THE ENGINEERING OF MOTOR ACTIVITIES

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The Science of Motor Action or Motor Praxeology

Motor functions are intrinsic to our lives, we do everything with our bodies, and even immobility requires good posture control. In any case, of all the activities that humans can carry out, only some of them are intentional and with an aim within motor activity, that is, only some of them have a motor objective.

When we move our hands with a pencil in our fingers or type on a computer, we do this in order to write something. When we work in the kitchen, we are cooking something or washing the dishes. When we load a truck with objects, we do so because we are working or because we're moving house. In all of these examples the final aim is not motor activity, but it is the prerequisite we need in order to execute tasks with work, domestic, literary or culinary aims.

Activities with a motor objective, on the other hand, are those in which the intentionality focuses on aspects associated with motor activity itself, for example: scoring a goal, jumping, dancing, relaxing, etc. In all of these practices, the final objective has to do with or is focused on motor activity. Practice is not done to produce anything nor to provide any services beyond the motor activity (a show can be provided, but this is an aspect linked to the motor functions). And even when exercise is done for health reasons, it is also an optimizing effect on motor functions.

Continuing with the previous example, the act of taking a pill to fight cholesterol has a utilitarian objective and not a motor objective, because it is the medicine which carries out the task. Taking a walk to fight against this disease, on the other hand, does have a motor objective because exercising does not produce anything material nor does it serve for anything beyond motor activity other than the improvement of one's motor capacity.

Many sciences study the motor phenomenon, principally in its leisure-sports aspect, with the objectives inherent to their respective fields. Hence, Sports Psychology researches the psychology of athletes, Sports Physiology focuses its attention on medical aspects, and Sports History studies the birth and evolution of the sports phenomenon, as do Sociology, Biomechanics, Anthropology, Pedagogy and the rest of contemporary sciences. Motor activity also has a heterogeneous range of disciplines that partially research it, such as Proxemics, which studies it from a spatial perspective, Kinesics from the point of view of communication and Ergonomics from the work angle. But none of them intends to define the universe of sports or games, much less consider it as their field of study, because their field of knowledge of origin is adequately defined.

The Science of Motor Action, on the other hand, studies it as a fundamental and unitary aspect, because it is a scientific discipline whose field of study is precisely motor situations, that is, physical activities of a leisure, recreational or sports nature. Its object of study is motor actions, thus, it studies the conditions, modes of operation and results of carrying out this type of actions. The name Motor Praxeology[1] is also accepted, and, indeed, it is probably more appropriate because Praxeology studies the conditions and rules of efficiency of action.

Over 30 years ago, Professor Pierre Parlebas, Professor and Dean Emeritus of the Faculty of Human and Social Sciences at the Sorbonne, Paris, and Honorary Doctor of the University of Lleida since 2002, among many other academic titles, developed the foundations of the Science of Motor Action. His postulates are based on the theory of action, the theory of games and the structural-systemic paradigm, and therefore this discipline considers motor situations as motor systems.

The Pedagogy of Motor Behavior

Motor actions are the basic unit of analysis of Motor Praxeology, because they are definitely what we can see and observe in the course of a game, sport or any motor activity in general. They are what emerges from any motor system and they arise as a consequence of the adaptation of the person carrying them out to the structure or internal order imposed by the rules of the game.

Motor actions can be studied independently of the specific individuals carrying out the activity or they can be studied taking into account the individual carrying out the action. Each individual has a very specific manner of expressing themselves in motor action as a consequence of their personal experiences and their genetic attributes; therefore, each person expresses their motor aspects through specific motor behavior that is the result of personal motor actions.

Thus, when you participate in a motor situation, you are also showing, to a large extent, the way you are and your personality, because action is always taken globally. Although game rules are restrictive because they call for a specific action framework, it is also true that each participant carries out the actions allowed in the game in a unique fashion.

Physical Education is the technical discipline that is involved with developing the pedagogy or teaching of motor behavior. In any case, it requires previous in-depth study, on a scientific basis, of the motor actions that are to be used as a tool to attain educational and training objectives, in order to be able to certify the appropriateness of the practices chosen as generators of the behavior expected of participants.

This is precisely what Motor Praxeology does. On the basis of rigorous study of the internal logic of a game or other motor activity, it can predict the types of motor actions that will occur and the behavior, which will adapt to the requirements of the stage that the practice involves. And not only that, but the knowledge of the structural foundations that generate the appearance of specific motor actions and behaviors allows motor situations to be designed that are conducive to the appearance of specific behavior.

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[1] Term coined by Alfred Espinas in his article “The Origins of Technology,” published in 1890 in *Revue philosophique*. Excerpt from Pierre Parlebas (2, p. 355).

Nonetheless, it must be reiterated that each individual is unique, which means that a single motor situation can generate different behavior in different participants, even inappropriate or irrational ones with regard to what the situation demands. These are anomalous to the recreational scenario and can hamper it, denaturalize it or cause the game to be interrupted. Only studying the possible structural grounds that facilitate the appearance of this anomalous behavior in problematic participants can allow the rules of the game to be modified such that the former are reinforced and the latter are prevented without having to use punishment outside of the dynamic of the game.

The Engineering of Motor Activity

The benefits and contributions of Motor Praxeology thus far have been limited to the academic sphere, and both research within the field and interdisciplinary research in collaboration with other sciences have remained locked inside laboratory walls, where they can only satisfy the few researchers dealing with this science.

Nevertheless, all sciences should be disseminated and be useful to society if they intend to succeed as such. Fields such as the abovementioned physical education, training and sports teaching should logically be the first and principal beneficiaries of Motor Praxeology. But other professional fields should also receive its contributions. Corporate training, for instance, specifically in the human resources sector, needs to improve the behavior of management and workers in skills related to communication, resolution of labor conflicts, teamwork, fostering of leadership skills without inhibiting potential of subordinates, decision-making, etc.

At present, there are many training programs being carried out by companies specialized in corporate training or by departments within a company that wished to use physical practices to attain their training objectives, but without criteria that could justify them. The creation of a new field is obviously necessary, that of the engineering of motor activities, which would focus on praxeology analysis, the programming and design of motor practices suitable for the pedagogy of behavior in the multiple fields stated above. Indeed, the director of this workshop is currently involved in such a project.

The specificity of this field of study should also allow the future to be secured for the Degree in Sciences of Physical Activity and Sports, although its current name may have to be changed and the plan of studies modified, accepting Motor Praxeology as a core subject.

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