My So-Called Second Life

Your avatar can look any way you want it to, up to the limitations of your equipment. . . .
You can look like a gorilla, or a dragon, or a giant talking penis in the Metaverse.

—Neal Stephenson, Snow Crash

Five minutes before the scheduled event, a few last-minute arrivals trickled into the amphitheater. It was a diverse crowd: men in jeans and casual dress shirts and women in sundresses or workout gear shared space on the benches with heavy-metal rockers, punks with Mohawks, fanboys (and girls) in full steampunk regalia, and the occasional pixie, troll, or elf.

They were all eager to hear author Seth Mnookin chat about vaccines, autism, and denialism, the subject of his book The Panic Virus with MIT science writing professor Tom Levenson. As the two men took the stage, Mnookin’s clothes suddenly vanished and he stood stark naked at the front of the amphitheater. There was a brief moment of shocked surprise among the onlookers before wry amusement set in. Meanwhile, the organizers scrambled behind the scenes to get Mnookin’s clothes back on.

No, this was not Mnookin’s worst nightmare, a rehash of that common anxiety dream of showing up naked in class that most of us have had at some point in our lives. The event was taking place in Second Life, a virtual world in which people create personalized avatars and use them to navigate and interact online. There are virtual shops, dance clubs, museums, research groups, churches, and party-friendly beach cabanas, as well as “live” events. This was Mnookin’s first experience in Second Life, and he was unfamiliar with the user interface. He simply hit the wrong command, and instead of making his avatar take a seat, he made his clothing disappear. After a few more clicks, the clothes reappeared, and the momentary awkwardness subsided. The rest of the event proceeded without a hitch.

Launched in June 2003 by Linden Labs, Second Life now boasts 15 million users.* The numbers are even more eye-popping when you include other virtual spheres. The British research firm KZero estimates that a staggering 1.8 billion people worldwide have avatars in virtual worlds, and just over 1 billion of those are between the ages of five and fifteen. “Children are growing up immersed in this new paradigm,” said Jacquelyn Morie, who studies the effects of immersive technologies and virtual worlds at the University of Southern California’s Institute for Creative Technologies. “They will never know a life that doesn’t include virtual worlds.”
where they could not put on new avatars just as easily as we put on outfits.”

Just what is so appealing to so many people about having a second life? I suspect it has to do with the high degree of control available to “residents” to shape their image in the virtual world precisely to their liking—far more than any of us can exert in the so-called real world. Morie, for one, balks at the distinction between real and virtual worlds, arguing persuasively that Second Life is every bit as real as your offline life. In your first life, you might be a pudgy schlub with a boring job and cramped apartment who drives a battered Toyota, but log into Second Life and you instantly become good-looking, fit, well dressed, and wealthy enough to tool around in a sleek Ferrari—when you’re not flying, that is, or instantly teleporting from place to place.

Yes, you can defy the laws of physics. You can even use the built-in “camera” to zoom in and out and rotate your perspective on the virtual space. Perhaps a better question might be why more people don’t lose themselves in Second Life. “Some people actually find themselves in Second Life,” said Sherry Reson, producer of a Second Life webcast series called Virtually Speaking Science.*

Everything in Second Life is user-generated with the three-dimensional modeling tools and scripting language built into the software. There is a bona fide economy, in which residents can exchange “Linden dollars” (the official Second Life currency) for goods and services: clothing, hairstyles, houses, furniture, property, artwork, pets, and specific gestures and animations. Dancing is one of the most popular activities, followed by having virtual sex. In addition to genitalia, you can purchase a wide range of positions, kisses, embraces, thrusting motions, and “adult accessories.” Presumably those residents who engage in these acts derive satisfaction from the experience, even if the user interface is a bit clumsy and awkward. Indeed, for those with physical disabilities, virtual sex may be the only available option, as Reson discovered in discussions with residents from those communities. “It taught me that the opportunities afforded for arousal and release [in Second Life] are life changing and life sustaining,” she said.

My own activity in Second Life is relatively mundane. I joined when my spouse—whose dashing avatar is named Seamus Tomorrow—started giving occasional physics lectures as part of the Meta Institute for Computational Astrophysics (MICA), a nonprofit science group that held public events in Second Life until the program ended in 2012. We have a modernist-style, sparsely furnished house, and a virtual feline named Miss Kitty who scampers around with her toy ball and purrs when we pet her. Once, out of curiosity, we used the virtual camera to zoom into the interior of a nearby house, only to find a naked avatar couple copulating enthusiastically: “Ack! Zoom out! Zoom out!” We genuinely felt as though we’d invaded their privacy. That is why the built-in camera has been aptly dubbed the “PervCam.”

The reaction to Mnookin’s naked avatar, or to stumbling upon our virtual neighbors having a bit of sexy time, is “not just a cold cognitive thing,” said Matthew Botvinick, a neuroscientist at Princeton University. “There are all sorts of motivational and social dimensions to self-representation. If something bad happens to your avatar in a social context, then that will engage the same neural circuitry that is engaged when something happens to the actual you in a social context.” Several years ago, Botvinick participated in an experiment in which researchers inflicted mild pain on people in an fMRI scanner. The subjects’ responses made for a sound study, because the part of the brain activated by pain is well established. The researchers then asked the same participants to view videos of others experiencing pain and found that this activated the same brain regions. The extent to which this occurred depended on how closely they identified with the other person.

