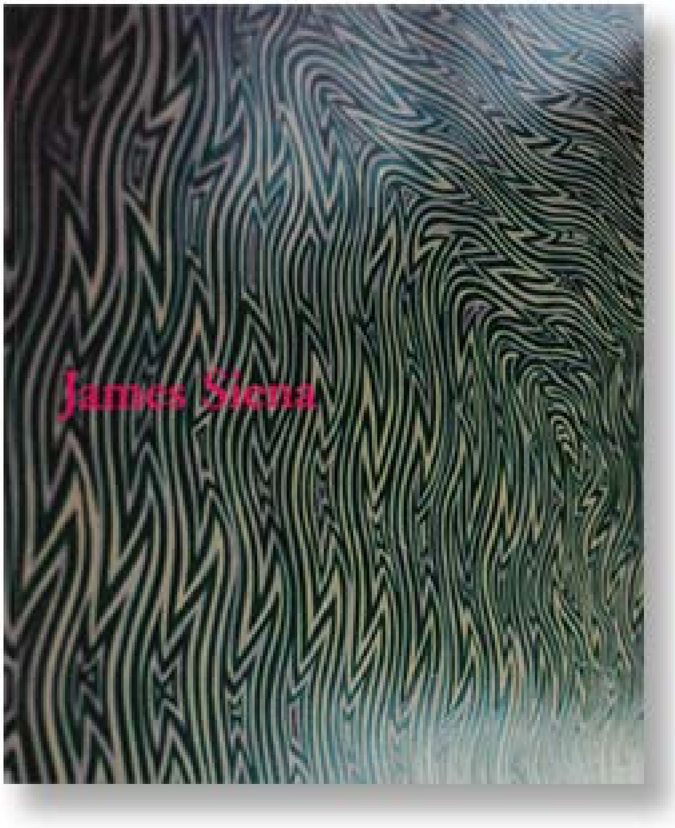

James Siena. New York: Gorney, Bravin + Lee, 2001; pp. 5-17.

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James Siena: 1991-2001

Robert Hobbs

[A]ll the life and soul of a place, all of our experiences there, depend not simply on the physical environment, but on the patterns of events which we experience there.

Christopher Alexander, *The Timeless Way of Building*

In the history of modern abstract painting the concept that art can be pared down to a series of essential decorative patterns has had dubious merits. With the notable exception of Henri Matisse, few artists have been able to sustain reputations as great decorative painters. Recognizing this dilemma, most Abstract Expressionists in the late 1940s and early '50s attempted to avoid the designation "designer"[1] by burdening their paintings with atavistic titles and aggrandizing them with high-flown rhetoric.

Following in modernism's wake, a small group of painters and sculptors in the 1970s, known variously as Pattern and Decoration, New Decoration, and more simply P&D, rejected this Abstract Expressionist fear and embraced ornamentation as an affirmation of art's enduring legacy. To make decoration more palatable, such a leading P&D artist as Miriam Schapiro invoked the anti-elitism of Third World hand-woven textiles and celebrated as feminist the heretofore perceived-as-minor arts of embroidery and patchwork quilts that generations of anonymous women had created. She endowed her unbridled hedonism with political legitimacy and sociological relevancy. Despite such a commendable policy, P&D constituted an overall reactionary interlude posing as the highly questionable oxymoron: postmodern vanguardism. Capitalizing on the exhaustion that followed the austere rigors of Minimalism and Conceptual Art, P&D paintings denoted the need for a brief respite before members of the art world could once again tackle difficult issues with impunity. Architectural critics paralleled art critics' positive responses to P&D exercises with premature assessments regarding a fully developed postmodern style identifiable by equally reactionary, applied decorative forms. Weakly legitimized as "pluralism," their findings trivialized history and skirted issues of criticality.

