

7 | Alchemy

Ora, lege, lege, lege, relege, labora, et invenies.

— Altus [Isaac Baulot] in *Mutus Liber*, a 1677 guide to creating a philosopher's stone

Of the many types of magic at work in the computer game medium—and we have discussed several in the course of this book—arguably none is more potent and pervasive than alchemy. Commonly (though not necessarily accurately) understood as a pseudo-science focused on discovering a way to convert lead into gold, alchemy can be traced back to ancient Egyptian and Greek words that refer either to the cadaverous black silts that form the bed of the life-giving Nile River or to the hazardously transformative arts of early metallurgy. Tellingly, neither the geological nor metallurgical etymology is definitive; the word “alchemy” is itself marked by combination, distillation, and ambiguity. It is thus ideal for describing the *prima materia* of the computer game medium. Alchemy connotes an alloy (or is it a brew?) so dense as to be impenetrable, so fluid it cannot be held. Just as the philosopher's stone changes the inanimate into the vivid, the inflexible into the pliant, and the mean into the magnificent, so too does the computer game medium (and indeed every medium) transform the things it touches.

The preceding chapters of this book have quietly illustrated this alchemy. In chapter 1, for example, we talked of computer game idiosyncrasy and how it demands a whimsical rather than strictly scientific, critical approach, arguing that attempts to corral games too closely risk being foiled by caveats, violations, and unavoidable dispensations. We also argued that idiosyncrasy is key to the medium's transformative power, enabling computer games to “change the relationship between human beings and the technologies they use to work, play, and communicate with one another.” Beyond this rather exoteric change—as medieval alchemists would term such out-

ward alterations—we hinted at the medium’s ability to incite more esoteric transmutations: “[C]omputer games have a way of smoothing human-computer interaction, of effacing biological and discursive difference by mystifying it, or at least making the disjunction between human beings and the machines they interact with less disjunctive. For game studies to clearly and deeply illuminate what amounts to a kind of love—the increasingly intimate relationship between human beings and their computers—the field must be unafraid of contingency.” In other words, the medium’s peculiar concatenations and imbrications are well suited for connecting human beings and the ways they change and evolve with the technologies that change and evolve with them. Colliquating human and machine, melting them together in the crucible of play, is what gives the computer game medium its shimmer of intensity, unpredictability, and delight.

In chapter 2 we took up the question of irreconcilability, arguing that computer game discord and disparity wind up collapsing attempts to reconcile the medium with others and even itself. Computer games are filmic . . . except in ways so important that the comparison quickly becomes silly (e.g., interaction, play, authorship, kinesthetics, and so on). The medium is internally consistent . . . except when one compares how computer games are made, who plays them and how, and the cultural impacts of their varied sono-visual aesthetics. Admittedly, there is a kind of unity that can be associated with the medium, one capable of binding a workshop’s worth of strange and unstable elements into a single artifact that even non-gamers can identify as a computer game. It is an odd unity, though, recalling the looping logic of alchemical texts: components of ambiguous necessity are brought together until the only true and universal statement that can be offered regarding the synthesis is that the components have indeed been combined, the impossible made possible and disharmonies tranquilized. Close on the heels of this conundrum: the dawning realization that in no way could one discern which element in this complex process of transformation had been the pharmacon, the primary active ingredient, the catalyst. We highlighted this impenetrable, irreconcilable, but strangely workable quality of the computer game medium, writing: “This medium-based and discursive discord [. . .] amounts to a kind of magic in that the phenomenon of disjunction is difficult to apprehend as a logical, synthetic, and mundane process. Rather, it appears in iteration after iteration as illogical, antithetical, and unusual.”

It is hard not to appreciate the way that sixteenth-century alchemist Philippus Theophrastus Paracelsus responded to the challenge that such a conundrum—unity out of irreconcilable complexity and difference—is absurd. He says simply: “If you do not understand it, or are not practiced therein,

it is well. It is better that it should be kept concealed, and not made public” (14). If those who write about the computer game medium were similarly direct, we suspect there would be far fewer “how-to” guides in the marketplace and that those that did exist would be as irreconcilable as the medium they purport to explain.

