Reconstructing an iconcostacis as a model for the constructionistic approach in education

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Abstract

Introducing the information technologies (IT) as a separate school subject in the Bulgarian schools since 5th grade made it possible to include themes illustrating the Dewey's idea that *education is not a preparation for life but is life itself.* An example of such a theme is the restoration of ancient vessels − a project included in an IT textbook for 7th grade. When working on the project the students are faced with problems from real life and are expected to understand in a natural way when, how and which IT tools to apply so as to help a local museum.

Such an approach reflects the crucial ideas behind the constructionsim since the vessel-restoration project is to a great extent a miniature version of a real research project in the field. Still, to develop a more realistic project approximation it is worthwhile to examine the specifics of an authentic research-art project. This is done in the context of reconstructing the iconostasis of a Bulgarian Orthodox church from 18th c. partially destroyed by a fire (Figure 1).

Figure 1. Details of the iconostasis after the fire and their digital reconstruction

The reconstructing process involves building a hypothesis about the fundamental generating idea of the anonymous master of wood-carving. This hypothesis is based on a thorough analysis of the main characteristics of the iconostasis (the epoch, the place, the artistic style) including the study of specimens *close* enough according to the above characteristics.

Based on observations on various stages of the process the authors notice some implications for the educational process in the spirit of the constructionism, viz. that both in school and university setting the *learning is most effective when part of an activity the learner experiences as constructing a meaningful product*.

Keywords

reconstruction, iconostasis, project based learning, constructionism.

Introduction

Introducing a separate school subject on information technologies (IT) since 5th grade in the Bulgarian schools made it possible to include themes illustrating the Dewey's idea that *education is not a preparation for life but is life itself.* An example of such a theme is the restoration of ancient vessels - a project on which a whole section in the textbook for 7th grade is dedicated [1]. When working on the project the students are faced with problems from real life and are expected to understand in a natural way when, how and which ICT tools to apply so as to help a local museum restore ancient Greek vessels and guess their function. For the purpose the students are expected to study the shape of an artefact, to build and explore a virtual 3D model of it (Figure 2) by means of a specially designed software application *Potter's Wheel* [2], to decode a message with hieroglyphs, in a nutshell - to put together a great part of the subject knowledge and skills acquired during the school year and to work creatively in teams pursuing a common goal.

This theme is further elaborated by Boytchev [3] in the frames of *the Math2Earth* European project for developing educational scenarios with the idea of "bringing mathematics to Earth", i. e. to demonstrate to learners of a large scale that mathematics can be enjoyable and useful in many situation of everyday life.

Such an approach reflects to a great extent the crucial ideas behind the constructionsim since the reconstruction project is a miniature version of an authentic research project. The students

- learn a lot about the culture, the habits and the dreams of their predecessors by studying the ancient artefacts;
- experience tackling problems without obvious solutions and get an idea about the professional research;
- acquire ICT-enhanced skills [4] such as: searching and selecting relevant information, splitting the problem in tasks and subtasks, working in a team, constructing meaningful products, then presenting and sharing the products of their work.

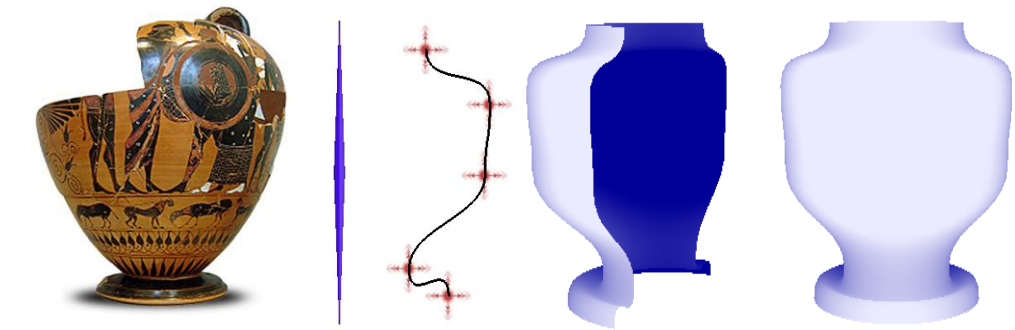

Figure 2. An ancient Greek vase and its virtual 3D model

Although the main idea behind the restoring-ancient-pottery project is based on authentic problems in archaeology many of the details (e.g. some of the hieroglyphs containing information about the function of the artefacts) are fictional. With this in mind the second author decided to learn more about the nature of a real restoration project in a slightly different context – reconstructing an iconostasis which is a woodcarving masterpiece of the Bulgarian Revival Period.