Since these works have mostly been relegated to museum storerooms and the purgatory of no longer relevant texts, the subject of decoration has remained over the past few decades a difficult subject for younger artists to broach. But the idea of a relevant decoration true to the conditions of its time has remained an intriguing and worthwhile ambition. When successful, such forms hold out the promise of an immediately recognizable view of present circumstances, including the encouraging prospect that our contemporary world is sufficiently integrated to yield a readily identifiable image of it. Recent forays in the realm of architecture and decoration enacted by the intrepid Los Angeles artists Jorge Pardo and Jim Isermann are appearing both novel and interesting, suggesting once again the possibility of a meaningful rapprochement between the fine arts and design that could serve as the basis for a period style. Thus far, however, their well-intended forays constitute an entertaining, yet retrograde sensibility, with the implication that our present is only a codicil to mid-twentieth-century advances.

New Yorker James Siena is advancing a far more trenchant proposal for joining aspects of art, architecture, and design in his small, intricate, and slick enamel patterns painted on aluminum panels. He takes us away from the preponderance of the grid and introduces the concept of the path and procedure as part and parcel of a pattern modality. Created only in standard sizes, his works look like handmade prototypes for industrial production. The reason for his many patterns is most certainly his desire to entertain and beguile viewers with moiré effects and intriguing arrays of competitive designs in order for them to concentrate in a variety of ways on the underlying import of all these paintings. In them, Siena has reoriented abstract painting so that it provides a visual equivalent to the little-understood but often-cited subject of artificial intelligence (AI).[2] A dead metaphor posing as a science fictional dream, AI represents one of the greatly misunderstood aspirations of our age since it places itself at the crux of our most advanced technology, computer science, which has repeatedly tried without success to create a program with sufficient intelligence to see and understand itself. At present only human beings can do this, not machines.

Siena's contribution of a rigorous new form of pattern painting deconstructing the aspirations of AI is of the utmost importance when we consider the far-reaching revolution enacted by the creation and merchandizing of the personal computer (PC) in the past two and a half decades. Although changes effected by the PC revolution were not yet understood in 1977 when the Apple II became the first commercially available personal computer, today we are fully aware of not only its capability for generating and communicating data but also its impact on the way that information has been reconceived. Because PCs provide global access to information, knowledge is no longer revered as a collection of discrete facts but instead is re-posited in terms of systems, networks, and modes of apprehension that emphasize, in a manner phenomenologists would applaud, our orientation to the world as an inextricable aspect of it. A signal determinate of knowledge is its relationship to other information, and the way it has been configured and then reconfigured to form meaningful patterns capable of determining our understanding of individual terms. Since patterns based on perceivable relationships are Siena's stock-in-trade, his art takes on a prophetic meaning when we recognize that his paintings are not just decorative puzzles conjured up solely for viewers' delectation even though they are notably arresting. Their importance is, in fact, far in excess of their modest size since they are abstractions of the metonymic pathways through which attempts to develop AI have been channeled.

In Siena's art, patterns are intended to constitute the visual effects achieved through the enactment of the sets of strict guidelines he has originated for each individual painting. He refers to these instructions as "algorithms." His word choice, with its implied reference to computers and mathematical procedures, which are "general purpose algorithmic automata,"[3] or more simply, machines for executing programs, is intentionally loaded since it cues viewers into the programmatic aspect of these works as the visual and handmade equivalents of software programs. In his paintings, Siena simulates coding, beginning with the establishment of an algorithm. A directive-like rule for a given game or a cooking recipe, an algorithm delineates a discrete form of logic as a basis for each painting, thus becoming its program. After establishing a given algorithm, Siena then necessarily conflates differences between source and executable code as he carries out the set of rules it prescribes by substituting himself and his hand for the computer hardware that would traditionally enact a given software's directives. Located in the back of the catalogue are summaries of the algorithms that Siena employed in creating each of the reproduced works. As we read them, we can appreciate his written instructions as not just prescriptions ordaining a completed work of art but as sets of challenges in the form of programmatic confines, forcing him to visualize strictly logical rules that represent constraints as well as opportunities for creating new visual constructs. As the artist has reflected:

> *Many repetitive modalities emerged from writing about these works. Lining voids. Dividing. Iterating. Recursion. Connecting. Sending. . . .I don't want to appear to be totally dry about it, but it seemed necessary to limit the parameters to the functions of procedural operation.*[4]

