

Model making and producing in industrial design using bionics technology

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An interesting and new subject of bionics technology and some aspects of model making in industrial design are examined in the present article.

Industrial designers are a mixture between an engineer and an artist. They study both function and form, and the connection between the product and the user. Usually, they co-work with engineers and marketers to identify and fulfill needs, wants and expectations. The production of every object begins with design: from the start the functions and the cycles of product existence are planned, then the engineering part is projected, all this guarantees a successful product manufacturing and its future use [1].

In addition to considering aesthetics, usability and ergonomics, design can also include the engineering of objects or products, their usefulness, market placement and other concerns such as seduction, psychology, desire, and the emotional attachment of the user to the object [2].

To describe the process of an industrial design project we can explore 7 steps:

- First, problem is identified. In some cases designer must invent a new product. In other cases designer will have to redesign an existing product or item thereof.
- In addition to this, the scope, appearance, materials, construction and safety of the object are taken into consideration.
- The next step is generating potential leads by designer.
- Then one of the areas is selected and analysed: what materials are accessible, the time required for building solutions, etc.
- This investigation leads to selecting the most appropriate solutions.

- Then go to a model or a prototype.
- The last stage of the project is testing and evaluation. (Will it work? Will the match be launched in production?).

Bionics is the application of biological methods and systems found in nature to the study and design of engineering systems and modern technology. A classical example is the development of dirt- and water-repellent paint (coating) from the observation that the surface of the lotus flower plant is practically unstuck for anything (the lotus effect) [3]. The necessity of projecting the whole cycle of existence of industrial products from creation to their using is the most popular problem nowadays for all the specialist designers. Out of control technical progress may cause many ecological catastrophes. The technique and the technology may be ecologised whether they are organized on the principle of natural processes. The human rationality is basically formed and influenced by the processes from the nature. Often, the study of bionics emphasizes implementing a function found in nature rather than just imitating biological structures.

The conscious copying of examples and mechanisms from natural organisms and ecologies is a form of applied case-based reasoning, treating nature itself as a database of solutions that already work.

We can distinguish three biological levels, after which technology can be modelled: mimicking natural methods of production, imitating mechanisms found in nature (Velcro), studying organizational principles from social behavior of organisms, such as the flocking behavior of birds.

Bibliography:

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