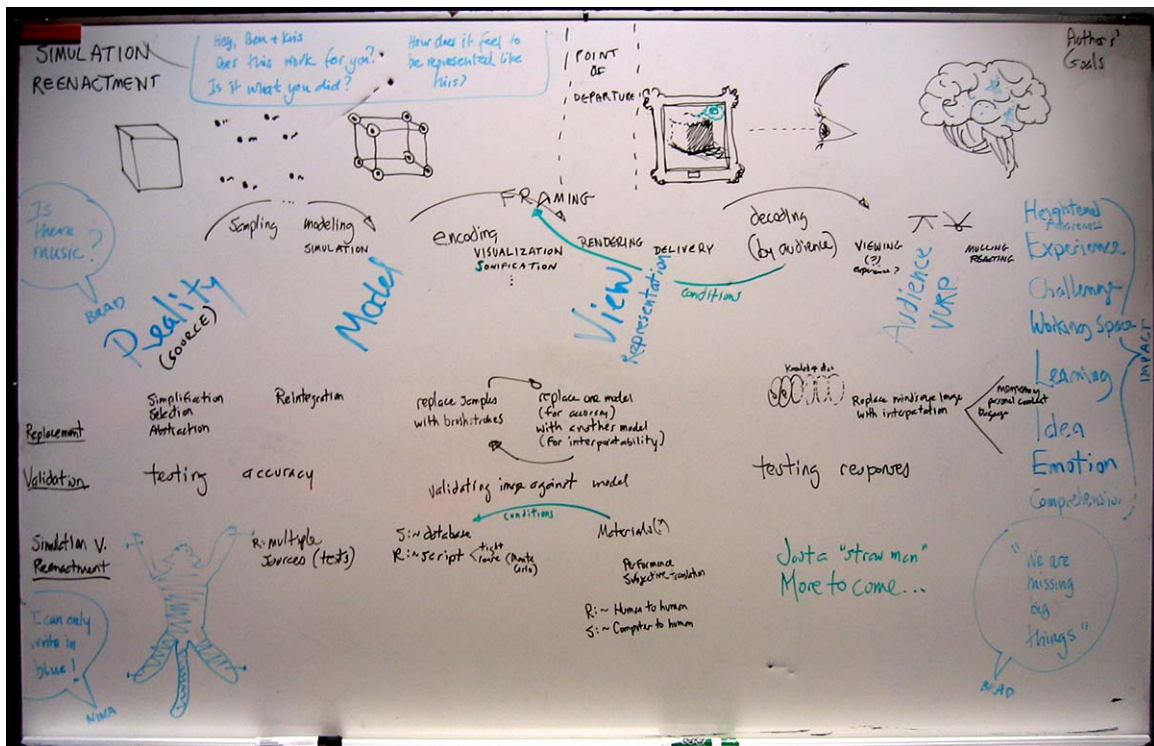


A Simulation/Reenactment Production Diagram (first draft)

Spanning the transition from April to May of 2004, Sara Diamond directed a summit meeting at the Banff New Media Institute entitled "Simulation and Other Re-enactments: Modeling the Unseen." The final days found us all with minds on fire, fueled by the rich variety and profound depth of most of the presentations. We relished the chance to burn some of our impressions and findings more deeply into our memories, and ad-hoc workshop groups were assembled to allow us to do so. I suggested trying to spatialize the process since that's my strength, weakness, and crutch in trying to understand such multifaceted systems, and several brilliant people—eight or ten in all—set off into the perfect atmosphere of the Canadian Rockies; a mixed caravan of chairs, a whiteboard, people, and tightly clutched markers we hoped to use to organize our scattered thoughts and fix them for ourselves and posterity. That would be you, gentle reader.

We got as far as the Kiln, a sandwich shop and general store a good thirty meters from the door of the studio where we heard one another's presentations, and set up shop. I was secretary to the group, and this photo records our common understanding of the Simulation/Reenactment process, though if it is overly formulaic and lacks details you can blame my intentional simplification (we had but two hours) and love of practical abstraction. We had a goal: capture the essence of how one might go about creating a simulation or reenactment; make it understandable; leave out no important step or reference; make it a guide that could be used for others about to embark on such a project. Here's a description of our thirty-meter start on what's likely a thirty-kilometer journey. Be kind as you read it—or better: criticize, enhance, and modify it so it can blaze a trail (how's that for justifying my mixed metaphors?) for the scientists, artists, engineers, and designers who may follow us.