An authentic research-and-art project

The background

There are many Bulgarian iconostases that have been created through the ages (starting from 12-13 c. as stone altars). Although preceding the Renaissance they are in themselves magnificent monuments of art [5]. The earliest monument of this kind (St. Peter from Berende village) which is being preserved dates back to the 14th c.

In August 2009 a team of artists (of which the first author is a member) was given the assignment to reconstruct digitally the iconostasis of the *Dormition of the Holy Mother of God* cemetery church in Bansko so that the model could be used by wood-carvers to reconstruct the iconostasis as authentically as possible. The church was built in 18th c., and the iconostasis separating the naos from the altar space was made by an extremely talented anonymous artist.

In 1958 a fire had burst in the church, believed to be deliberate [6]. As a result one-third of the iconostasis (together with all the icons mounted on it) was scorched. A single picture of the iconostasis from a post card was preserved (Figure 3).

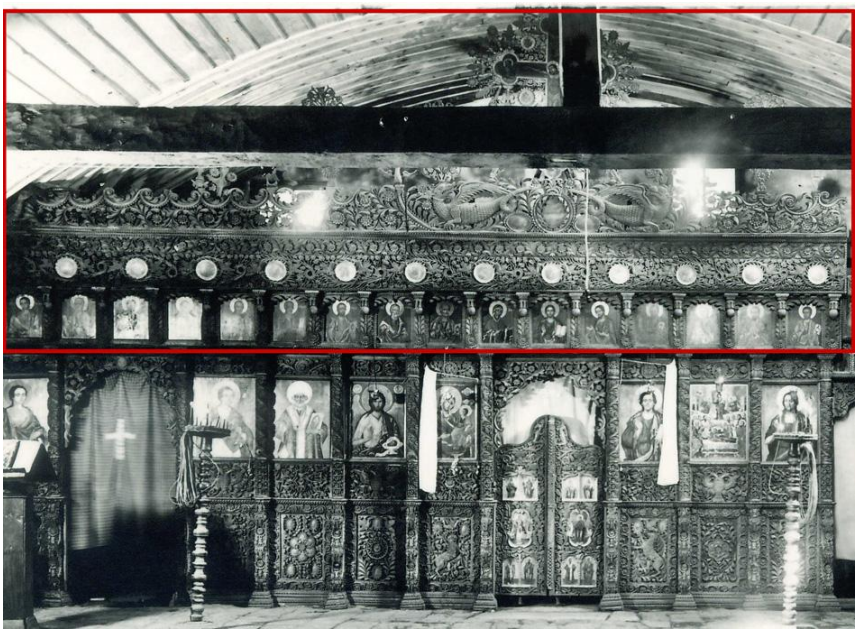

Figure 3. The iconostasis prior to the fire in 1958 (the part framed in red is to be reconstructed)

The reconstruction project through the eyes of a professional re-constructor

The floor goes to the first author now:

The main problems occurred were the insufficient information about the master and about the original iconostasis. Not only has the cross been charred by the fire but as seen in the original picture it is half hidden by the beam. Still there is a part of the iconostasis relatively well preserved after the fire which could help mainly for establishing the style of the woodcarving.

The main challenge the re-constructors faced was to build a hypothesis with the hope to extract the fundamental generating idea of the anonymous master. Such hypotheses are usually based on a thorough analysis of the main characteristics of the object of reconstruction (the epoch, the place, the artistic style) including the study of *close* enough (according to the above characteristics) specimens. The iconostasis under consideration contains a typical pattern showing that the master wood-carver has a specific mode of expression; the ornaments have