In chapter 3 alchemical traces pervaded our discussion of the occult forms of aimlessness and boredom and their transmutation into specific objectives gleaming with irresistible intensity. We argued that the computer game medium—which is not to say specific games—cannot be anything but boring, because it is little more than a vastly complex abstraction, a wasteland of the possibilities of computer-mediated play. Yet because it offers so little in the way of arousal, satisfaction, and stimulating situations (Mikulas and Vodanovich), the medium yields readily to the hands, minds, and instruments of those who would engineer it. Like the alchemists of old, computer game developers proceed heuristically, methodically, intuitively, and optimistically, each choice a step toward gold (or “going gold” in computer game patois). The worker of the computer game medium must coax and cajole the available resources toward an end that will itself coax and cajole players to play (not to mention buy, discuss, and perhaps even defend these choices). From an aimless origin—play via nearly anything in nearly any way—the computer game medium is altered and made desirable, not merely by addition and multiplication but by distillation, filtration, fixation, cupellation, sublimation, and sublimation, terms the alchemists used to describe the thinning of substances into increasingly pure forms. It is by way of these arts that the computer game medium coagulates—as seventeenth-century alchemist Johann Isaac Hollandus would have named it—into something it appears incapable of becoming. The medium is transformed, not out of saturn, or lead, but out of *Lady Tut* and the Sega Saturn.¹

In chapter 4 we focused on how time acuates the computer game medium into a restless sliver that shifts ceaselessly between the past and future. To instantiate the medium, developers scry over the marketplace, human behavior, anticipated resources, and numerous other variables in hopes of catching a clear glimpse of the future’s weird predilections. As the ludic golem of a game takes form, a long past of earlier games congeals into its husk until the medium is transformed into a single artifact that exists as a game only when it coexists with the now of player(s) playing. This anachronism is another place in which the alchemy of computer games bubbles up, assisting in the constant reformation of the medium from its leaden form into something brighter: from potential to idea to concept to product to property to pastime to detritus to heirloom and so on until the artifact be-

comes a memory. Like an endlessly regressing image in a pair of mirrors, this medium-based memory's shine dims as it fades into infinity, the gold reverting back to humbler origins.² At least this is what usually happens. Paracelsus himself warns of the potential for failure in alchemy in the opening lines of *Coelum Philosophorum*:

You who are skilled in Alchemy, and as many others as promise yourselves great riches or chiefly desire to make gold and silver, which Alchemy in different ways promises and teaches; equally, too, you who willingly undergo toil and vexations, and wish not to be freed from them, until you have attained your rewards, and the fulfillment of the promises made to you; experience teaches this every day, that out of thousands of you not even one accomplishes his desire. Is this a failure of Nature or of Art? I say, no; but it is rather the fault of fate, or of the unskilfulness of the operator. (3)

In other words, failure is expected even among the skilled in the arts. In fact, as Paracelsus records later in the treatise, “If . . . there be anything wanting in you or your mode of working, or your understanding, the planets and the stars of heaven will fail you in your work” (16). In the alchemy of computer game development there are the rare exceptions when everything aligns and anachronism changes from liability into asset. On those strange occasions—when the predictions of developers yield a clarified image, the furnaces have reddened to the proper shade, and all the necessary resources are close to hand—the golden game stays golden. Like a splendid and ageless soul remembering itself before its fleshly catchment, the anamneses of the greatest computer games do not freeze time so much as obviate it. This perfect balance of the future and past in a roomily ballooned present—not “emotion,” “realism,” or any other quality the medium is capable of producing—is the grail of computer game development and play. In its anachronism, the computer game medium oscillates irregularly but constantly between having run its course and becoming radiant in perpetuity.

In chapter 5 we accused the computer game medium of duplicity, one of the primary and inveterate criticisms lodged against alchemy. Geoffrey Chaucer, for example, recorded a host of challenges to the veracity of the ancient hermetic art in the “Canon’s Yeoman’s Tale”—most famously in lines 409–10: “But al thyngs which that shineth as the gold / Nis nat gold”—while Reginald Scot’s scathing repudiation of “real” magic in his *Discov-erie of Witchcraft* (1584) and Ben Jonson’s acclaimed comedy about a team of charlatans taking in a variety of marks in *The Alchemist* (1610) make

