

# **Nested Dolls and Trojan Horses Help to Innovate Across Industries, from Gene Therapy to Video Communication and Journalism**

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The nested doll principle, or placing object inside another have helped to smuggle genes into cells, to escape from the prison camp, and to introduce new video communication applications. Perhaps it can help to solve your problem, too?

## **Gene inside the Virus**

"... major obstacle to successful gene therapy was the difficulty of getting a chosen gene into the desired tissue... we selected a virus as our delivery vehicle, or vector, because viruses are skilled at smuggling genes into cells. They survive and propagate by tricking the cells of a host organism into bringing the virus inside, rather like a biological Trojan horse", writes professor H. Lee Sweeney from the University of Pennsylvania in the paper published recently in the Scientific American [5].

Sweeney and his team try to find the treatment to muscular dystrophy. They are bringing synthetic genes into the tissue, using a harmless virus as a delivery vehicle.

## **Escaping inside the Exercise Horse**

A biological Trojan horse is a good example of the "nested doll" principle. It is the principle number 7 in the list of 40 principles. The principle is described in many TRIZ books, for example, in "Simplified TRIZ..." [2, pp. 142-143], and in numerous articles, for example, in the TRIZ Journal [1].

Shortly, the principle recommends to "place one object inside another" or make "one part pass through a cavity in the other. Telescoping structures and measuring spoons are typical examples [3, pp. 142-143].

The words "Trojan horse" remind of another application of the same principle. There is a famous escape story. During the WWII English war prisoners used an exercise horse for digging a tunnel out of a German prisoner camp. Prisoners, watched by German guards, carried out physical exercises. At the same time diggers worked inside the hollow horse. Three prisoners run out through the tunnel and got successfully home.

One of them, Eric Williams, wrote a novel about the escape [6]. In the book he tells that they got the idea discussing of the ancient Greek literature. Somebody recalled the story of the Trojan War. The Greek at last took the city of Troy by a new trick. Some soldiers were hidden in the hollow

belly of a wooden horse. They climbed down and opened the city gates when Trojans, celebrating victory, were drunk. The exercise horse worked very similar way. The only difference was that the Greeks got into the city, but the English prisoners got out from the camp.

## **Text Message inside the Mobile Phone**

There are business examples on how a new product or service is introduced inside the old one. Some years ago text messages, or SMS, from word "Short Message Service", became popular. They are short messages, like telegraphs, sent by the mobile phone.

The secret of the success was that people, buying the phone, got the text message service automatically. The mobile phone worked as a Trojan horse carrying a new service in its "belly". It could be difficult to sell a separate device, even a cheap one, for text messages. Now people got the opportunity to experiment with the new service free of charge. After that many of them became ready to put sometimes rather much money to send messages.

## **Coffee Room Application inside the Network**

Last year I wrote in the TRIZ Journal of a coffee room application of Video Technology [4]. One Finnish company, constructing a powerful computer network with video conferencing rooms, decided to add yet one service, a video connection between two coffee rooms. People can now, during coffee breaks, chat with colleagues in another city.

The coffee room application was practically free for the company who needed a powerful network in any case. As a separate installation it could have been rather costly. Further, the benefits of the new service are often nearly invisible in the beginning. Informal chatting can give more results than additional "serious" meetings, but nobody can calculate the output in the beginning. Introducing the new service in the "belly" of the old one the risks can be decreased nearly to the zero.

## **Video Communication inside Phones and Computers**

Having examples from past we can resolve new problems using the "nested doll" or "Trojan horse". Let's consider the near future of the video communication.

Desktop video phones and web cameras are today available, at the prices affordable to rather large part of consumers. However, one cannot yet see a video phone boom.

Yes, there are some obvious obstacles. The quality of both sound and image may yet be disappointing. There may be a postcard size video window, not the big screen we know from sci-fi movies.

Let's suppose that the problems with sound and image will be solved. Do everybody, then, hurry to buy a video phone? Not necessarily. If some extra device is needed and even small extra effort is required, many people will think: for what do I need this?

The "nested doll" may be the more safe way. Andrew Davis is a partner in Wainhouse Research, an independent research company who is specialized on visual collaboration and rich media. He wrote two years ago:

"Video(conferencing) made more sense an add-on-to other applications, not as a stand-alone product... video as an add-on to voice is a natural." [2]

"Video as an add-on to voice", or video inside the voice phone or computer is yet one nice example of the "nested doll". We can imagine that soon there will be embedded cameras and "video buttons" in all phones, computers and TV sets. In the beginning many people will ignore them. Then, at some day, they will decide to experiment. They need to show something, or to see each other, and they will press the video button. Video communication will explode.

## **Facts inside Fiction**

I hope you enjoy this story. I have tried to make it as readable and attractive and at the same time as informative as possible. There are hard facts from gene research and information technology. I have placed them inside other objects: history and myth. William's novel is a story based on facts. A narrative on Trojan war is also a story but one knows little of how much there are facts and how much imagination.

We have different layers in the story, from strongly verified facts to pure fiction. There is an own word for this like structure: "faction", coined from "fact" and "fiction". In this context the word means writing that mixes fact and fiction. There are other terms, like "news fiction" or "nonfiction", or "documentary fiction".

Here we have yet one example of the principle number seven: the nested doll where facts are placed inside fiction. One can find lot of examples of faction in modern journalism. It is more difficult to find in big commercial newspapers or magazines, say, in Time or in Newsweek, stories without some combination of facts and narrative elements.

At last, there is a much older and better know example: sci-fi or science fiction. Science is placed inside fiction.

## **Way to the Ideal Final Result**

Perhaps you can add yet some cases of how the nested doll principle is used?

A "nested doll" often helps to reach nearly ideal solutions. The ideality is defined as the relation of the sum of benefits to the sum of costs and harms, see "Simplified TRIZ..." [3, p. 80]. In "nested doll" solutions costs are often next to zero. Benefits, like the ease of use, may be big.

There are enough examples showing how "add-on to" products or the innovations smuggled in the "belly of the Trojan horse" have been many times superior to "stand-alone" products and ideas. It is reason to check: Can I use the nested doll principle to solve my problem?

## **References**

1. Contradiction Matrix and the 40 Principles for Innovative Problem Solving  
<http://www.triz-journal.com/matrix/index.htm>
2. Davis, A. VCON/Mitel Introduce Voice First, The Wainhouse Research Bulletin, Vol. 3 #08, February 12, 2002

3. Rantanen, K., Domb, E. *Simplified TRIZ: New Problem Solving Applications for Engineers & Manufacturing Professionals*, CRC St. Lucie Press, Boca Raton FL USA. 2002
4. Rantanen, K. A Coffee Room Application of Video Technology. A Story of How to Find the Solution not Solving the Problem . The TRIZ Journal, May 2003, [www.triz-journal.com](http://www.triz-journal.com)
5. Sweeney, H. Gene Doping, the Scientific American, July 2004
6. Williams, E. Wooden Horse, Collins, London, 1950.