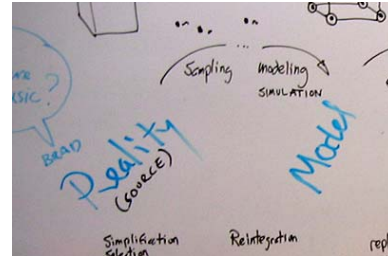


There are three main horizontal stripes to the diagram; images across the top, big words and arrows across the middle, and smaller words in a three-tier grid across the bottom. They are aligned vertically in space to

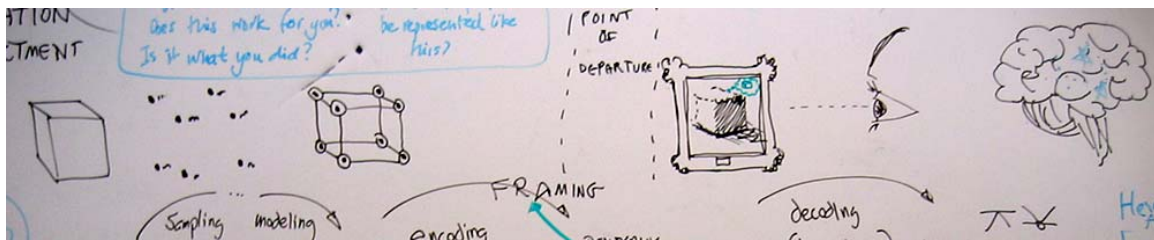
suggest their alignments in meaning. I'll start in the middle stripe, since it's perhaps the most concrete and basic; it names the classes of entities involved in the process.

What's a simulation or reenactment? It's a copy of the world. (Yes, we're taking a positivist stance to start with, but we try to cloud it with enough interpretative variability later that you can lose the capital-R "Reality" on the left side of the flow if your religion calls for it.) So what about that Reality? Just above the large-word entity categories in the middle stripe hover some process words, mostly ending with -ing and arced overhead with arrows. Gotta have arrows in any conceptual flow diagram. Here they try to expose the transformative processes that allow one to generate something in each successive large-word category.

Thus (reading backwards) to create a Model one has to do *modeling* (a less than useful observation...), after one has *sampled* Reality. (Note that Reality, the subject of the simulation/reenactment is here perhaps mis-subtitled "source" since each step along the way provides a new opportunity to inject meaning, and all the meaning embodied in the project at the end can rightfully be called source material.) Our choice of the word *modeling* as the process needed to create a Model may have reflected a tautological and spare vocabulary, but it did provoke us to specify examples of our lofty -ing process names, and they mostly live just under those names, drawn in all capital letters. One sort of *modeling* is SIMULATION.



One sort of *sampling* is SENSOR-BASED DIGITIZATION, but we didn't think of it on the spot. A lot of that happened as helpfully recorded by Nina, a welcomed subversive element from another workshop group studying and intent upon Disruption. I mentioned that "we are missing big things" and that aside was immediately made part of our presentation at the lower left corner of the board. She kindly kept her "disruptive" notes productive, spatially marginal, and blue—keeping at least the sense of a larger frame of reference firmly in view as we tried to capture the universe of process. (But is an embraced disruption truly a disruption or just a subtler tool of manipulation? Hmmm...)

