

A person wearing a white and red VR suit is seen from behind, standing on a dark, textured floor in a virtual industrial setting. The background features metal railings and a wall with vertical panels. A single orange traffic cone is visible on the floor to the right. A large, semi-transparent, multi-colored shape (red, orange, and blue) is overlaid on the center of the image, containing the title text.

# VR and the Battle for Truth

by Basem Aly



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## **VR and the Battle for Truth: A Cross-Disciplinary Approach to Reflective Creative Development**

“VR and the Battle for Truth” is a course in which students address creative programming and development critically, producing artworks (including digital and analog games as well as AR and VR artworks for multiple platforms) that analyze, manipulate, and deconstruct crucial social systems. Lessons and student-directed explorations into critical theory and reflective writing inform investigative art-making. While the class focuses on technologically enhanced artworks and experiences, the critical analyses and inventive negotiation of systems described here can also be applied to other modes of creative production. The assignments listed here (for the first and second weeks of class) provide a foundation of creative exploration for the students, and a framework with which they can experiment in the media and technologies taught throughout the class, regardless of their prior experience.

### **First Day of Class**

The first class is about introductions and meetings, including the following questions:

1. What's your major/ concentration?
2. What time period & location would you most like to visit?
3. What creative activity do you most enjoy doing?
4. What subject has always fascinated you, but was too intimidating to learn?
5. On what basis do you decide whether something is true? What strategies or approaches do you use to make up your mind?
6. What types of evidence or arguments do you find most convincing?
7. How would you describe yourself in a few words?
8. What ideas or projects would you like to explore involving VR/AR or “the battle for truth?”

I ask students to each use a large sheet of paper to write a definition of VR as they understand it, and to draw a diagram describing VR. Then we pin their sheets to the wall and each student describes their ideas, including how they conceived of them. This isn't a critique but a way to explore recurring elements in our conceptualizations.

The assignment for the first week of class is to read a handout containing about fifty definitions of VR (appended) and pick out the ones they think are most compelling. This allows students with limited VR experience to understand some of the many ways the medium can be approached, and it provides even the most knowledgeable students with new angles. I also ask the students to suggest an assignment for the class that would address at least two of the learning outcomes I wrote on the board at the start of class (see full assignment below), and I promise a prize for any suggestion that we end up using in class. Essentially I am asking students to



imaginatively inhabit the role of teacher; the "gamification" of the assignment by use of the prize doesn't tend to produce competitive pressure to win but does foreground the role of externalized reinforcement.

## Second Day of Class

I begin the class with a very quick overview of Unity3D, the game design program, and show them how to build simple 3D environments with first-person controllers. A few students have had minor technical problems but for the most part they all get it working and are pleasantly surprised how easy it is to get a simple working demo from scratch. This simple technical introduction results in a workable prototype and gives students positive feedback about their capabilities to produce something interesting even as beginners.

We switch gears and I ask the students when VR was invented. After lots of tentative guesses of various dates, I give them a hint that I was thinking of "by far the cheapest form of virtual reality." Sometimes a student will come up with the answer I'm looking for: *dreams*.

We talk briefly about dreams, comparing and contrasting them with technological VR, and hit upon the question of control. Usually in dreams the person doesn't realize they're dreaming and has little control, except in the case of lucid dreaming. A few students know what that is, and the others are interested. I give copies of a book about lucid dreaming to students who thought of the connection between dreams and VR, and to a few others who express interest.

The second assignment calls for the students to write a 1,500 word draft of a story drawing from the questions from the first day of class. Students are asked to imagine themselves in the historical time and place cited in their second answer, as if it were a dream. In the dream, they're already experts in the subject that's always fascinated them (question 4) and they're struggling to learn the creative activity they enjoy doing (question 3). These visualizations are designed to promote a growth mindset as they realize that their current state of being is one among many possible states. After this assignment, many students report that it encouraged them to reimagine their preconceived ideas of what is most meaningful for "the good life."

Students are asked to do a bit of research and describe a specific task or process they're doing in the dream relating to question 4, and they'll also describe the difficulty their dream selves experience when trying to do the creative activity from question 3. If either of these tasks are anachronistic or don't fit into their chosen time period, they'll describe how they're inventing or discovering the task.

As an example, I mention the first computer programmer, Ada Lovelace, who demonstrated symbolic processing well over 100 years before computers existed. This is a good opportunity to talk a bit about diversity and the gender imbalance in computer science and the fact that the word *computers* used to refer to people-- mostly women-- who did calculations by hand for all sorts of astronomical calculations, as depicted in the recent movie [Hidden Figures](#).



In later lessons I continue to draw from their initial answers, particularly when we get into questions of points of view, embodiment, and how they discern facts from fantasy.

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#### APPENDIX ONE: First Assignment

Choose three definitions from the "Dawn of the New Everything" handout (attached) that you find most compelling, and briefly state why the definitions interest you. Post your responses to the class blog.

Also post to the blog your idea for an assignment that fulfills at least two of the following learning outcomes for the class:

- Connect relevant experience outside the classroom to in-class work.
- See and make connections across disciplines and majors.
- Adapt and apply skills, abilities, theories, and methodologies to new situations.
- Develop a sense of self as a (lifelong) learner, building on prior experiences to respond to new challenges and contexts.