it clear that alchemy's deceptions have long been widely suspected if not wholly dismissed. Whereas countless practitioners of the "mystic or smokie science" (Scot 206) have in turn labored over apologia, not a single soul has dared argue that the computer game medium is anything but an art (to paraphrase theorist of magic Dariel Fitzkee) "designed to deceive the mind, and the mind alone, of the spectator" (27).³ In virtually every respect the computer game medium lies, cheats, and steals, from technical designs that fool players' eyes to marketing techniques designed to create desire rather than model truth in advertising. Computer game alchemy does not beget deception under the exigence of failure, but rather deception begets alchemy through the exigence of success. It is the medium's deceptions that ultimately work to transform valueless density into shimmering and precious golden disks, and it is this inherency of the trick, the *trompe l'oeil*, the ruse, and the swindle that makes computer games fun. It is also what makes them genuinely dangerous; among the most common complaints against alchemy is that in working to gain a fortune, one can lose one.⁴ Duplicity, good-natured and unrealistic as it may be, always has consequences, transforming the rich into the poor, the sane into the mad, the calm into the frenzied. These consequences divulge the fullness of the computer game medium's transformational power and the pleasures and sorrows it is capable of bequeathing.

In chapter 6 we examined work. More than any other probe offered in this book, work has the most far-reaching material consequences, making it the most transformative, the most alchemical. Conjuring computer games requires the work of developers, players, and the many other people who handle the commodified form of a game as it is brought to and through the market. Moreover, computer games require their own work to fulfill their playful purpose—games' work is producing games' work. Arguably, the very concept of work is itself transformative, if not always alchemical: work converts raw materials into processed and usable ones, it alters people's relationships to the world (including game worlds) by allowing them to cocreate the world with others in meaningful and observable ways, and in the context of the work of play, it generates a transformation of consciousness through the activation and exercise of the imagination. Work has a shadow side, of course—labor—and labor too recalls sol and luna's hopeful art.⁵ Like alchemy, labor requires the sacrifice of life; unlike alchemy—which is pursued with the expectation of a reward for the struggle—labor's life sacrifice is always already a defeat, an imposition of power that mandates only one set of transformational relationships: the quick are nourished by the moribund, who are often moribund in every sense—economically, spiritually, and intellectually. The computer game medium necessarily involves work and la-

bor, building up and tearing down, life and death. This is no esoteric exaggeration: the contemporary computer game industry is a dirty business, from its exploitative labor practices, to its use and production of environmentally hazardous materials, to its facilitation of wasted natural resources.⁶ The computer game medium is thus responsible for any number of transformations—from the personal to the global—from the perspective of work alone. Like the alchemical laboratory of old, filled with dangers and rewards both mundane and extravagant for the workers within it, the places where the computer game medium is embodied and brought to life can be both toxic and life-giving.

All this, then, has been the alchemical substance of this book, each chapter speaking in its own way about how and why the computer game medium occupies the same liminal space between art and science that alchemy does. It also recalls a series of transformations that we as computer game researchers have undergone over the years. As players, we have come to see the medium as both magical and supremely technical, the magic experienced in what Mihaly Csikszentmihalyi would call the “flow” state of play, and the technique experienced in those epiphanic moments that all computer game players have on occasion when they realize they are playing with a machine and it is playing right back. As developers (albeit small-time ones), we have come to understand the medium as the embodiment of an uneasy but inescapable alliance of art and science, one that encompasses not only computer games themselves but also the industrial and cultural infrastructure that makes game development possible and desirable. As archivists, we have been repeatedly surprised by the ways the computer game medium heaves and floats on cultural desire and nostalgia, the new being characterized by technological dominance, the old by artistic merit, and the cutting-edge inevitably worn away leaving only gameplay to testify to a title’s rightful claim on recollection. As teachers, we have witnessed many times computer games’ power as both science and art to lead people into new ways of thinking, not only through processes of problem solving (science) but also through the problematics and potentialities of representation (art). As scholars, we have gradually become unable to separate art, science, and magic; to us, computer code seems an unruly and occasionally elegant language that speaks associatively through all media, conjuring games into being, and unapologetically celebrating the glorious waste of time that the best play is.