In these involved pieces, Siena has divided the activity of making art into generative and executive realms. He has taken the two roles for making art – which Sol Lewitt made conceptual and procedural by taking one for himself and delegating the other to a corps of assistants – and appropriated them both, making certain that he remains keenly aware of the differences between the two processes. While distinct in their goals, both roles are creative even though each emphasizes a separate course of action: the first is a mental construct, and the second, which is highly intuitive, depends on the coordinated efforts of the mind and hand working in tandem. As Siena explains:

> *I don't make marks. I make moves. The reality of abstraction is my primary point of engagement. When I make a painting, I respond to a set of parameters, like a visual algorithm. These structuring devices are subject to the fallibility of my hand, and my mind's ability to complete the work as planned. Using proven mathematical truths, as simple as* one plus one equals two, *I construct pictures that, I hope, are so beyond complex that even a baby can understand them. But like all artworks made by hand, they live or die by the essential capabilities of their aesthetic moves.*[5]

In addition to reinforcing his reliance on algorithms, this statement, with its purposefully ironic conjunction of complexity and clarity, also contains suggestions regarding the dynamics of Siena's process and the type of abstraction that he invokes in his art. When he asserts that he makes moves rather than marks, Siena points to the dynamics of his interactive forms. Rather than creating static compositions that represent the resolution of opposing forces and therefore a denouement tantamount to a pronouncement rather than a proposition, Siena wants viewers to be able to retrace the dynamics of his forms and see how they interact. His conscious choice of the word "moves" as opposed to "marks" connotes the role his art plays in an ongoing game, like chess, that depends on visualization followed by action.

Far more complex but equally important to the overall meaning of the above statement is Siena's reference to "the reality of abstraction" as his "primary point of engagement." In order to unpack the density of this phrase, which could seem at first merely a rote expression and not an act of faith, and lay bare its references, we will need to move outside the domain of art and consider a range of topics that are initially dependent on Siena's embrace of algorithms and interest in the formal structures giving rise to the concept of AI but that are ultimately of primary importance to progressive computer scientists. While Siena is aware of some of these sources, others stem from the ongoing conversations of software programmers and are thus part of the history of computer theory he has inherited. Before looking at Douglas R. Hofstadter's popular study of artificial intelligence in his book *Gödel, Escher, Bach: An Eternal Golden Braid*,[6] which has had an enormous impact on Siena's thought, it is necessary first to investigate the importance of patterns for software designers, and then, to explore the primary source for their ideas about patterning, which are the writings of Berkeley architect and theorist Christopher Alexander, particularly his 1979 book, *The Timeless Way of Building*. Only then will we be able to investigate intelligently the types of patterns favored by Siena that enact the mechanics of recursive structures, strange loops, and tangled hierarchies, which together have served software engineers as cogent analogies for AI. In this way we can begin to appreciate Siena's need to couch his highly abstract and theoretical ideas in terms of decorative patterns.

Clues to the recently established field of software engineering, whose origins date back to the 1960s, are found in journalist Richard P. Gabriel's collection of essays, *Patterns of Software: Tales from the Software Community*.[7] Referring to this discipline by its currently preferred name, object-oriented programming, Gabriel points to an overriding prejudice that he evidently shares with a number of its prominent practitioners, namely, that "there are few fields that blend art and science: architecture is one, and computer science is another."[8] Citing the innovative work of the Hillside Group, Gabriel points out that sophisticated programmers are intrigued with the task of transforming their work into an artistic form through patterns. Gabriel belabors the current widespread reliance on secrecy plaguing software development and hopes a discipline-wide subscription to patterns will allow practitioners to see and enjoy programs created by others. "As it is," he points out, "programs are secret and protected, so we rarely see any but those we write ourselves."[9] In recent years the "open source movement" is fulfilling the dream of Gabriel and others since it serves as a forum for hackers wishing to make their source code available for reuse.[10] As a consequence, this grass-roots community is bypassing the barriers of executable codes and large corporations and revealing the patterned languages in which its members' programs have been originally conceived.