clear and sharp contours, the flowers and the leaves stand out clearly against the background. According to the art expert Enev [6] *the woodcarving is very expressive, clear-cut, and sharp-lined. The major elements are flowers with birds and fairy-tale animals inserted among them.* As for the creator of the iconostasis, he is described as *skilled professional with a strong individuality, yet probably familiar with the work of his contemporaries from Athos*. Historical investigations show that the wood carver could hardly have been a monk from Athos but rather someone who had learned the craft from them. The presumed date of that iconostasis is 1801 and the experts establish a great similarity between the iconostasis to be reconstructed and the one of the churches in Golyamo Belovo. As for the woodcarving school the iconostasis creator belonged to certain schools (e.g. the famous Debar one) could be rejected based on the specifics of the elements (flowers and birds but not human figures typical for the wood-carved motives from Debar school). It is clear that the analysis should take into account the studies of experts in various fields (art, orthodox religion, particularly in Bulgaria − in the region of Bansko), the information provided by good intending local people (filtered appropriately).Then the practical work begins – taking highly professional pictures of the current status of the iconostasis in different levels of detailisation (Figure 4).

Figure 4. Details of the iconostasis after the fire.

One of the challenges for the re-constructors is to figure out the original appearance of the cross – at a first glance there are a series of potential candidates from other Bulgarian churches (more simple in terms of woodcarving, from the same region and period (Figure 5) but also very complex ones as the crown on the iconostasis (Figure 6).

Figure 5. Crosses from Bulgarian orthodox churches of the same period

Figure 6. The crown on the iconostasis in the naos in the Church of the Nativity in Arbanassi

An additional problem compared to the problem of reconstructing icons for instance is that the wood-carving could not be demounted after it has been charred.

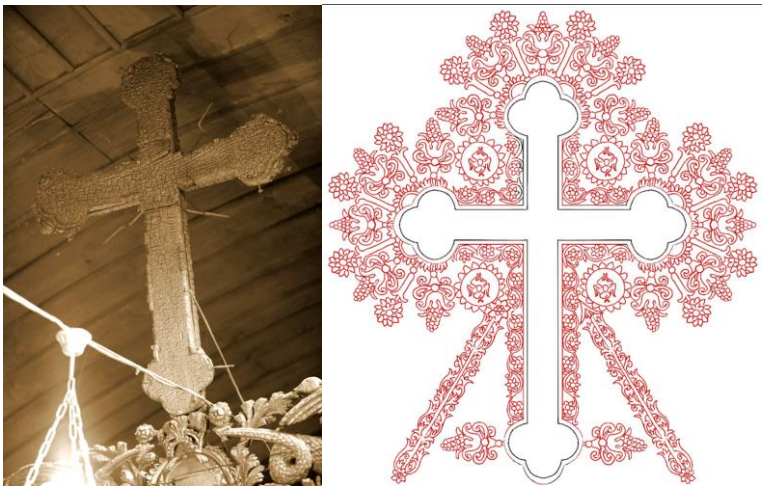

Figure 7. The charred cross and its digital reconstruction

After a careful analysis of the artistic line we can model the specific elements – flowers, leaves (Figure 7).This analysis is based on the logics from religion-symbolic point view, and from architect point of view.

The series of elements give an idea about the whole ornament, and from there – of the whole panel of the iconostasis.

The next step is to make a retrograde strategy by which to verify the hypothesis – how close you are to the reality in terms of size, distance, placement of the elements, etc. This verification is based on hundreds of pictures scaled in 1:10, fitting them in transparent paper, completing the missing parts of the picture by manual drawing (Figure 8). Then we scan the transparent paper, process it digitally to turn it into a vector graphics with a very high quality, scale it to its real size and print it on a plotter to be used as a model by the wood carver performing the final reconstruction.

The reconstruction of the icons requires more complex artistic and graphical analysis. For the purpose the research team will use an iconographic digital library with elements of semantic access [7, 8].