Leave at least two comments on other students' posts. Any assignment the professor decides to use will result in the student getting a \$25 Amazon gift card.

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#### APPENDIX TWO: Definitions of Virtual Reality

From Dawn of the New Everything, by Jaron Lanier

1. A twenty-first-century art form that will weave together the three great twentieth-century arts: cinema, jazz, and programming.
2. A simulated new frontier that can evoke a grandiosity recalling the Age of Exploration or the Wild West.
3. Hope for a medium that could convey dreaming.
4. The substitution of the interface between a person and the physical environment with an interface to a simulated environment.
5. A mirror image of a person's sensory and motor organs, or if you like, an inversion of a person.
6. An ever growing set of gadgets that work together and match up with human sensory or motor organs. Goggles, gloves, floors that scroll, so you can feel like you're walking far in the virtual world even though you remain in the same physical spot; the list will never end.



7. A coarser, simulated reality fosters appreciation of the depth of physical reality in comparison. As VR progresses in the future, human perception will be nurtured by it and will learn to find ever more depth in physical reality.
8. Technology that rallies the brain to fill in the blanks and cover over the mistakes of a simulator, in order to make a simulated reality seem better than it ought to.
9. The investigation of the sensorimotor loop that connects people with their world and the ways it can be tweaked through engineering. The investigation has no end, since people change under investigation.
10. Reality, from a cognitive point of view, is the brain's expectation of the next moment. In virtual reality, the brain has been persuaded to expect virtual stuff instead of real stuff for a while.
11. VR is the most centrally situated discipline.
12. VR is the technology of noticing experience itself.
13. The perfect tool for the perfect, perfectly evil Skinner box.
14. Magic tricks, as applied to digital devices.
15. Instrumentation to make your world change into a place where it is easier to learn.
16. Entertainment products that create illusions of another place, another body, or another logic for how the world works.
17. A general-purpose simulator, as compared to special-purpose ones like flight or surgical simulators.
18. Instrumentation to explore the deep time of nervous system adaptations and preadaptations.
19. Instrumentation to explore motor cortex intelligence.
20. Like lucid dreaming, except that (a) more than one person can take on roles in the same experience, (b) the quality is not as good, and (c) you have to work to program VR if you want to be in control, which you should want. Dreams, meanwhile, are often best if you don't seek to control them. Even Stephen LaBerge seeks to be nonlucid in most of his dreams, since it is in untethered dreams that the brain surprises and renews itself.
21. In comparison to older, grandiose definitions of "nanotechnology," VR lets you experience wild things without messing up the one physical world that others are compelled to share with you. VR is vastly more ethical. It's also not so nutty. We can see how VR will work without weird speculations or apparent violations of fundamental physical laws.
22. A preview of what reality might be like when technology gets better someday.
23. VR is sometimes compared to LSD, but VR users can share a world objectively, even if it's fantastical, while LSD users cannot. VR worlds will require design and engineering effort, and will be best when you are willing to make the effort to create and share your own experiences. It will be like riding a bike, not a roller-coaster ride. Although there will be thrilling VR experiences, you'll always be able to take off the goggles. You won't lose control. VR will typically be "lower quality" than reality or dreams or psychedelic trips, although it will be up to you to hone your senses so you can notice the difference. LSD is ready now and VR won't be really good for a while. It might be more for your kids or their kids.
24. A cybernetic construction that measures the probing aspect of human perception so that it is canceled out.
25. A media technology for which measurement is more important than display.



26. A media technology that prioritizes stimulating the cognitive dynamics by which the world is perceived over accurately simulating an alternate environment.
27. A medium in which interactive biological motion is emphasized.
28. The digital medium that fights the hardest against time.
29. A cultural movement in which hackers manipulate gadgets to change the rules of causality and perception in demos.
30. A technology in which internal data and algorithms are intelligible as transformations of real-time, point-of-view human experiences and thus inspire curiosity to look under the hood.
31. You are having interesting experiences but look preposterously nerdy and dorky to onlookers.
32. The technology that is often misrepresented as being able to make so-called holograms float impossibly in the air.
33. The ultimate media technology, meaning that it is perpetually premature.
34. Instrumentation that might just enable telecommunications with honest signals someday.
35. Training simulators for anything, not just flight.
36. A way to try out proposed changes to the real world before you commit.
37. Instrumentation to present data as lucidly as possible.
38. The ultimate way to capture someone inside an advertisement. Let's hope it is done as little as possible.
39. Digital implementation of memory palaces.
40. A generalized tool for cognitive enhancement.
41. A training simulator for Information Age warfare.
42. Digital puppetry.
43. A new art form that must escape the clutches of gaming, cinema, traditional software, New Economy power structures, and maybe even the ideas of its pioneers.
44. The term you might have used in the 1980s if you were partial to those weirdos at VPL Research.
45. A person-centered, experiential formulation of digital technology that hopefully inspires digital economies in which the real people who are the sources of value aren't ignored.
46.  $VR = -AI$  (VR is the inverse of AI).
47. The science of comprehensive illusion.
48. A shared, waking state, intentional, communicative, collaborative dream.
49. The technology that extends the intimate magic of earliest childhood into adulthood.
50. A hint of the experience of life without all the limitations that have always defined personhood.
51. The medium that can put you in someone else's shoes; hopefully a path to increased empathy.
52. A way of using computers that suggests a rejection of the idea of code.