

## Dossiê 6

A modelagem integrada ao projeto de Moda no âmbito do ensino

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## EXTENDED SUMMARY

# BIONICS APPLIED TO MODELING FOCUSED ON SUSTAINABILITY: CONTRIBUTIONS OF THE MODTHINK MODEL

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## 1 INTRODUCTION

The present study displays the result of the application of the methodological phases of the MODThink model by Emídio (2018), in the context of an academic project of the first year of the Fashion Design course at the State University of Londrina. Through the application of the bionic creativity tool, it demonstrates how it was possible to include the concept of the project in product modeling, in addition to contributing to aspects of addressed to sustainability.

The results show the potential of bionics applied to modeling focused on sustainability, and the methodological contributions of the of the MODThink model phases to enhance the mental structures of students in the construction of knowledge in modeling.

We contribute to establish a common language between design and modeling fields, using design tools and creativity techniques as cognitive resources to boost students' mental structures in the construction of modeling knowledge.

## 2 DEVELOPMENT

The MODThink model consists of 5 phases, with reflections and analyses to be developed in each phase, as well as suggestions of design tools and creativity techniques applicable to every stage, such as cognitive tools for modeling teaching-learning.

The model starts from a problem-situation/ focal question of modeling and, subsequently, includes problem analysis, investigation, exploration, verification and execution of the modeling.

Regarding the work in question, the concept was established and worked starting from the following focal question: how to develop a wearable product that explores a concept related to the tree (plant), the changes of the seasons and the necessary adaptations during its life cycle while expressing these aspects in modeling?

First, the main objective was to find a way to include the concept in the modeling (focal issue). Therefore, in line with the objectives of phase 1 of the model, it was essential to "raise, interpret, question and record the aspects involved in the proposed modeling problem situation" (EMÍDIO, 2018, p. 156-166), and also seeking theoretical support (phase 2) to justify the outcome.

From this research, we saw the possibility of adopting the bionic tool in the context of the academic project in question. According to Pazmino (2015), bionics is a creative technique that studies the natural systems of aspects related to form, function and materials, with the aim of developing analogous forms, functions and materials.

Through the use of the bionic tool, we tried to find a working principle present in the tree (plant species) to apply to an attire, this opportunity led us to the concept of fractal, which is a structural and standardized form of nature, simple, but with considerable potential, through which it manages to organize, maximize, recycle, enhance and save.

From an analysis of the functioning of fractal geometry and how it is used to solve problems of efficiency and economy of nature, we formulate the phrase-concept “the life-giving geometry of everything”.

After selecting the triangular shape to demonstrate the concept, the next step demanded exploration in modeling (phase 3 of the model), that is, the creation of ideas capable of applying the research content to answer the proposed modeling issue. In this phase, the major activity performed was the generation of alternatives, subsidized by the project requirements tool, and by the results of the concept and expression panels of the product. Under such perspectives, we considered modeling knowledge from both the technical-creative and technical-productive dimensions.

Subsequently, it was necessary to establish criteria to elect the finest ideas and to finish the product creation process through modeling. This is phase 4 of the model, named modeling verification, followed by phase 5, modeling execution, beginning with the gradation of the molds, insertion of seams and seam allowance for wearability. As the molds were previously made in size 40 and in a 1: 2 scale, they should be produced on the size 50 mannequin and on a natural scale, so the product could be used by the student during the presentation and defense of her integrating project.

### 3 CONCLUSION

By using the MODThink model, we have demonstrated not only the technical and productive character of modeling, as an instructional activity, but also its creative, innovative and abstract aspect, through the application of design tools and creativity techniques.

The adoption of bionics, as the core of the work and the basis for the development of productive thinking towards sustainability, achieved the purpose of portraying the concept of “tree” in clothing, ranging from its shape to its subjective / psychological aspects, as it brought the product closer to the target audience from the application of the concept in the product (modeling and aesthetic form) to its manufacturing process.

Therefore, it appears that the model presented by Emídio (2018), contributes methodologically to the training of fashion designers who seek ingenious solutions aimed at meeting human needs (physical, psychological, socio-environmental, socio-cultural, among others), since it seeks to explore the modeling resources available in an innovative manner.

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