Avatars are a virtual extension of the self. Growing evidence suggests not only that we bond psychologically with our avatars, but that those bonds are stronger the more similarities we share with our online selves. As technology continues to advance, one day that bond may become a physical link as
well. Technically, an avatar is just an object, and only a pixilated one at that. But the objects with which we surround ourselves can nonetheless telegraph a great deal about who we are.

**Tokens and Totems**

“Surely you don’t believe in that nonsense.”

It was intended as a rhetorical question, uttered with an implied wink and a smirk, conveying the unspoken assumption that, as reasonable human beings, we would both agree on this. The speaker, an ardent skeptic who prided himself on his rational approach to life, meant no offense. He was merely surprised to find that I, a lover of science, tote a battered key chain embossed with my astrological sign: Taurus. I’ve carried it with me for twenty years, like a personal totem.

It was perfectly reasonable for my skeptical inquirer to assume my key chain says something about me. He was employing cue utilization. We all make snap judgments when we meet new people, relying on certain cues to make assessments, and those judgments often can be accurate, at least in broad strokes. Physical attractiveness, race, gender, facial symmetry, skin texture, or facial expressions and body language are all factors that contribute to how we form our impressions of people. Those cues may also include our “stuff”: our choices in fashion, jewelry, tattoos, and key chains all provide clues about who we are, whether we intend them to do so or not.

Social psychologist Sam Gosling is very interested in checking out our stuff, but not in a creepy, voyeuristic way. He has studied how we fill our spaces with material things, particularly offices and bedrooms, to better understand what those choices say about our personalities. For instance, certain items function as “conscious identity claims,” things we choose based on how we wish to be perceived by others—the posters, artwork, books, or music we display, for example, or the tattoos we ink onto our bodies. We also fill our personal spaces with “feeling regulators”: photographs of loved ones, family heirlooms, favorite books, or souvenirs from travel to exotic locales—anything that serves to meet some emotional need. “If you are missing someone, you carry a photo in your wallet, or propped up next to your computer, or you value a necklace that somebody gave to you,” Gosling explained. “You do these things to connect to someone as a sort of proxy, until you see that person again.” Finally, there is what he terms “unconscious behavioral residue,” cues we leave behind in our spaces as a result of our habits and behaviors. A highly conscientious person may alphabetize their books, while the books of someone who is less conscientious would be more haphazard and disorganized.*

All these cues, taken together, paint a fairly accurate rough sketch of the personality behind them, even those that are not chosen consciously. Gosling’s research showed that it is possible to scan the objects in someone’s personal space to make indirect inferences about certain personality traits. Those people who score high on openness to experience on the Big Five personality inventory tend to fill rooms with a greater variety of books and magazines, while those who score high on conscientiousness tend to have clean, well-lit, meticulously organized bedrooms.

However, Gosling cautions that this is an imprecise method; we can misread those cues. We may realize a given item is significant in some way to the owner, but we may not infer correctly the statement that it is making. Context is key. Position can help distinguish whether an object is serving as an identity claim or a feeling regulator. If you walk into someone’s office and there is a wedding photo on the desk facing outward, so it can be clearly seen by visitors, that is likely an identity claim. However, if the same photo is turned instead to face the owner, then it likely functions as a feeling regulator, to remind him or her of a loved one.
That is what happened in my encounter with the skeptic who scoffed at my choice of key chain. It does say something about me, but he interpreted it as an identity claim, when in fact it is a feeling regulator. There is a story behind that key chain, or rather, a singular person by the name of Nick. We became friends as eager young twentysomethings in New York City, when we both ended up working briefly for the same legal publisher. Nick was smart, sarcastic, and flamboyantly funny, a natural raconteur who could hold a roomful of dinner guests in rapt attention, usually doubled over in laughter while he recounted his decidedly Rabelaisian adventures as a young gay man in Manhattan. He loved good food, good clothes, good music, good sex, and never shied from offering to buy the next round of drinks.

But this was at the height of the AIDS epidemic, when an HIV-positive diagnosis was akin to a death sentence. Over the course of three years, I watched my friend wither away to a shadow of his former self as the virus ravaged his immune system, although his wicked sense of humor and big heart remained intact. Nick even helped me with a last-minute move on a hot summer day after I was evicted from what turned out to be an illegal sublet, stopping every now and then to dramatically wipe the sweat from his brow and announce, “I shouldn’t even be doing this, you know. I have a terminal illness!” Then he would grin at my guilty expression and give me a hug to let me know he was just teasing.

Nick’s own housing situation was even more precarious: unable to work as his illness progressed, and unable to sign a lease with a reputable landlord, he relied on local city charities and the tight-knit gay community to snag a cluttered, roach-infested grungy basement apartment in Chelsea whose prior occupant had died. It was rent-controlled, and thus dirt cheap, but the stench of death still hung over the place—likely due to the decaying rodent corpses trapped behind the sagging walls. Nick hated it and found it unbearably depressing. Soon he was back in the hospital, and when I went to visit, he broke down in tears over a game of cribbage and begged me to help him find another option: “Please—I just don’t want to die there.”

Quite frankly, I didn’t want to do it. I was barely scraping by myself, and we had only just gotten him settled in that dank basement. It was exasperating to have to start the housing search all over again. But how could I refuse my friend just because it would be inconvenient? It took a good bit of bureaucratic wrangling, but I found him a small sun-filled studio on the East Side. While purchasing a few last-minute bathroom accessories, I spotted a bright metallic red key chain for sale at the register, embossed with Nick’s astrological sign: a fellow Taurus. It seemed like the perfect trinket to hold the key to his new apartment, a ray of hope after weeks of darkness.