Patterns, in addition to serving as mnemonic devices which help software designers remember past programs, are important, according to Gabriel, for their concision and power, qualities that affirm their "compression." A loaded and highly useful term for Gabriel, the concept of compression, enables him to establish the following analogies between software and poetry and to underscore the left and right brain functions necessary for programming:

> *Compression is the characteristic of a piece of text that the meaning of any part of it is "larger" than that piece has by itself. This is accomplished by the context being rich and each part of the text drawing on that context – each word draws part of its meaning from its surroundings. A familiar example outside programming is poetry whose heavily layered meanings can seem dense because of the multiple images it generates and the way each new image or phrase draws from several of the others. Poetry uses compressed language. . . .*[11]

The term is useful not only for Gabriel and for object-oriented programmers at large but also for Siena who often refers to the compression of particular works as a quality particularly worthy of note. While compression can be merely a formal element and certainly does explain his desire to work against the heroic scale of both Abstract Expressionism and '80s abstract painters, its usefulness for programmers and also for Siena's art lies in its ability to underscore the seemingly contradictory condition of minimal form and maximal content to which both aspire. For Siena compression, both a formal device and a strategy to intensify content, is a means for architecture, patterning, and coding.

Of central importance to Gabriel's discussion of parallels between programming and art are his references to Alexander's writings, including *The Timeless Way of Building* and *A Pattern Language*. Gabriel points out that "computer scientists over the years have picked up on his [Alexander's] writing, and now a small group of them are into 'writing patterns.' "[12] Although none of them, according to Gabriel, have yet achieved in their work the Zen-like "quality without a name" that Alexander upholds as the highest attainable aesthetic condition, this software journalist maintains the hope that software patterns will someday attain this wordless, ineffable state.

In *The Timeless Way of Building* Alexander suggests that patterns, which he often calls "pattern languages,"[13] are reifications of relationships between objects in the world together with the implicit rules signaling how to re-stage them. Although his chief biographer and apologist, Stephen Grabow, in *Christopher Alexander: The Search for A New Paradigm in Architecture*, does not connect Alexander's thought to structuralism, which enjoyed its height of popularity during his formative years, this architect's own statements that were especially prepared for this publication strongly point to a structural basis for his thought. Particularly close to Ferdinand de Saussure's emphasis on *langue*, that is, language as a system, is Alexander's emphasis on patterns as self-contained and self-regulating systems. Alexander notes:

> *We give names to things but we don't give many names to relationships. Our language is full of nouns. The idea that the noun is merely a label for a bundle of relationships that is real is not supported in verbal experience. . . . Most Western languages tend to perpetuate the illusion that it's the object which is real. . . . The idea that an atom, for example, is a "thing" is a popular view, when actually it is not. So there are quite a few problems involved in seeing patterns rather than things as fundamental, and not merely adjuncts to reality.*[14]

In light of the tremendous literature available on semiotics and structuralism, it is surprising that software writers have considered revelatory Alexander's semiological understanding of patterns as cogent visual forms designating ongoing sets of relationships, which in turn are dependent on the tacit agreement of established linguistic communities in order to endow them with meaning. The probable reason for this reliance on Alexander rather than de Saussure is that his prose manages to clothe basic structuralist and related semiological ideas in an architectural guise. His ability to write directly and clearly has certainly helped secure his preeminent position. A pertinent example of the type of prose that software designers have found so stimulating is the statement serving as the epigram for this essay. Here, in a slightly extended form, is Alexander's injunction:

> *We must begin by understanding that every place is given its character by certain patterns of events that keep on happening there. . . . Those of us who are concerned with buildings tend to forget too easily that all the life and soul of a place, all of our experiences there, depend not simply on the physical environment, but on the patterns of events which we experience there.*[15]

Since computer scientists have wanted to see themselves as architects rather than mere engineers of programs, they have enthusiastically responded to Alexander's analogies and consequently have preferred to view themselves and their programs in primarily architectural terms.[16]