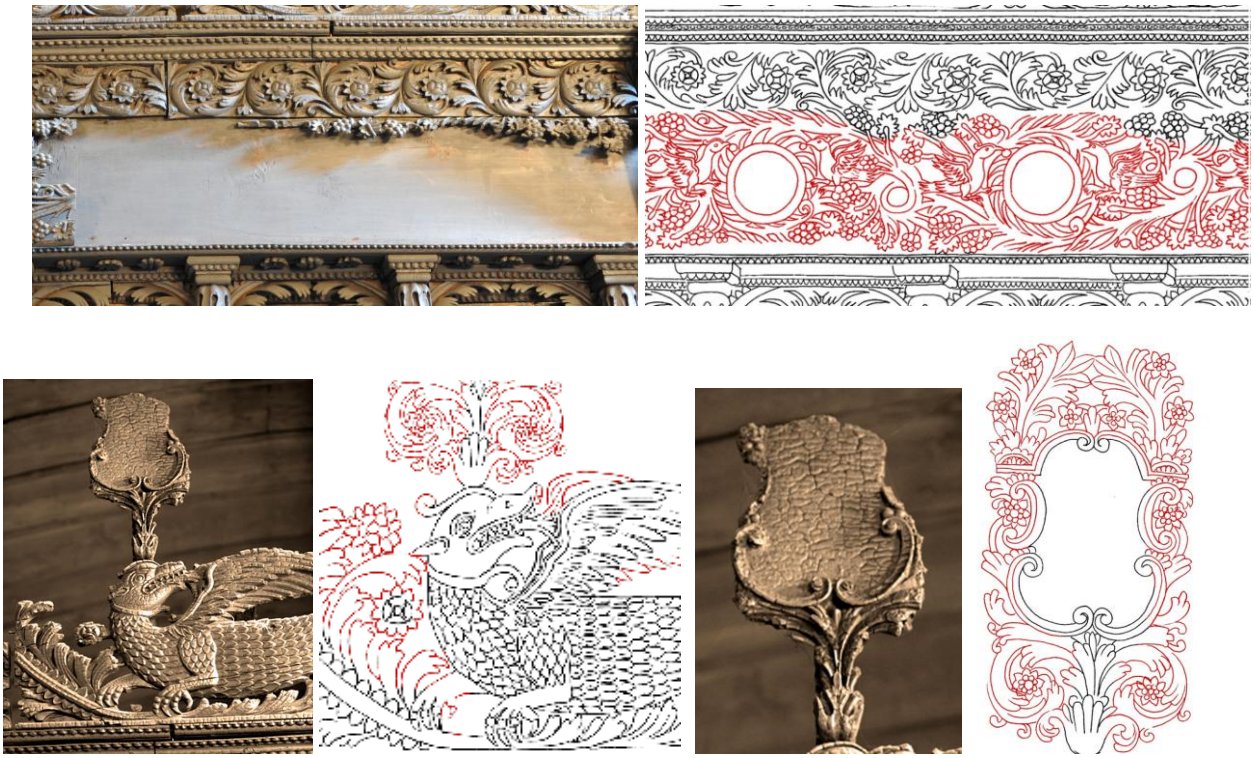

Figure 8. The digitalization makes it possible to model and reconstruct the objects with high fidelity

The main achievement of this project is the synergy between the extraordinary creativity of the anonymous master and the contemporary analytical view and knowledge about this masterpiece together with the new technological facilities. Without them the precise artistic reconstruction would have been extremely difficult.

Of course, being an artist yourself it is very difficult to suppress your ideas so as to remain faithful to the old master and to the canon. But again you learn so much... And I can't forget what my then 4 year old son said: *You don't seem to work, you are artists... the work couldn't be a joy.*

Back to the educational setting

What we realized after exchanging our experience in a project-based context is that it would be impossible not to simplify the realty in a school setting. Still there are many things in common.
The interdisciplinary approach applied in the case of reconstructing the iconostasis included profound knowledge on the history of the orthodox art, digital photography, artistic skills, the use of specialized graphic software thus enriching significantly the palette of the project team with new tools and creative potential.

Although on a smaller scale the 7th grade students working on restoring the ancient vessel are expected to integrate knowledge from different fields in a motivated way. They have to realize from a personal experience that the participation in a project requires a successful implementation of ICT-enhanced skills including collaborative work, finding and using various resources, ensuring that tasks are complying their deadlines, transferring ideas and results from one domain to another, and finally, dispatching resourcing including personal efforts and time.

In conclusion, our "project-based" discussion reinforced our belief that both in school and university setting the *learning is most effective when part of an activity the learner experiences as constructing a meaningful product*. Of course, re-constructing is not less meaningful...

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