Eight months later, Nick was dead. I’ve carried that key chain ever since, the only thing I have left from his long-dismantled life. My totem says nothing about my belief in astrology, although you might be forgiven for making that assumption. To me, it’s a token of the beloved friend I lost—the very definition of a feeling regulator—and a constant reminder not to take my friends for granted, no matter how busy I become, because they might be gone sooner than I think. It is also a symbol of the most valuable thing I ever gave to Nick: a decent place to die.

Every personal item has a story behind it, at least if it holds any real meaning for the owner. Cultural historian Mihaly Csikszentmihalyi has argued that we are attached to old photographs, family heirlooms, or seemingly insignificant trinkets precisely because they keep us grounded in the present, and help us remember the past. In that sense, the objects with which we fill our homes play a vital role in how we construct our sense of self. Like Gosling, he lumps such totems into three distinct categories. There are objects that serve as symbols of status, or of good taste. There are objects relating to what he terms “continuity of self” that help construct memory and personality. Finally, there are objects of relationships, like my Taurus key chain, that link us to our loved ones and broader social networks. “Without external props, even our personal identity fades and goes out of focus,” he writes. “The self is a fragile
I might quibble with Csikszentmihalyi’s insistence that the self is a fragile construct—on the contrary, the self strikes me as surprisingly robust despite, or perhaps because of, its remarkable fluidity—but his insights into how we infuse material objects with meaning fall right in line with Gosling’s research. Gosling found that this phenomenon carries over into our online identities as well: one can infer quite a bit about somebody’s personality by perusing his or her Web site, blog, or even an e-mail address. (Many Internet hipsters still sneer at those who use AOL or Hotmail addresses, for example.) We form very different first impressions of someone whose e-mail address is just their first and last name, versus someone who uses the handle “sexyspacekitty69.”

Nowhere does this become more apparent than on the social networking site Facebook, where we create detailed personal profiles of our likes and dislikes, share links, play games, take quizzes, and post personal photographs. As of 2011, there were more than 600 million active users in the United States alone. Increasingly, for many of us, our Facebook page is where we keep our stuff. Your Facebook profile is one gigantic identity claim, whether you realize it or not.

Gosling drew his conclusions from two related studies. In the first, participants took the Big Five personality test, and those results were compared to the so-called virtual residue (similar to Gosling’s behavioral residue in the object study) strewn throughout their respective Facebook profiles. Analysis revealed significant correlations between the self-reported Big Five test results and certain personality traits suggested by the subjects’ Facebook profile pages. Extroverts had the most friends and interacted far more frequently than introverts, while those focused, achievement-oriented conscientious types used the site the least. Those with low scores on conscientiousness were far more likely to use Facebook to procrastinate.

You might argue that both the answers to the personality tests and the profile pages were generated by the participants themselves and hence lacked objectivity. So in the second study, nine undergraduate research assistants looked at only the archived Facebook profiles of the study participants and rated their personalities based solely on carefully selected cues: number of photos and photo albums, number of wall posts, group memberships, total number of friends, and even how many words each participant used in the “About Me” section. Once again, there were strong correlations between the profiles and the self-reported assessments: extraversion correlated with the number of friends and higher levels of online engagement, and openness correlated with the number of friends. It proved much more difficult to draw correlations between the cues found on Facebook profiles and the traits of conscientiousness, agreeableness, and neuroticism; the results were inconclusive.

But the two studies aptly demonstrate that your online and offline identities overlap on Facebook, and your profile does reflect your most easily observable personality traits. The same should hold true for Second Life, another online repository for “stuff”—or as Gosling might say, identity indicators. Many residents amass vast personal inventories of virtual items, which may also serve as totems. Reson, for instance, cherishes a virtual rainbow feather—a gift from a friend and mentor, and her very own pixilated feeling regulator.

At the end of the day, Facebook is just one more tool we use for self-verification: we want to be known and understood by others in keeping with how we feel about ourselves. There are two distinct psychological models that we might apply to the social networking site. There is Objective Self-Awareness (OSA), first proposed in 1972, which holds that we are both the subject of our own life stories through our actions and an object when we evaluate ourselves, making reference to societal norms and standards. We can accomplish this simply by looking in a mirror and wondering if those jeans make us look fat. Facebook, too, can serve as a social mirror, whereby we compare our own profiles with those
of others in our network. Alas, there is a downside to such behavior. This kind of self-evaluation often results in decreased in self-esteem. We inevitably come across people who are smarter, better-looking, or more successful, and we never quite measure up to those impossible standards. The same is true for our online interactions.

The Hyperpersonal Model might be a better fit. Developed by a communications professor named Joseph Walther in 1996, this model holds that we have more control over how we present ourselves in so-called computer mediated communication than we do in traditional face-to-face interactions. Call it selective self-presentation. When we design our profile pages, we instinctively highlight those features that show us in the most flattering light, thereby creating more positive first impressions. More recent studies found that viewing your own Facebook profile actually boosts your self-esteem—even more so if you view only your profile, rather than comparing it to the profiles of your friends.