While one of Siena's favored texts, Hofstadter's *Gödel, Escher, Bach: An Eternal Golden Braid,* cited earlier, relies on similar thinking about patterns and software development, this author does not refer to Alexander and finds instead that M. C. Escher's prints provide an apt heuristic device for explaining AI. At the outset of his study Hofstadter is careful to point to the analogical structure of AI and to distance it from theories regarding the chemical basis of human consciousness. Using the terms "recursion," "strange loops" and "tangled hierarchies," he identifies AI as a type of patterning whereby a system is able to fold back on itself and become self-aware. Referring to "reasoning" as "a patterned process," Hofstadter points out that not all patterns result in intelligence or consciousness.[17] The ones that do, however, are strange loops that allow one to jump in and out of a system. Since humans, not machines, are the only ones able to discern strange loops, AI is still only a Hollywood fantasy and a programmer's dream. The designation of AI as an ability to break out of frames is central to Hofstadter's thought and also to his incipient postmodernism. It raises structuralism to the level of meta-structuralism, a recursive structure and a strange loop, that allows one to surmount the hurdles of any particular system and look both within it and outside it.

Hofstadter defines recursion and then credits himself with its origination in one of his many discussions of Escher's art. "A recursive figure," he tells his readers, "is one whose ground can be seen as a figure in its own right. Usually this is quite deliberate on the part of the artist. The 're' in 'recursive' represents the fact that both foreground and background are cursively drawable – the figure is 'twice-cursive.' Each figure-ground boundary in a recursive figure is a double-edged sword. M. C. Escher was a master at drawing recursive figures."[18]

While a recursive structure through the oscillation of positive and negative forms enables one a means of surmounting the constraints of any given perspective, Hofstadter suggests that strange loops or tangled hierarchies provide one with an additional manner of transgressing limits and crossing boundaries. The easiest way to envisage a strange loop is to think of oneself walking on a Möbius strip, which would enable one to be both inside and outside this imaginary thoroughfare at the same time, a situation Hofstadter is careful to underscore in his analysis of Escher's *Picture Gallery.*[19] In this image a surrogate viewer looks at a work of art in a picture gallery that ultimately incorporates the entire scene, including the picture gallery and art observer in it, so that seeing constitutes both image and the process of looking. "A Tangled Hierarchy," Hofstadter elaborates, "occurs when what you presume are clean hierarchical levels take you by surprise and fold back in a hierarchy-violating way." He continues:

> *The surprise element is important; it is the reason I call strange loops "strange." A simple tangle, like feedback, doesn't involve violations of presumed level distinctions. . . . On the other hand, where language does create strange loops is when it talks about itself, whether directly or indirectly. Here, something in the system jumps out and acts* on *the system, as if it were* outside *the system. . . .*[20]

In case one does not fully appreciate the bizarreness of this position, Hofstadter points to such strange loops as the FBI investigating allegations of its own infractions of the law and a sheriff going to jail while still holding office.[21] In Siena's art, recursion is found in the positive/negative interplays occurring in his densely constructed pieces and the strange loops arising from the Op-Art-like oscillation of forms that seem to move inward or outward, depending on one's orientation. Often his handmade shapes seem to palpitate two-dimensionally, making the overall perimeters of individual pieces appear to be in the process of stretching ever so slightly beyond their given limits.

At this point in our discussion one might falsely conclude that Siena has done nothing more in his art than transpose Escher's realism into abstraction, but such an assessment does not take into consideration the far different goals Siena has set for himself and the sizeable accomplishments he thereby attains. Instead of being content to illustrate a picture puzzle and point up its playfulness even to the point of dwelling on its ingenuity as Escher does in *Picture Gallery*, Siena is far more attentive to the theoretical roles that his paintings play. While Escher supplies Hofstadter with a wonderfully instructive example, he himself was apparently unaware of any possible relationships between his picture puzzles and software development: we can safely conclude that Escher is more an illustrator than a maker of concepts. Instead of seeking to develop metaphors of object-oriented programming, Siena mines the associative power of metonyms that connect his works with the myth of AI in a syntagmatic manner, i.e., as part of a process. Furthermore, his handmade paintings either play with the phenomenon of recursive enumeration in which a program modifies itself and its rules through the variances it achieves in the course of its activities, or else they pit human intelligence against its program's strictures to demonstrate the type of licenses that can occur when people attempt to enact the rigorous laws of computer software.

