

Computer-based simulations as a tool in historical research – state of the art and future perspective

Round Table

Simulations have become an indispensable part of the natural sciences. They are used when real-world experiments are too dangerous, expensive, or complex, or when underlying systems are to be explored. Furthermore, their results provide predictions that have found their way into everyday life (e.g. weather reports or climate forecasts). At least since the 90s of the last century, the topic of simulation has also been part of the academic discourse in the historical disciplines and especially in archaeology. It is striking that although individual applications, such as least-cost analysis, have been discussed and further developed, the general question of the nature of simulation and its added value for research has only been touched upon. Therefore, in this discussion round on simulation technologies in historical research, the state of research on this topic with a focus on the developments until today shall be presented and future perspectives shall be explained.

The following definition should serve as a basis for such a discussion: "Virtual, reproducible experiment written in the scientific paradigm to replicate a process or state. The goal is to model and test complex systems to gain a better understanding of processes and valences of individual factors, as well as predictions that are as close to reality as possible or strong constraints of scientifically possible futures (possibility space)." (Scheuermann 2019) Following on from this, or in contrast to it, the participants in the discussion round formulated their ideas about the added value of simulations in historical research

Motivation

Due to the approaching climate change and the associated extreme weather events, the topic of the precarious relationship between humans and the environment from a historical depth perspective is becoming increasingly important. However, in order to shed light on this issue, appropriate tools are required that enable the reconstruction of historical landscapes from a natural science perspective, and that delimit the scope for human action. Here, simulations seem to be predestined, not least because they were developed in the natural sciences for such scenarios. Thus, it is hardly surprising that in recent years the method has also become increasingly important in broad historical research. Here it is time to enter into a methodological debate about what exactly simulations are, what added value they possess, and where limits are set for them in the cognitive process.

Target Audience

The intended audience ranges from specialists in the field of simulation technology to an archaeological audience and an interested public.

Keywords

#simulation #technology #methodology