In both cases, what we really desire is positive feedback that bolsters our self-esteem and makes us look good, even as we claim to desire objective feedback, in the same way that the subject of a magazine profile claims to desire objective reporting. Perhaps that is why Facebook is so addictive. The very act of updating your profile makes you feel good about yourself, because you are consciously focusing on the positive events and attributes you wish to share with your circle of friends. It’s much like staring into a mirror and repeating the mantra of Saturday Night Live’s Stuart Smalley: “I’m good enough, I’m smart enough, and doggone it, people like me!”

There is nothing intrinsically wrong with that. Affirmation can be healthy, unless it becomes an obsession, as in the cautionary tale of Snow White’s wicked stepmother. The Evil Queen’s most prized possession was her magic mirror. Every day, she looked into the mirror and asked the same question: “Mirror, mirror, on the wall, who is the fairest of them all?” And every day, the mirror would reaffirm her unparalleled beauty—until that upstart Snow White came of age, at which point the queen turned into a homicidal maniac. She desperately needed that hyperpersonal self-verification and responded badly to objective self-awareness. Today, the Evil Queen might obsessively log onto her Facebook page to get the daily affirmation she craved. If she were in Second Life, she would obsessively gaze upon her avatar.

I’ll Be Your Mirror

In Harry Potter and the Sorcerer’s Stone, everybody’s favorite boy wizard stumbling onto a magical mirror at Hogwarts in which he can see his dead parents standing next to him. But when he excitedly tries to show his best friend Ron Weasley the image, all Ron can see are reflections of himself—or rather, an idealized version of himself, in which he is a star athlete, no longer in the shadow of his numerous older siblings. Harry asks his headmaster, Albus Dumbledore, why they saw different things, and Dumbledore explains that this particular mirror only reflects that which we most desire. Harry longs for his lost family to be whole again, while Ron craves the attention and glory that always seem to elude him. Unlike the Evil Queen’s magic mirror, which reflects physical appearance, the Mirror of Erised delves beneath the surface to reflect one’s inner self and most passionate desires. If the ongoing research on virtual worlds and self-representation proves correct, our avatars may reveal just as much about us, serving as virtual mirrors.

The word “avatar” comes from a Sanskrit word, avatara, describing various incarnations of the Hindu god Vishnu on Earth. Just as Vishnu inhabits and animates his human host on the terrestrial plane, a person can build a digital representative through which he or she can interact in the virtual sphere. Practically since the invention of games more than four thousand years ago, human beings have employed
tokens to represent the players. In the classic board game Monopoly, one may choose from a number of small metal pieces to mark one’s place on the board. When people began interacting online, many chose small static thumbnail images to represent themselves, and this practice naturally extended to computer games. The term was first used to describe full virtual bodies in the 1986 online role-playing game Habitat, although Neal Stephenson’s groundbreaking 1992 cyberpunk novel, *Snow Crash*, is widely credited with bringing “avatar” into mainstream culture.

Our avatars are the primary means by which we make identity claims in virtual worlds. Almost everything about that design process involves some kind of conscious choice: hair color, hair style, eye color, body type, tattoos, gender, age, ethnicity, clothing style, even our choice of genitalia (should we go that route)—all reflect the user’s personal taste and sense of self. Sherry Reson views her avatar as “both a psychological projection and [form of] creative expression [that is] constantly evolving,” she said. “The glasses I wear make me feel more like me. And there are times I’ve dressed as a hermit because it accurately represented my feeling state.”

My avatar is named Jen-Luc Piquant. The roots of her name date back to the early days of the Internet. Having a clever e-mail handle was all the rage, and I settled on “lucrezia,” in honor of the renowned sixteenth-century femme fatale Lucrezia Borgia, who I always felt got a bad rap as a smart woman in a powerful family who was denied much of that power for herself. She also owned fabulous poison rings, which suited my morbid Gothic sensibilities. I even bought a few cheap knockoff rings from the vendors on St. Mark’s Place in Manhattan’s East Village. I filled them with salt (instead of arsenic) and would sometimes offer to sprinkle some on a date’s food. If he laughed, he was worth a second date.

Fast-forward many years later. I had moved to Washington, D.C., and my upstairs neighbors took to calling me “Jen-Luc”—a mashup of my first name and e-mail handle. When I started my blog in 2006, it just made sense to name the moody little avatar at the start of each post “Jen-Luc.” I added the last name “Piquant” as a nod to Captain Jean-Luc Picard of *Star Trek* fame, of course, but also to capture something of the flavor of the blog.

Maybe it’s because I named her, but Jen-Luc Piquant took on a life of her own, becoming a full-blown character. She’s smart, snarky, and a bit pretentious, sprinkling bons mots throughout her online commentary. Cropped purple hair, a beret, and a black turtleneck are her trademarks—very faux-French—although she has occasionally appeared as a vampire, a ninja, a pirate, a princess, and once as the cartoon character The Tick. She has a penchant for gourmet cuisine, high fashion, celebrity gossip, and existential angst, and she dabbles in both amateur scientific research and Lacanian literary criticism. Over the years she’s acquired a middle name—Marie-Evangeliste—and a rumored ex-husband (Crackle of Rice Krispies’ Snap! Crackle! Pop! fame) following a wild weekend in Las Vegas, although she claims those are lies, vicious lies. It seemed only natural, when I joined Second Life, to let Jen-Luc into that virtual world as well.

