of the scientific process). Such categories include for example the enterprise, national economy, household. Assertions concerning the enterprise X are consequences of a case study, those concerning the industry Y – are assertions about a subset, while those referring to any enterprise – are assertions about a category.

All the values and goals of the action system, including beneficiality and economy, must be designated, cross-referenced and situated against each other in a specific way.

4. Economics and management vs. other sciences

The relationship between economics and management vs. other sciences can be analysed in any number of ways, depending on the assumptions we make. For the sake of this study, we shall divide those sciences into: related social sciences, natural sciences and other sciences.

Related social sciences are those which formulate assertions necessary to develop the assertions of economics and management (primary functions). They include particularly those referring to people and communities, such as: psychology, sociology, anthropology, political science, history, etc. Other sciences include those which play a supporting role to economics and management, for example mathematics, systems theory, logics. Finally, natural sciences perform a primary function (for example, chemistry for the chemical engineering industry) and a supporting function (for example, astronomy).

A broader examination of the relationship between economics and management and those sciences exceeds the scope of this study. Let us just note that the starting point for these analyses should be defining of the object of the scientific process as accurately as possible. The action (functioning) of an „area of natural beauty" is a different expression from the action of the „Wielkopolska region"; the functioning of a „school" differs from that of an „enterprise trading in chemical products", which in turn differs from that of an „enterprise producing and trading in handicrafts". In any of these objects, management and economics must try to solve distinct industry-related problems at various levels [management or economics of the area of natural beauty calls for additional „nature-related" knowledge and skills in the category-based sense (nature as a whole), and not just the local one].

The sciences under analysis cover the largest scope when considered at the category level. In this case, we are talking about economics and management with regard to any social system. There is a problem, applicable to both management and economics, of how to transcend from the level of an individual action system to the category level. For example, the economics of a „plant cultivation enterprise" calls for allocating, applying and utilising the resources of fertilisers or pesticides. It should comply with the laws of biology and other natural sciences, and take into account the technical and economic factors of resource outlay in a specific agricultural situation, but also the specific market situation of the enterprise. How to link the laws of economics applicable in this situation with the universal laws of economics at the level of any action system, i.e. those which apply regardless of the industry characteristics? Can we resort to the hypothesis used in physics and cosmology which refers: the laws of cosmology to the universe, the laws of classical mechanics to the macroscopic world, wherein the physicist functions, and the laws of quantum physics to the microcosm? The existing division into singular „economics" and „macro-economics" and „micro-economics" is a step towards universalisation, though an imperfect one. Further exploration into the subject is needed. There is a role to be played here by meta-studies: meta-economics and meta-management.

It will be quite to the point here to mention that scientific processes also need to be managed and subordinated to economy. If these processes take place in scientific enterprises, then by nature economy will come to the fore (as the superior goal overriding the merit-related outcomes of the scientific process). The manager's main goal will be to ensure the success of such an enterprise (the economic processes within a given branch of science), according to the expectations of the main stakeholders. In other cases, economics plays a restrictive role with regard to the scientific processes involved. Management in that case aims primarily at realising the merit-related outcomes of the scientific process (as the superior goal with regard to other values) and staying within the adopted economic constraints.

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