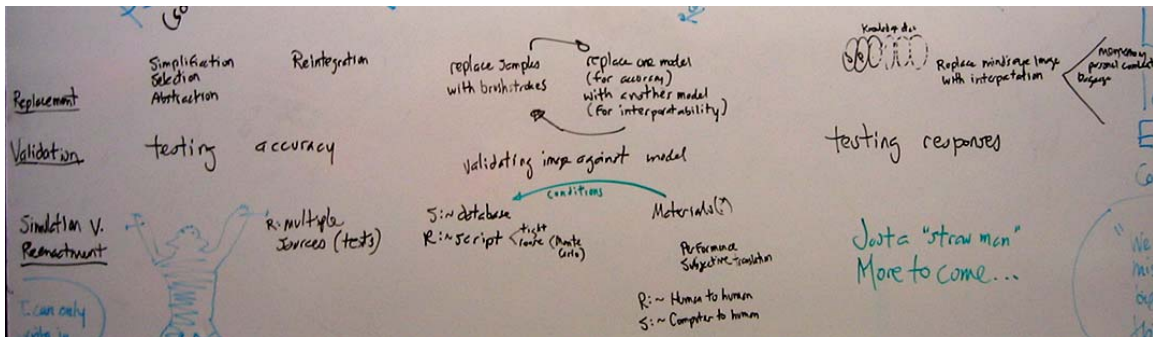


But back to our core story—we need a picture before we can frame it. A good story perhaps even *needs* pictures, according to some ("And what is the use of a book, thought Alice, without pictures or conversation?") so I scribbled some iconographic visual landmarks across the top. Reality, that square solid immutable noumenal plinth we assume exists out there somewhere, became a cube in my mind and on the whiteboard. Partially because it's the one thing I can sketch most recognizably. And partially because it's a square solid. So our simulation/reenactment pipeline became the cube's journey, starting in Reality and ending as a fleeting (star-shaped?) spatio-temporal pattern of nerve activations in a primate brain. But I'm getting ahead of myself. Start again.

Reality gets *sampled*. The cube has its key features identified and recorded. (The tiny scribbles next to each dot are meant to represent $a=\{0, 0, 0\}$, $b=\{1, 0, 0\}$ (hidden in our haste and desire to create a simplified and readable 3D image), $c=\{1, 1, 0\}$, $d=\{0, 1, 0\}$ and so on. You get the picture.) After it's sampled it's

reconnected (and b reappears as an anchor of the line relationships a-b, b-c, and b-f), thus creating the cube model illustrated by the tinker-toy schematic representation of connected points above our large-word Model. Not so fast, you might say, a lot of choices go into these two steps and they can support or dramatically impede the progress of finishing a project. Well, we said not so fast ourselves and tried to capture some of these critical points of inflection in the bottom stripe on the whiteboard.

The bottom stripe is our embryonic critical reflection on the whole simulation/reenactment pipeline. It has only three frameworks with respect to which we tried to “unpack” our representations. (Love the way this critical jargon renders simple truths in Byzantine and almost undecodable language—where’s Beckett when you need him?) The top framework in this stripe, Replacement, reflects a participant’s realization that while we can follow an idea through the process, it’s constantly being replaced by different versions of itself. A wonder we can follow it at all! And in fact a sad failing of many projects may be the very fact that we can’t, perhaps as a result of not consciously choosing a suitable way to accomplish the replacement. Here we “foreground” the process (okay, I’ll stop...) by listing simplification, selection, and abstraction. Each step of which must be selected mindfully, with careful attention to the nature of the subject and the purpose of the project as a whole.



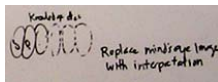
How might one select the methods of simplification, selection, and abstraction involved in sampling? What are some appropriate criteria? How can we validate our choices? Well, we only got around to providing one casting of this essential step: the admittedly science-y engineering-y sounding “validation.” I plead guilty to being limited in my own jargon here, but I believe that the concept of validation need not only concern itself with “testing accuracy” the type of validation I listed to span the processes involved in sampling and modeling. After the fact, I can imagine completely opposite criteria coming from an esthetic need: a trivially labeled “inaccuracy” which hides the central themes of distortion and the type of distortion that might serve an expressive purpose—think of ultra-wide-angle lenses, infrared film, or Seurat’s painted dots. (Though those dots may fit more appropriately at a later point in our pipeline—only Georges could have told us if he actually saw those dots or if he created them post-impression.)

So far we’ve replaced reality with samples, the next replacement created the model by re-integrating the samples. This still leaves us with a sort of raw-material, a simplified description of the subject. The next step is riskier—we want to encode the subject in a way that will make it more readable. Ah but here we might have to throw all pretense of scientific objectivity to the wind: to usefully encode our subject we need to take into account not only the purpose of the project, but the viewer’s abilities—even their state of mind when looking at the finished piece. Lions and tigers and bears; oh my. Undaunted, we tried to at least schematize this encoding process, and the later decoding by the viewer. We hoped to keep ourselves from being eaten by these issues by listing a bunch of examples of widely varying large-word Authors’ Goals at the end (from aesthetic Heightened Awareness and Experience to the more quotidian Comprehension). But back to encoding.

