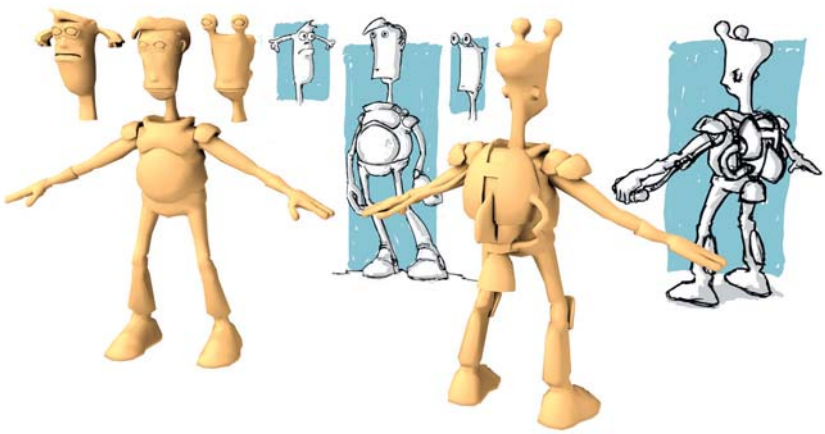
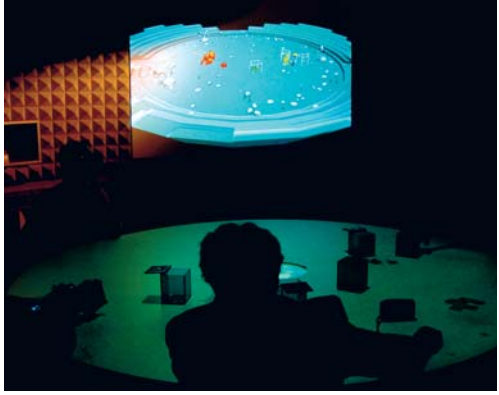
Gulliver's World

Gulliver's World thematicizes the relationship between virtual and material reality, and the reality that is a blend of these two components.
In conjunction with the 2002 Ars Electronica Festival, *Hidden Worlds*[1] was installed as the first permanent exhibition based on mixed reality technology. The following year, the Ars Electronica Futurelab collaborated with Prof. Hirokazu Kato (Osaka University, Japan) to expand on this research effort and developed *Gulliver's Box*[2] for the 2003 Ars Electronica Center Exhibition. This set-up is also a multi-user mixed reality system, and one that has been confronting visitors from wide variety of backgrounds on a daily basis ever since.
From its very inception, *Gulliver's Box* was conceived as an experimental platform on which new interfaces and approaches to interaction could be tested in a laboratory setting as well as in actual use with the general public. But in spite of the installation being a prototype, *Gulliver's Box* developed into one of the top attractions at the Museum of the Future. Furthermore, the experience derived from this exhibition context led to insights that have made a key contribution to the work the Ars Electronica Futurelab is doing. Motivated by this success, staffers took another long look at the concept and expanded it in several directions.
Probably the most important new feature designed into *Gulliver's World* is that users are no longer limited to preset environments and characters; instead, they are called upon to design the artificial world and its components themselves. This was accomplished by the development of intuitive editors with which the environment can be totally revised and customized anew each time. In dealing with the individual interfaces, users are introduced into mixed reality environments on different levels of interaction.
The visitor's experience begins with the design of the framework conditions through the use of a "world editor" that resembles a classic globe. Here, terrain structures and objects can be selected and freely positioned on or dispersed about the "globe." The editor itself consists of a neutral sphere and a sort of pointer or paintbrush; the contents exist only in digital form and are projected onto the surface. The various types of terrain and objects are each connected with individual characteristics that have a direct effect of the behavior of the characters that populate the playing surface. The characters can be created and endowed with particular qualities at a station especially for this purpose, whereby users have at their disposal additional possibilities to implement action sequences all the way down to small narratives. The third station in this series consists of a 3-D scanner,





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a glob of plastic modeling material and a tool with which the sculptures formed by the visitors can be virtually colored. The digital objects created in this way are, in turn—depending on their form and color—endowed with characteristics that are designed to provoke various reactions on the part of the animated characters on the playing surface.
As in *Gulliver's Box,* the playing surface or stage sits upon an empty round table on which the characters are moved with the help of "Magic Cups."[3] When they approach one another, the animated characters react individually, just as they do to the various different conditions of the environment and the objects in it. The scenery is enhanced by video images that the visitors produce of themselves at a special station in order to then dispatch their own miniaturized likenesses onto the playing surface.
Everything that happens in *Gulliver's World* is tracked by freely positionable cameras that send images onto screens set up in the installation space. A life-size stereoscopic projection enables the user to assume the position of an avatar (a virtual game figure) and thus to move about the playing surface in person, as it were. The user's movements are captured by a computervision system, analyzed, and applied to the movements and behavior of the avatar. In this way, the visitor intervenes directly and in real time in the "playful proceedings" of *Gulliver's World.*
In any case, it will not be until the multiplicity of interaction concepts that are applied in *Gulliver's World* and the complexity of the interplay of user-triggered actions with the dynamics inherent in the programmed elements are actually put into use in a real-life exhibition situation that it will become evident which correlations emerge from this experimental array. And, once again, actual experience with *Gulliver's World* will flow into the ongoing research work being done at the Ars Electronica Futurelab in an effort to some day be able to declare obsolete the debate over the boundaries between concrete and virtual reality.

Text: Pascal Maresch. Translated from German by Mel Greenwald

1 See "Hidden Worlds" in *Unplugged – Art as the Scene of Global Conflicts,* Ars Electronica 2002, Hantje Cantz Verlag, pp. 406-410.
2 See Maresch, Pascal; Lindinger, Christopher, "Gulliver's Box" in *Code – The Language of Our Time,* Ars Electronica 2003, Hantje Cantz Verlag, pp. 326-328.
3 See Kato, H., Billinghurst, M., Poupyrev, I., Imamoto, K., Tachibana, K., "Virtual Object Manipulation on a Table-Top AR Environment" in: *Proceedings of the IEEE and ACM International Symposium on Augmented Reality 2000,* pp. 111–119.

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