Such grand and ultimately affectionate perspectives perhaps seem uncharacteristic in a book that has focused on the ostensibly undesirable qualities of the medium: idiosyncrasy, irreconcilability, aimlessness, anachronism, duplicity, and work. If these were the medium’s only qualities, it would be a

grim one indeed and not nearly so full of mesmeric potential. However, these qualities—and presumably other ones as well—are subject to the medium’s alchemy and changed when they are combined into any given game. These changes range from subtle to radical, and the ratios of their mixture are both infinite in number and immeasurable with any precision, suggesting a final alchemical principle that effectively consolidates the many objectives of all those who interact with the computer game medium directly: the imperative to improve the imperfect.

ENNOBLING BASE MATTER: THE END OF BEGINNING

In both its most esoteric and exoteric forms—that is, its most philosophical and practical manifestations—alchemy’s truest ends may be phrased simply as the ennoblement of base matter. Georg Luck explains that these ends have been expressed in three primary ways throughout history, regardless of alchemical tradition: “The transmutation of baser metals into silver and gold; the creation of an elixir of life to prolong it; the creation of a human being (*homunculus*)” (361). The computer game medium serves as an alimentionation to these same ends in the machine age, and is so for the same reason: to perfect the imperfect, to ennoble base matter.

Though alchemy’s tripartite desiderata seem distinct, each strives toward perfection through processes of mixture and refinement, revealing certain qualities of alchemy in general, and of the computer game medium specifically. First, alchemy is processual, involving many steps, trials, tests, alterations, repetitions, failures, and—according to most hermetic texts—the exceedingly rare success. Second, alchemy resides permanently in an imperfect world, a space in which there is always opportunity to strive yet further toward the perfect. To ennoble base matter is always to have in mind the principle that the end of any enterprise will always be the beginning of a new one. Alchemy is the practice of striving again anew, and the computer game medium obeys this dictum because this dictum defines the medium itself.

Consider the “transmutation of baser metals into silver and gold,” for example. In the computer game medium, this initiative takes the form of the impulse to manufacture wealth and pleasure through wit and work. Willie Higinbotham’s early efforts to transform boredom into intrigue, Ralph Baer’s light rifle prototype, the overflowing coin box of the first *Pong* machine, the invention of the home gaming console, Sony’s packaging of the Blu-ray drive into its PS3—these moments and every other in the medium’s history are both literal and figurative base metal transmutations. The narrative leading up to each is recountable, the wealth emergent from each is measurable,

but the final impact of each remains incalculable. Herein lies the nature of alchemy, and so too the computer game medium: even suspected success breeds imitation and imperilment. Alchemy is more than an explanation of why there are so many computer game franchises and sequels, studio takeovers and career takedowns. It clarifies why the question of computer games as art can never be resolved, and why the claim that games are scientific can never be made. Like traditional alchemy—forever condemned to that special post-Enlightenment purgatory of “proto-science”—computer game alchemy is always sometimes artful and thus not quite scientific, and always sometimes scientific and thus not quite artful. Computer game alchemy is a paradoxical combination that somehow allows the medium to thrive and its developers to proliferate despite working conditions, failure rates, and the fugaciousness of players.

One of the more tangible ingredients of this alchemy is savvy marketing. It might even be fair to articulate it to the second alchemical path, the “elixir of life” (the mystic fluids of Madison Avenue certainly prolong computer game vitality through manifold techniques for creating desire). Compelling as this perspective is, however, it is of lesser import than the elixir of play, that full-bodied concoction that captures imaginations and attentions so completely and transports consciousness—regardless of the player’s age—to other times, places, and states of mind. Perhaps it is the mix of endorphins and elevated blood pressure that connects the seventy-year-old online canasta player and the seven-year-old *Pokemon Red* fan. Or perhaps it is the trancelike state the flow of play induces that makes post-play life seem hyperreal, as when *Portal* players later look for transdimensional gateways from their kitchens to their garages, or when *The Fast and Furious* players take to the real streets moments after a game and find themselves struggling not to sideswipe passing cars or power-slide elegantly around corners at busy intersections. To some, the computer game medium’s elixir is addictive; to others, it is a pleasant and innocuous drug that stops time, alters space, and changes identities for a few moments at a time. Regardless, during play the present can balloon infinitely and the meaning of life resides exclusively therein, without doubt the ennoblement of base matter—albeit fleetingly.