In addition to reducing AI to the basic function of constituting a distinct pattern, Siena heralds one of the computer's most laudatory feats, the compilation of the coefficients of chaos, which if seen with sufficient perspective, exhibits the distinctive pattern of self-similarity, resulting in symmetry across the boundaries of scale. Rather than creating the effects of Mandelbrot's now famous fractal patterns that look like elaborate paisley designs, as have some so-called computer artists, Siena continues to respect abstract painting as primary means for rethinking some of society's most significant concerns without being content merely to illustrate its effects. Consequently, he avoids corrupting its major theoretical component, that is, its nonobjectivity, by making it a spurious form of representation even if that depiction would entail the replication of such mechanical structures as fractals. Instead he looks at structures indicative of AI and their capacity for scaling through the process of nesting elements in a number of his works. While he avoids directly transcribing known forms, choosing instead to enact processes that are analogous to software development and then present these results as new visual patterns, sometimes his paintings inadvertently call to mind various Neolithic, Pre-Columbian, and tribal patterns as a number of critics have reported. However, these resemblances are purely coincidental and should not cause viewers to think that his art is subscribing to a new form of primitivism. In his art he relies on multiple languages, one describing another, which is what computers do when executing a program. Instead of mythic epithets, Siena employs titles as idiosyncratic and often irrelevant or oblique handles that level the playing field so that his paintings will not be confused with earlier artistic forms. For example, he notes,"*Proton Saga* is the name of a Malaysian restaurant near my studio, and *Global Key* is a hardware store in the same neighborhood specializing in the copying of keys. I choose to title pictures because it encourages polyvalent interpretation and allows naming to differentiate them as part of a wider range of production."[22]

In conclusion, James Siena's art in the past decade has found a way to incorporate aspects of architecture and design indirectly through simulations that result in visual reifications of software's potential pattern languages. His quest is in many respects complementary to Chuck Close's desire to underscore in laboriously created paintings the arbitrary effects occurring in photography because of its inability to replicate with exactitude depth of field. Like Close, he recognizes the need to re-posit the effects of one language in terms of a second so that he can thereby attain the necessary distance to underscore the first language's limitations. While Close looks at photography through painting, Siena investigates the imaginary space of programmers' source and executable codes (i.e., their patterns) through paint. While computer artists might aver that Siena only assumes the role of a "futurist folk artist" and "his paintings are neo-Paleoliths, printed on the futuristic cave walls of reality,"[23] they do not take into consideration his lack of interest in becoming a computerist. His art instead critiques AI as an outlandish dream, and his primary means of exposing its limitations is to reenact by hand – an analog process – the type of self-reflexive patterns resulting from its mechanical (i.e., digital) applications.[24] He accomplishes this through the analogous process of first creating and then enacting algorithms as the basis for individual works. In this manner he traces the rituals of AI, allowing us to see in these formalized propositions an inherent logic. At the same time he realizes the long-anticipated dreams of software developers to use patterns to attain a distinctly new art form that joins science and art. Although Siena's paintings might suggest to naïve viewers mere decoration on the order of printed fabrics and wallpapers, his handmade models actually re-present through their incisive patterns the rigorous thinking associated with the catachresis, AI. In his work the so-called thinking of electronic brains is re-posited in terms of the recursive forms and strange loops comprising the patterns he paints, becoming meta-structures analogous to AI, which is itself a structural equation intending to re-present self-reflection.

We might deduce that Siena programs himself as an analog device that outputs meta-digital information, which in turn becomes a form of meta-intelligence. The irony of his position is evidenced by the fact that he poses for himself the problem of emulating the computer coding process, which is an attempt to transform human cognition into a self-reflexive pattern. This wonderfully insane Catch-22 parallels Fredric Jameson's definition of the postmodern pastiche:

> *Pastiche is, like parody, the imitation of a peculiar or unique, idiosyncratic style, the wearing of a linguistic mask, speech in a dead language. But it is a neutral practice of such mimicry, without any of parody's ulterior motives, amputated of the satiric impulse, devoid of laughter and of any conviction that along side the abnormal tongue you have momentarily borrowed, some healthy linguistic normality still exists. Pastiche is thus blank parody, a statue with blind eyeballs. . . .*[25]

