Foreword

More than two millennia ago on the shores of what we now call Turkey, Heraclitus of Ephesus wrote: "You cannot step twice into the same river."

Heraclitus was a philosopher, and although the city in which he lived remained relatively unchanged for 500 years, he argued that existence is a state of constant flux. Nothing remains constant.

How much more apt, then, is Heraclitus' epigram today, when in less than three decades, computers more powerful than those that once sent the first humans to the moon are available in the pocket of any teenager with a cell phone?

Not all changes are equal, however. A river is different from moment to moment, but each molecule of water is much the same as the next, even if their exact position and velocity change. The shape of the river shifts over time, but its motion still obeys the same basic laws of physics. On the other hand, a car is not just a horse-drawn carriage that goes faster, and the printing press did more than just make copies of the Bible.

The central question behind the essays in this volume is thus critical, urgent, and enduring. In the face of dramatic technological change, few doubt that computers have a role to play in preparing young people for a future where the norm is continual change: in how we work, how we entertain ourselves, how we make civic decisions, and how we take care of our own bodies.

But do computers fundamentally change how we think about education? Is the psychology of computer games a new field or merely an extension of existing ideas into a new medium? What lessons of the past should we carry forward as we face the future?

The field of the Learning Sciences is relatively new, but it builds on a long tradition of research in education. The remit of the learning scientist is to understand the particular forms of cognition that take place when people develop skills, capacities, and habits of mind that matter in the world—when they grow to be more full participants in the world around them. The Learning Sciences exist at the intersection of individual development, social interaction, and the technologies and systems in which and through which learning takes place.

The study of games and simulations has an even longer pedigree, perhaps because of the close association between game theory and economics, war, and politics. Film and popular media more generally have similarly been subjected to extensive examination, again because of their commercial and cultural impact. We understand a great deal about the mechanics of the cinema and of games.

With all of this knowledge of the pieces, though, we have yet to solve the equation:

Learning Theory + Game Theory + Media Theory = ??

At this early stage in the development of a framework for thinking about games and cognition, the discussion and debate are lively. Questions of definition abound: What is a game? What is a computer game? What is the difference—or is there a difference—between a learning game and an entertaining game? Are games just interactive movies? Are computer games just board games played on a screen?

Is learning with a computer just learning with a particularly smart—or particularly literal-minded, or particularly patient—teacher or peer?

Different authors in the chapters that follow come at these questions from different directions, from different perspectives and theoretical backgrounds. The answers they suggest point to different paths of development, different hypotheses to explore, different implications for the future of games and of learning. That is the nature of science and of scholarship, where theoretical concerns and frameworks generate empirical examinations that show which lines of reasoning are the most productive.

Perhaps computer games are a new kind of cognitive activity, best understood as a novel and unique cultural form requiring new theories of cognition. Or, perhaps they are better understood in terms of existing ideas about learning, games, or media.

The value in investigating such issues, ultimately, is to ask: What next? What does each perspective imply for future research? How can we continue the discussion in a more informed way as the field moves forward?

In grappling with the relationship between games and cognition, this volume captures a moment in time when a field collectively pauses to take stock, and individual researchers and practitioners reflect on the decisions they will make moving forward.

It is a moment to ask whether we are stepping again into a river—and if so, which one?—or whether we are leaping into truly uncharted seas.

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