Finally, there is the alchemical path bent on “the creation of a human being,” the homunculus born of *takwin*, as eighth-century alchemist Abu Musa Jābir ibn Hayyān al-Azdl called the process of inventing new life.⁷ Controversial in both ancient days and modern times, this alchemy is nevertheless at the heart of computer games, enabling players to inhabit the avatars developers have labored over, create their own homunculi for online

gaming, and control the appearances and abilities of “emergent artificial intelligences.” Computer games routinely facilitate *takwin* work and with increasingly unpredictable ends. There are games, for example, whose developers do not even know how play will unfold because so much creative power has been given to players (*Black & White 2*). Other games have entire communities of homunculi with which the player (through her or his own invented game being) interacts, but when these homunculi are left alone, they go about their lives in relatively unscripted ways. For example, Dmitriy Iasenev, lead programmer at GSC Game World, notes that one of his team’s chief goals in the development of *S.T.A.L.K.E.R.: Shadow of Chernobyl* was to ensure that the game’s non-player characters would “live their own lives and exist all the time, not only when they are in the player’s field of view” (Champanard).

Like seeing marketing as the computer game medium’s elixir of life, however, seeing avatars—no matter how intelligent—as homunculi is understandable but not true to the particulars of alchemy. The ancient alchemists sought to do more than manipulate events at a distance and enact a kind of “telepresence” of their own wills. They hoped instead to create new minds and bodies that were improvements on the ones they occupied. In other words, they looked to ennoble the base matter of themselves and of the species. The computer game medium embodies the selfsame end, changing players one person at a time and thereby changing cultures, societies, and histories. Moreover, the medium’s *takwin* constructs not one but two homunculi. The first is the computer game itself, which though not anthropoidal nevertheless takes the homunculus-like form of what alchemists Paracelsus and John French referred to as a “restorative medicament” (French n.p.)—that is, a highly refined curative distilled from all manner of animalian *materia*, including organs, bones, fluids, and excretions. Properly prepared and consumed, this homunculus rejuvenated the patient, transforming weakness into strength, malaise into engagement, aimlessness into focus—all very much things computer games do exceedingly well.

The second homunculus produced is the gamer, the person who plays with the computer game medium’s instantiations and is changed through these experiences. In fact, the very designation “gamer” suggests a transformation has occurred; no longer a student, teacher, or worker, the gamer becomes one with the game, enacting its will and feeding that will back into the system of play while also contributing unique material derived from other parts of life, which the game assumes and likewise feeds back into the system. The homunculus-gamer is simplified and purified in the moment of play, the slag of quotidian life burned away until the gamer offers up everything to bring

the game to its ultimate fruition. Base matter is ennobled in this way on both sides of the screen: the human being is calcined through play into the ingot “gamer,” while the game is rarefacted from its dense technologies into something livelier, softer, and more scintillating than its packaging could ever suggest. Through this symbiosis computer game alchemy is apparent to anyone with their senses tuned to the discovery of transformation.

We opened this chapter with Altus’s 1677 epigram *Ora, lege, lege, lege, relege, labora, et invenies*—Pray, read, read, read, read again, work, and you will discover—an aphorism that holds equally well for those bent on understanding the computer game medium as for those bent on ennobling base matter through alchemy. Accordingly, pursuing the computer game medium (professionally, intellectually, and otherwise) requires an ability to commune with immaterial powers that do real work in the world. It also requires deep, reflexive research that is constantly questioned and takes effort—not labor—that is diligently conducted out of a passion for both process and product. Should these requirements be met, success—in the form of discovery—will be had. Yet even here is an alchemist’s trick: success, says the epigram, will not be gold or eternal life, but “discovery,” perhaps the only outcome that could in fact be assured after much praying, reading, and working.

Paracelsus records in *Coelum Philosophorum* that “The straight road is easy, but it is found by very few,” and certainly we have not found that road in this book. On the contrary, we have pursued innumerable windings, including several that double back on themselves like the alchemical *ouroboros*, the serpent swallowing its own tail. We hope, though, that this whimsical exploration of how the computer game medium works industrially, culturally, historically, textually, and even magically has cleared away enough undergrowth to reveal for others a straighter road than we have taken. If that seems too much to hope for, then we hope that this book has at least begun to suggest for readers—as it has for us—that there is no straight road when it comes to the computer game medium, that there is only ever discovery whichever way one turns.