Throughout this involved process Siena also rethinks the purported self-absorption of holistic works of art that once constituted a key criterion of Clement Greeenberg's and Michael Fried's formalist theories. His art no longer refers to the presentness and instantaneity these critics described but instead points to the recursive structures and strange loops that give rise to the patterns labeled "AI." During the course of his operations, Siena moves abstract painting from its former modernist function as an ontological affirmation of being to its postmodern role as an epistemological assessment of thought. In doing so he deconstructs contradictions at the basis of both modernist painting's claims to achieve a self-reflexiveness tantamount to being and AI's attempts to manifest a self-criticality synonymous with thought by revealing them to be intriguing patterns incapable of evidencing either condition. His art thus serves the agreeable function of clearing the decks of inherited misconceptions so that we might begin to realistically contemplate human capabilities and their limits. In this way his art offers the possibility of a fresh approach to old problems, and his patterns become a means of analysis rather than thought's incarnation.

Notes

[1] Robert Motherwell, interview by author, Greenwich, Connecticut, 25 January 1976.

[2] Siena is intrigued with many forms of superannuated intelligence. He collects aerial photographs of World War I trench warfare that present a form of intelligibility gone awry. In the images in his collection one can see the chaotic traceries of a form of fighting that was already being declared obsolete during the war. In addition to these photographs, this artist has put together an impressive group of early nineteenth- and twentieth-century typewriters. He is particularly intrigued with machines with novel solutions that were later rejected. Consistent with this type of collecting and with the overall modus operandi of his art is Siena's present interest in acquiring early personal computers.

[3] George Ifrah, *The Universal History of Computing: From the Abacus to the Quantum Computer* (New York: John Wiley & Sons, Inc., 2001), p. 369.

[4] James Siena, e-mail to author, 27 June 2001.

[5] Anonymous, "The Motivations of Young Redefined Abstraction," *Terma Celeste* (Autumn 1996), p. 54. Mark Lindquist, e-mail to author, 7 August 2001, suggests that Siena's "moves" might refer to "the mathematical coordinates (x, y, z) that all computer positional systems rely on in locating and outputting positions such as printers, processes and universal imagining techniques."

[6] Douglas R. Hofstadter, *Gödel, Escher, Bach: An Eternal Golden Braid* (New York: Basic Books, Inc., 1979, reprint 1999).

[7] Richard P. Gabriel, *Patterns of Software: Tales from the Software Community* (New York and Oxford; Oxford University Press, 1996).

[8] Ibid., p. 45.

[9] Ibid., p. 42.

[10] The web site address for the "open source movement" is www.slashdot.org. The author thanks Ben Lindquist for recommending this site.

[11] Gabriel, p. 5.

[12] Ibid., p. 33.

[13] Christopher Alexander, *The Timeless Way of Building* (New York: Oxford University Press, 1979), p. 167ff.

[14] Stephen Grabow, *Christopher Alexander: The Search for A New Paradigm in Architecture* (Stocksfield, Northumberland: Oriel Press Ltd. [Routledge & Kegan Paul PLC], 1983), p. 46.

[15] Alexander, pp. 55 and 62.

[16] As Gabriel points out early in his book, "*Software engineering*. . . shares with other engineering disciplines virtually nothing. . . ." Cf. Gabriel, p. xv.

[17] Hofstadter, pp. 19 and 3.

[18] Ibid., p. 67.

[19] Ibid. pp. 714ff.

[20] Ibid., pp. 691.

[21] Ibid., p. 693.

[22] Siena, e-mail to author, 27 July 2001.

[23] Mark Lindquist, e-mail to author, 8 August 2001.

[24] Ibid.

[25] Fredric Jameson, *Postmodernism, or, The Cultural Logic of Late Capitalism* (Durham: Duke University Press, 1991), p. 17. My interpretation is informed by Mark Lindquist's wonderfully insightful response to the first draft of this essay. As a computerist, Lindquist is fully aware of the blank ironies evidenced by the term "artificial intelligence."