An avatar can be an accurate representation of one’s actual self, or a fantasy self (an elf, a dragon, an Amazonian angel), or even an ideal self—the person you might like to be, in a world free of the usual constraints. “We all have selves that we envision in the future, and they serve as very powerful motivational goals,” WUSTL’s Michael Strube explained. “We may present a self that may not currently be true, but perhaps we would like it to be true. We are hoping that others might accept it and validate it in ways that allow it to become true.”

Jacquelyn Morie admitted she had always wanted red hair, green eyes, and fuller lips; in Second Life, she has all three. I designed Jen-Luc Piquant similarly: she is younger and thinner, with fuller lips and better hair—an idealized self that I could never achieve in the meat world, where her proportions would make her a freak of nature. (Apparently she stands six-foot-four; avatars are very tall in Second Life.)
That idealization can also apply to personality traits, whereby we create avatars that are more extroverted or less neurotic than we might be in our offline lives.

People occasionally express confusion over whether Jen-Luc Piquant is “really” me, particularly since I use her for my Twitter handle as well. She is more like an alter ego or evil twin. She is far more narcissistic, at least according to the standard Narcissism Personality Inventory (NPI). The NPI consists of forty forced-choice questions asking you to select one of two statements. For instance, “If I ruled the world it would be a better place” versus “The thought of ruling the world frightens the hell out of me.”

Dr. Drew Pinsky, co-host of the popular call-in TV show *Loveline*, is also an assistant clinical professor of psychiatry at USC, and he started giving the NPI to celebrity guests who appeared on the show—much to the annoyance of his brash co-host, Adam Carolla. Pinsky found that celebrities score slightly higher (17.84) than average. Woman celebrities were slightly more narcissistic than their male counterparts. Musicians were the least narcissistic. Reality TV stars scored the highest, at 19.45, with female reality TV stars scoring near the top of the charts.*

As one who sometimes jokes to friends that my Native American name would be Crippled By Self-Doubt, it is not surprising that I scored a troubling 10 on the narcissism scale. Apparently I barely have sufficient self-esteem to function in society. Either that, or I am disinclined to admit to my own self-absorption, even on an anonymous quiz. A certain degree of narcissism is healthy, after all; it’s what gets us through the inevitable obstacles and disheartening stumbles in life. But what about Jen-Luc Piquant? Her score almost maxed out the scale, which ranges from 0 to 40. The average American scores around 15.3; Jen-Luc scored a whopping 39. She had a brief moment of uncharacteristic humility, which destroyed her shot at a perfect 40. Even reality TV stars aren’t as narcissistic as my faux-French avatar.

For all the freedom in constructing online identities, most people—nearly 90 percent, according to a 2010 study—tend to choose avatars that share similarities with their “real world” selves: the same gender, a similar name, and either resembling their real-life physical self, or personifying an idealized version. A 2007 study of online gamers found that only 4 percent of women chose a male character and only 14 percent of men chose a female character, although adolescents were far more likely to engage in gender swapping as a form of identity play, perhaps because at that age our identity and sense of self are still in flux. For the most part, we use our avatars the same way we use our Facebook profile page: as a means of self-presentation and self-verification via online interactions with others. We bond more strongly with avatars that resemble us, and the more we bond with our avatars, the more enjoyable we will find the virtual experience. We need to be able to look at our avatar and feel, “This is me.”

That is not to say you can’t have more than one avatar to explore different aspects of your personality. Jacquelyn Morie uses three primary avatars in Second Life, including twins who have distinct personalities and different backstories. She even borrowed her husband’s avatar once. To Morie, such role-playing is perfectly natural, even healthy. “Our identity shifts all the time and every day, morphing and evolving based on what we are doing now,” she said. “I’m not the same person I was at sixteen and I’m not the same person I was last week.” As for my faux-French avatar, Morie opined, “She’s part of you, but she’s not the totality of you, and she may not even be who you are at the moment.”

Perhaps Morie had a point. I took the Big Five test again, this time adopting Jen-Luc Piquant’s persona. As expected, there were pronounced differences. She is far more extroverted, and much less agreeable; in fact, she bottomed out on that scale, reflecting her breezy lack of concern for others’ needs and feelings. Jen-Luc Piquant is not out to make friends; she does not cringe or apologize or ingratiates, and she speaks her mind. We also differ widely on conscientiousness. I am highly conscientious and goal-oriented, but Jen-Luc is, again, near the bottom of the scale. She loves spontaneity and being in the moment, and tends to be careless and disorganized in her intellectual pursuits.
But there were also striking similarities between Jen-Luc and me. We both scored low on neuroticism (within ten points of each other), and we both ranked high on the openness scale. We both are curious, imaginative, and creative, and like to spice up our daily routine with a hefty dose of variety and new experiences. She may be a conscious creation, but there might be more of me in Jen-Luc Piquant than I consciously intended. That said, in my avatar, these qualities are exaggerated to ridiculous extremes for comic effect; were she real, Jen-Luc would have all the makings of a psychopath.

You might think that in a virtual world where everyone can present an idealized self, appearance would cease to matter, but this is not the case. First impressions matter a great deal, even in Second Life. Much like material objects in rooms and offices, or someone’s Facebook page, we can use observations drawn from avatar cues (attractiveness, gender, hairstyle) to form personality impressions.

