# Virtual Space

Virtual worlds (VWs) are digital environments in which individuals, groups, and even organizations interact in virtual, nonphysical spaces. They provide untapped opportunities for current and potential users. In fact, they may be thought of as vast opportunity spaces that only become inviting when users can expect certain activities to be performed there consistently. That is, users like to go to familiar places where they interact either with other users or with virtual objects. While fascinated by such opportunities offered by space, the users still seem to yearn for more bounded places where they can go to conduct meaningful activities.

Virtual world (VW) has been defined as "an electronic environment that visually mimics complex physical spaces, where people can interact with each other and with virtual objects, and where people are represented by animated characters". In most cases, the objects and software they use have been designed to simulate physical places. Focusing on a type of VW, namely the social virtual world, and one popular application, Second Life (SL), a virtual setting built and owned by its users, and thus one that provides support for manipulating an apparent three-dimensional environment.

Many have explored the role of apparent three-dimensional space in allowing users to interact with work tools that are virtual objects. It incorporates spatial concepts that can be applied to create a "place" for users in a VW. In simple terms, space is for humans the sum of all places, whereas virtual place is defined as the perception of bounded space imbued with meaning. The notion of place as the sum of associated mental representations that are created not only through social interactions in a virtual space, but also by manipulating virtual objects. The virtual space and place (VSP) distinguishes among the concepts of space, place, and presence, and seeks to explain their interrelationships.

In sum, new users of a VW must repeatedly manipulate objects in virtual space, exercise the new spatial environment, and interact with the environment (and possibly others) to develop a meaningful place within the VW. These spatially related interactions support the development of a level of abstraction that is subsequently required to operate efficiently in the virtual environment. Through repetitive interactions in the virtual environment, the users become familiar with the VW as they adapt their cognitions about "what a virtual world is." Users who have never manipulated virtual objects or interacted with others in a VW do not have a mental representation of place. They are unfamiliar with it yet must adapt their cognitions to the new environment. Only users who have mental representations of an imagined place can apply their already adapted cognitions of what a virtual world is in using and evaluating virtual objects. It takes less cognitive effort for users who have mental representations of a place, imagined though it may be, to use a virtual object and enjoy its features. Further, by manipulating the virtual objects, the users have a better understanding of the space, enjoy it more, and are less likely to feel frustrated from being unable to navigate in the space. These users will like using the tool more than those users who cannot move the objects easily in the space. Thus, the virtual object is perceived as being more intuitive (i.e., easy to use) and more enjoyable. Hence, users who have a heightened experience of place when using a virtual object find it significantly

easier to use than those who have a diminished experience of place when using a virtual object. Users who have a heightened experience of place when using a virtual object find it significantly more enjoyable than those who have a diminished experience of place when using a virtual object.