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### THE “OLD MASTERS” OF ENGINEERING DESIGN AND THE MODERN FORM DEVELOPMENT PROCESS OF AUTOMOBILES

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A comparative study was made between the “Old Masters” of engineering design and the modern form development process of automobiles with focus on the quantified structure as a common element. The study found that although the modern form development of automobiles uses different approaches, it follows a pattern similar to the strategies adopted by the “Old Masters.” In the product synthesis, design approaches from the two parties are similar as far as the development allows us to move gradually from one solution to another. However, the “Old Masters” approach is based on quantified structure while the modern form development process of automobiles is additionally related to aesthetics but can be analyzed with help of product semantics.

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### THE SKETCH POWER TO SUPPORT PRODUCT DESIGN

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1207

This paper is interested in the extent to which sketches and 3D representations are important in today's design process, particularly during the preliminary creative phases of product design. We question the relevance of sketches within systems of external representations and amongst the infinite possibilities offered by CAD tools. This exploratory research is conducted through 3 steps: an information gathering step where we assess the current state of art, a direct contact with designers through interviews and the testing of the existing theories through pragmatic experimentation. The project's goal is to objectivize a Human Machine Interaction that could effectively and efficiently support the product designers in their creative phases.

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### TECHNOLOGICAL PARADOXES IN INDUSTRIAL DESIGN

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Through a case-study of the design of a large-scale interactive kiosk, I will explore the design process of the modern Industrial Designer and the ways in which VR technology can make it possible to minimize potential problems associated with traditional prototyping of large objects and improve communication between designers and their clients.

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### APPLYING TRENDS TO DESIGN: A THEORETICAL FRAMEWORK

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When technology and functionality are not enough to differentiate a product from its competitors, the product's visual appearance becomes a major driver of consumer preference. But how do designers identify what is and will be attractive to the consumer, and how do they apply this to the styling of their products? It is evident that physical products are increasingly becoming fashion based items. There is a substantial body of theory, built over the last 50 years, as applied to fashion. However, to date, little of this understanding has been applied to the design of physical consumer products. This paper seeks to address this gap, by synthesising seminal literature from fashion theory, taste, consumer behaviour, and product design.

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### COOPERATION OF ENGINEERING & INDUSTRIAL DESIGNERS ON INDUSTRIAL PROJECTS

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The paper introduces theory and methodology developed on the basis of a “map” of Engineering Design Science, which proved to be a powerful tool for efficient and effective cooperation for the two “competing” professions like engineering and industrial designers. This approach has been validated during education design projects carried out for and evaluated by industrial partners. The projects have been carried out at the University of West Bohemia in Pilsen over the last few years. Students worked in “competing” teams consisting of engineering and industrial design students. The following topics were undertaken last year: Dentist's working place, Assembly line for gluing hinges on mirror doors, and Parking facilities for “Coupe Vehicles”.

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**INDIRECT ENCODING OF THE GENES OF A CLOSED CURVE FOR INTERACTIVELY  
CREATE INNOVATIVE CAR SILHOUETTES**Yannou B., Dilhman M., Cluzel F. - *Ecole Centrale Paris (FRA)*

1243

An Interactive Genetic Algorithm system is proposed for designing a car silhouette while involving the style designer in the evaluation process of a population of individuals. This IGA is based on the principle of an indirect encoding of a closed curve genome using a primary Fourier decomposition. A crossing over operator is proposed for mixing the parents' genes by a random weighted average into a new child's genome. A perceived similarity index between two genomes is built. It allows to check that our IGA is able to converge toward a targeted individual which was not present within the initial population and, consequently, that any silhouette in a style designer's mind could be revealed by our system.