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Perceiving architectural structures as augmented reality on mobile devices

The usage of architectural models has long been limited to downscaled haptic models. With the exception of very few, but prominent one-to-one scaled projects, on-site models are not part of the repertoire. A non-existing building and its site are only associated. The perception of imaginative architecture is bound to their location of presentation, usually the architectural office or some exhibitions.

The introduction of computed realities led to the assumption that a virtual world can be complete in its reception while in fact the aesthetic perception is dyed with dispersed technical instructions. Because the computational models are hidden inside machines, the promised more compelling results are only virtual.

As result, the question of whether any spatial perception can occur without prior mental representations of the environment is always addressed so far, as whether spatial perception is mediated through visual perception and cognition, but not any further.

Recent developments demonstrate that new technologies in computation result in other forms of virtual modeling. The combination of "Augmented Reality" and interactive modeling on a cellular phone, as introduced in our system, only gives some indications of the potential and capabilities. While the purpose of our system is of practical nature and the development is focussed on practical goals, it became evident that the ability to react to the spatial aspects of the environment should not be limited to the visual reception.

During our experiments we located a virtual three-dimensional sphere at a specific location on our site. The sphere was rendered as computational drawing and then composed onto images of the real world scene in real time. Thus the user could simply perceive distance by walking around with its mobile phone. The environment, as mentioned before, was no longer substituted by its mental representations.

This opens up new forms of the appreciation of unbuild architecture. Although the objects itself are not real, the distance between them and an observer carrying the mobile device is. The same is valid for the dimensions of the virtual structures. With techniques like "Augmented Reality" in combination with mobile devices and interactive modeling the borderline between virtual objects and the real environment becomes obfuscated. Thus the perception of virtual or unbuild architecture will change.

Keywords: augmented reality, perception, virtual and real objects