The findings from the handful of studies published to date offer useful tips on effective cues. Pupil size, viewing angle, and the frequency with which your avatar blinks its eyes are critical to first impressions. Avatars with larger pupils are judged to be more attractive, happier, good-humored, and sympathetic, even though we are not consciously aware of that trait. Frequent eye blinking (sixty blinks per minute) is associated with dishonesty, fearfulness, shyness, and anxiety. Reduce the blink rate to twenty-four blinks per minute, and your avatar will appear more sociable and attractive. Avatars viewed from below are deemed more sociable, self-confident, and attractive, compared to those viewed from above, who are deemed weaker and in need of protection. A full frontal view means that avatar will likely be deemed more trustworthy, open, and sympathetic.

Certain characteristics can also be associated with particular personality traits. Attractive avatars with long, stylish hair are usually seen as extroverted. Male avatars with black hair, or wearing jeans, gray shirts, or long-sleeved shirts are seen as introverted, while female avatars with blond hair wearing pink shirts, necklaces, bathing suits, or high heels are deemed more extroverted. Large breasts on female avatars serve as a cue for extroversion, too, as well as openness, although if they also favor Gothic-style clothing, they are seen as more neurotic. Blond hair and dressy clothes on females correlate with higher agreeableness. Male avatars should avoid army pants, black shirts, and sunglasses, lest they be deemed less agreeable.

That’s what the studies say, anyway, which doesn’t bode well for Jen-Luc Piquant’s social prospects in Second Life. True, she has the requisite flowing long hair, but it is purple, not blond. Rather than enhance her feminine pulchritude to exaggerated extremes—as is the custom for female avatars in virtual worlds—I reduced her breast and hip size as much as possible to give her a lanky gamine build. She has only two outfits: a snazzy steampunk ensemble, complete with military-style trench coat and chic aviator goggles, and a classic edgy “rocker chick” ensemble. Jen-Luc doesn’t do ultra-high heels, French maid outfits, sexy bathing suits, or any shade of pink. As a committed Lacanian, she eschews the most obvious forms of self-objectification, even as she acknowledges her own dual existence straddling the boundary between Subject and Object.

That doesn’t stop her from mugging shamelessly for Second Life’s built-in camera every chance she gets. The ability to shift perspective means we can view our avatar from the front, and see our virtual self the way other residents see us in cyberspace. We can also take snapshots of our avatar, and when the camera clicks, said avatar will momentarily throw up its hands to frame its face and beam with delight. Morie noted that while many of us react poorly to photographs of our actual selves, “We are more likely to be enamored of the look of our avatar.” Second Life is a true digital mirror in that regard. As Dumbledore tells Harry Potter, “The happiest man in the world looks in the mirror and only sees himself exactly as he is.”
Neal Stephenson introduced science-fiction fans to the Metaverse in *Snow Crash*: a fully immersive virtual world that offers a glimpse of what online spaces like Second Life might one day become. In this dystopian future, people escape their grim existence in an anarcho-capitalist Los Angeles by logging into the Metaverse, where they can lead parallel virtual lives through their avatars. This world is threatened by a new virtual drug called snow crash, a computer virus that not only affects one’s avatar in the Metaverse, but also the actual brains of hackers in reality, dissolving the boundary between “real” and “virtual,” “self” and “avatar.”

Stanford University’s Jeremy Bailenson has demonstrated similar boundary effects in his Virtual Interaction Lab. One of the first simulations he created was a virtual gaping pit in the middle of a simulated “room” with a board laid across it. Test subjects, outfitted in full VR gear, were instructed to walk across the pit. Even though they knew consciously that the pit wasn’t real—they’d seen the real-world version of that room and there was no pit—they still found themselves reacting as if the pit were really there. Some teetered uncertainly, some fell down, some ran away, some screamed in fear. The psychological responses were very real, a testament to the power of digital illusions.

Inhabiting a virtual world can affect our behavior offline, too. Bailenson devised an experiment to investigate what happens when we view our own digital doppelgängers. He found that watching your digital avatar running on a treadmill, for example, makes you more likely to exercise offline as well. The effect is even stronger when you watch your avatar become thinner or heavier in response to behavioral choices, such as eating carrots versus candy, or exercising versus standing still. The more we identify with our avatars, the more strongly we will respond. Spend enough time with an avatar that looks like us, and the lines between our real and virtual identities begin to blur. It takes only twenty minutes of exposure to produce changes in behavior.

If your avatar has wings, and you become accustomed to manipulating their movement in cyberspace, your brain might become unable to distinguish between the virtual wings and your “real” body. Virtual-reality guru Jaron Lanier first speculated about this in the 1980s, with his notion of “homuncular flexibility.” The homunculus is the brain’s map of the body that resides in the cortex, with those body parts requiring the most synaptic connections enlarged with respect to less connected parts. As Lanier recalled, back then, he and his cohorts donned full-body suits covered in sensors to create “bodies” in virtual space. There was the occasional bug, one of which “caused my hand to become enormous, like a web of flying skyscrapers.” The glitch made him realize how quickly he learned to adapt to the new body part. And that led him to wonder just how much he could distort his body before his brain could no longer adapt.

His favorite experiment involved a virtual lobster, which had three midriff arms on either side of its body—something the human body lacks, so Lanier wondered how one might learn to control those arms in virtual space. He found that he could mix and match small twists and flexions of his existing human limbs to control the extra limbs on the virtual lobster. Theoretically, the brain should be able to incorporate certain physical attributes of our avatar into its map of the self—even if our avatar has wings and our physical self does not. Lanier is now collaborating with Bailenson on demonstrating this in the lab.