We list a couple of example encoding processes: VISUALIZATION and SONIFICATION, and refer to a third (PAINTING) in the Replacement row below. Honestly, I don't think we addressed whether RENDERING is part of encoding or after it, part of the DELIVERY process. But we know they all fit right around here. And the physical act of FRAMING to do that delivery nicely illustrates the creation of a View—a representation of the subject. Our cube is only represented in a sketchy/scribbly view at this point, but good eyes might be able to pick out the fat that it's still thinking of the archtypical or modeled cube that was rendered. And the frame of authority makes it worth somebody's time to actually decode.

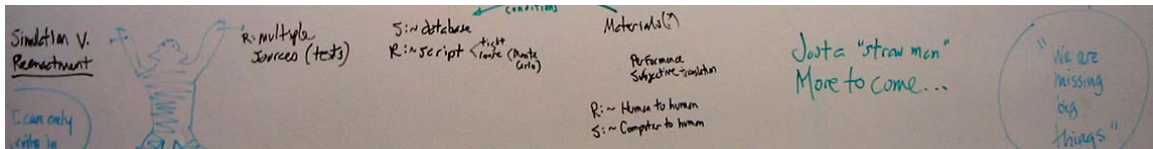
Who's that "somebody?" the Audience, or VURP (an encompassing but embarrassingly non-euphonious acronym standing in for Viewer, User, Reader, and Player all at once). Excuse me. And what might they do in their decoding process? Well, while VIEWING they might be MULLING and RELATING, but zillions of higher-level processes of understanding could be listed here. We didn't have zillions of units of time or room on the whiteboard, so we resorted to synecdoche—indicating the whole by mentioning parts—a process of simplification that is valid to use here since the whole blasted whiteboard here is a simulation of the process of simulation, of sorts.

But as a last-ditch effort not to lose ourselves in meaningless and self-referential recursion, I snuck in a tiny version of my own "Knowledge Acquisition Pipeline," marker-bearing secretary's privilege. Aha—caught!



Yes, I do tend to like building simplified models. That other pipeline tries to abstract the workings of the human brain/mind as a target for information visualizations—those vertical ellipses group stages of mental processing from *sensation* (e.g. light vs. dark) to *distinction* (lines) to *segmentation* (objects) to *recognition* (remembered things) to *interpretation* (signs & symbols) to *association* (letters, words, paragraphs, books), and finally ending at *comprehension*. A rather dry way to slice up the brain, but useful if the abstraction is done with a purpose—and my purpose is to let designers and engineers know just enough about the incredible complexity of the mental processes we go through in creating meaning that they can make more decodable images. But that's another story.

This one ends with the whole group having created our own abstraction of the simulation/reenactment process, but wondering where the two might diverge. So in our last few minutes—resisting repeated calls to please come home to the studio by Sara's helpers—we scribbled out a few places where the two processes are decidedly not the same. We did this in the bottommost row in the bottom stripe—not because it was unimportant, but because we ran out of space (as I fear you may be running out of patience with my densely tangential retelling of the admittedly non-linear story).



We thought that at the sampling stage reenactment might use several sources (subjects); e.g. the two texts used by presenters Kris Cohen and Ben Coode-Adans in their reenactment of the Everest tragedy. And when encoding, simulations might use databases that are presumed to be accurate, or at least attempts are made to hew to their authority rather than some reenactments' use of scripts that allow and even encourage reinterpretation by performers. And at the viewing stage reenactment is perhaps a human-to-human endeavor at its core, while simulation might be computer-to-human, or aspire to be a direct model-to-human replacement.

And this sparse last sampling of divergences—using, as it does, some language and categories from our little pipeline—might justify the happy hours we spent in creating it. It seemed to be useful at the time, and if it is useful to you we'd love to hear about it. Perhaps Banff can even post critiques, applications, rebuttals and

enhancements. Send them along, anyway, and maybe we'll end up with more than this straw man, who seems to me to be only dozens of steps along our journey to the intellectual peaks we all glimpsed in this lovely retreat in the Banff mountains. I think I speak for all of us when I express my deep gratitude for being introduced to these people and ideas, and for the opportunity to try to organize them in some useful way.

W. Bradford Paley

New York, June 16, 2004