Time is a critical factor in bonding with an avatar, according to Caltech neuroscientist Christof Koch. There must be a sense of continuity, which translates into less than a 250-millisecond delay between the brain sending a command for motion and the feedback it receives once the action is performed. “If the delay is too long between when I initiate the reaction and when the feedback comes, my brain can’t really
deal with it, and you don’t get this easy merging of nerve and muscle,” said Koch. “But there is no reason why the brain shouldn’t adapt [to an avatar] as long as the delay is relatively short.”

Our brain already does this with extensions of our physical body. In the 1930s, German philosopher Martin Heidegger proposed the concept of “ready-to-hand.” He reasoned that since we don’t consciously think about our fingers while tying our shoelaces, or about our hands while hammering in a nail, in some sense we “fuse” with our most familiar, functional tools. They become part of us, much like Lanier’s virtual extra lobster limbs. This is equally true for a blind man who uses a cane to sense and navigate his environment; the cane becomes an extension of his physical body, at least as far as his brain is concerned. It is also true when we use a computer mouse, according to Anthony Chemero, a cognitive scientist at the University of Cincinnati, who performed the first direct test of Heidegger’s concept.

Chemero set up a simple experiment in which participants used a mouse to control a cursor on the monitor. The mouse was rigged to malfunction halfway through the test, such that the cursor on the monitor lagged significantly behind the movement of the mouse. You can imagine how frustrating the participants found this malfunction; profanity was a common reaction. Chemero tracked their hand movements throughout the experiment, and when he analyzed the data, he found markedly different mathematical patterns produced when the mouse was functioning versus when it was malfunctioning.

The hand movements when the mouse was functioning fit a pattern known as “pink noise,” which appears whenever something is naturally attuned to our cognitive processes. Pink noise is similar to white noise (the snowy static on a TV screen) in that it contains every frequency within the range of human hearing (between 150 Hz to 8,000 kHz), but unlike white noise, it is not completely random. Rather, pink noise is indicative of a system that, while momentarily stable, is literally teetering on the edge of chaos—a sweet spot nestled between rigid order and disarray. Pink-noise patterns can be found in pulsing quasars, heartbeats, the structure of DNA, the flow of traffic, most musical melodies and electronic devices, tides, and the fluctuations of the stock market.

This is a fragile state. Chemero found that all it takes is one small malfunction in the mouse to break the connection and push the pattern over the brink into a new chaotic state. When the mouse was functioning properly, the pink-noise pattern emerged and the mouse was “ready to hand.” But the pattern vanished when the mouse malfunctioned. The users were no longer “fused” with the mouse; it was no longer part of their cognition.

Chemero also adapted the experiment to measure physical indicators of stress, such as heart rate, respiration rate, and galvanic skin response (changes in the electrical activity of the skin triggered by emotional or physiological responses). He found an increase in all three at precisely the same moment when the mathematical pattern transitioned from pink noise to chaos. So Heidegger was correct. “You’re so tightly coupled to the tools you use that they’re literally part of you as a thinking, behaving thing,” Chemero told Wired in 2010. The brain’s unusual ability to incorporate nearby bits of the environment into its concept of self “has to be foundational in any feeling of oneness with your avatar in Second Life,” Chemero explained.

It is even possible to fool the brain with a rubber hand. While still a graduate student, Botvinick designed an experiment in which a participant’s hand was hidden and replaced by a rubber hand in the position where the real hand would have been. Both the real and fake hands were stroked simultaneously, and even though participants were in on the “trick,” and knew the rubber hand was a fake, they still responded as if it were part of their body. Threaten the rubber hand by attempting to stab it with a dagger, for instance, and the participants would exhibit an involuntary startle or fear response. It’s the combination of visual and tactile feedback that does it, and it takes only a few seconds for the illusion to kick in. Not only that, but subsequent experiments proved this wasn’t a purely psychological effect. The
real, hidden hand’s temperature actually dropped half a degree—a small but measurable physiological response.

Henrik Ehrsson of the Karolinska Institute in Sweden has taken the rubber-hand illusion one step further and used similar methods to induce out-of-body experiences in subjects, armed with little more than a video camera, goggles, and two sticks. In one experiment, he manipulated study participants in such a way that they felt as though their bodies were of different sizes, either the size of a doll or a giant. Subjects would lie down on a bed wearing a head-mounted display connected to two video cameras. Both cameras faced a fake body lying on the bed next to the subject, so when the subject looked down at their bodies, they “saw” the fake body instead. To get the subjects to “bond” with those fake bodies, Ehrsson combined the visual feedback with tactile feedback, poking the arm or stomach of the mannequin while simultaneously doing the same to the subject. A few seconds was all it took to change most subjects’ perception of their physical world.

“Our experience of self is surprisingly malleable,” said Matthew Botvinick. He thinks it should be possible to extend this same kind of linkage to one’s avatar in a virtual world—at least in principle. “At a figurative level we are constantly putting avatars out there, representing ourselves to people,” he said. “The boundary, in my mind, between what we have established coarsely and what we really don’t understand corresponds to the boundary between the bodily self versus other forms of self-representation.” We would need to take the self that we present to others, find a way to “detach” it via a separate digital avatar, and then create sufficient levels of sensory feedback to attain that all-important coupling between user and avatar.

We don’t yet have all the requisite technology to achieve this, but several rudimentary pieces are already in place. The biggest challenge is the coupling between user and avatar. Most existing user interfaces for virtual worlds are as clumsy and nonintuitive as the one in Second Life, limiting the extent to which our avatars can be assimilated into our cognition, thereby becoming truly “ready to hand.” Bionavigation systems like Wii or Microsoft’s Kinect are more intuitive, making it possible to track physical movements so one’s avatar can mimic them, with no need for sophisticated technologies like motion-capture suits.

Jacquelyn Morie, for one, finds this approach equally unsatisfying, especially in Second Life, where the ability to fly or teleport is a big part of the appeal. How do you mimic those physically impossible movements with a Kinect? Users might discover some way to adapt using micromovements, much like Lanier did with his virtual lobster, but Morie envisions something even more radical. Ideally, she would like to design an interface that could detect emotional states in the brain and trigger the appropriate responses in an avatar within Second Life—almost a form of virtual mind-reading.

That kind of nonverbal communication and control would require a brain-computer interface (BCI) of some kind to translate the electrical impulses in the scalp generated by cognitive activity into commands to control a computer cursor. The technology is still in its infancy, although researchers at Duke University successfully trained two monkeys with BCI implants to use their brains to move the hand of an avatar and successfully identify the texture of virtual objects—something they achieved without moving any part of their real bodies, just manipulating their virtual “hands” over the surface of the virtual object. And in 2011, Adam Wilson, a member of the University of Wisconsin’s Neural Interfaces Lab, used a BCI to post simple messages to Twitter (“USING EEG TO SEND TWEET” and “SPELLING WITH MY BRAIN”), although that mind control clearly did not extend to disabling the Caps Lock key.

The current techniques used to connect a brain with a computer require attaching plastic electrodes to the body, along with messy conductive gels, as well as hardwire links to circuit boards and bulky power supplies, all of which make it difficult to use BCIs outside a controlled laboratory setting. However, Todd
Coleman, a bioengineer at the University of California–San Diego, has devised an intriguing alternative. Coleman’s version mounts electronic components onto a thin sheet of plastic covered with a water-soluble layer that sticks to skin. Then the plastic dissolves, so the electronics are imprinted into the skin, much like a temporary tattoo, and can detect electrical signals from the brain and transmit them wirelessly to computer. Even better, the device mimics the stretchy, flexible properties of skin, allowing for natural movement. With such a system, one could be truly “jacked in” to a virtual world, with a physiological link to one’s avatar.

Jeremy Bailenson cautions that for all their potential, BCIs are unlikely to be a viable commercial technology in the short term. Creating a realistic digital self, however, might be attainable within just a few years. If you are willing to fork over $400, companies like Second Skin Labs will digitally scan photographs of your face to ensure your Second Life avatar more closely resembles you. ConAgra, owner of the Orville Redenbacher brand of popcorn, dug through years of archival sound clips, video, and photographic footage to build a digital version of Redenbacher, who died in 1995. The faux Redenbacher made his advertising debut in 2006, marveling at the storage capacity of an MP3 player.

Then there is Contour, a camera system that creates realistic synthetic actors by capturing the intricacies of facial movement at resolutions as high as 200,000 pixels. It was used to create a digital likeness of actor Brad Pitt for The Curious Case of Benjamin Button, in which the title character ages in reverse. The program re-created older and younger versions of Pitt in such exquisite detail, “he basically never has to act again,” said Bailenson, adding that it isn’t possible to re-create that same level of detail using just one’s current digital footprint. But with the full cooperation of the subject, combined with full body scans, voice matrices, and psychological questionnaires, it should be possible to achieve the equivalent of “total personality downloads” with immersive digital technology—or at least the illusion thereof. It won’t be “you” in the sense of a conscious being, but it will be as close as modern science can get to a perfect representation of all that you are, with the added element of enabling others to interact with this digital self. Think of the portraits of deceased headmasters in Dumbledore’s quarters at Hogwarts. They capture the personalities of the individuals, and those likenesses even react to the events they witness, but they are still a pale reflection of the people on whom they are based.

Jacquelyn Morie thinks such digital selves will become the snapshots of the future. “My great-grandchildren can come and talk to me,” she said. “I may look like an eight-bit video game to them, but it will be charming, like looking at a black-and-white photo, except it will be interactive. They’ll have some sense of who I was, not just what I looked like.” The first step is to forge that critical connection between brain and avatar. Ideally, an avatar of the future would also learn from being connected, so it could act as a surrogate when the user was offline. It would require not just recording a user’s real-life memories, but the ability to create its own memories of its experiences and encounters in the virtual world as well.

This is not the equivalent of the “singularity,” a term coined by futurist Ray Kurzweil to describe a future in which everyone would be able to upload their consciousness into cyberspace, thereby achieving a form of immortality. Many neuroscientists remain highly skeptical about the likelihood of ever achieving such a feat; we have yet to map a full connectome, and even that would be insufficient to re-create human consciousness. Morie insisted that, even if it could be done, she would find the experience unfulfilling without a physical body. “Our brain is entangled with this body,” she said. Avatars offer a handy repository for our digital selves, however, into which we can download our memories, thoughts, and experiences. She envisions a future not of singularity, but of multiplicity—many different representations of our selves that live on in virtual space: “This is when our multiple avatar representations have become so thoroughly us, and we them, that our essence remains in their crucibles after our deaths.”
It’s as close as most of us are likely to get to immortality.