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**THE UNCERTAIN PREDICTOR: CALVINO'S CASTLE OF
TAROT CARDS**

In the boundless universe of literature there are always new avenues to be explored, both very recent and very ancient, styles and forms that can change our image of the world ... But if literature is not enough to assure me that I am not just chasing dreams, I look to science to nourish my visions in which all heaviness disappears.

- Italo Calvino, *Six Memos for the
Next Millennium*

And coming soon to a metaphysical store near you is the wry Po Mo Tarot, "a postmodern deck for navigating the next millennium" ... Among the 22 trump cards of the Major Arcana, the Fool becomes a fashionable Idiot in Armani. The Magician turns into a Scientific Expert. And the Empress and Emperor are those 60s sitcom staples, Dad (with briefcase) and Mom (with rolling pin).

- *New York Times*, 31 October 1993

In *The Castle of Crossed Destinies*, Italo Calvino arranges the seventy-eight cards of the tarot deck into two intersecting schemata that dictate the narrative form of the book's twin novellas, "The Castle" and "The Tavern". The fifty-six Cups and Coins, Clubs and Swords, are dealt along with the allegorical images of the twenty-two Major Arcana to form a cross-hatched series of fantastic tales. Each card turned over on the table either reveals or ramifies an element of plot until the 'board' has been completed - and the cards are then swept up, shuffled, and dealt

once again. Not unlike the many forms of *solitaire*, this book requires for its successful 'reading' the display of every card within a deterministic, but by no means fixed, order. Calvino holds the tarot deck as a literary device - a 'telling' machine - with both very ancient and very recent applications. Certainly these five-hundred year old images retain their association with the gypsy clairvoyant and the foretelling of 'destinies'. The author acknowledges in his note to the text that "tarots have inspired a vast tradition of cartomancy, based on various interpretations: symbolic, astrological, cabalistic, alchemistic." But we will find "few traces of all this in the present book, where the cards are 'read' in the most simple and direct fashion."¹ For Calvino shuns the smoke, the shadows, and the drapery-shrouded rooms of the occult for the light of science and the effervescence of the game itself. Just as James Clerk Maxwell mischievously fantasized a Demon capable of separating slow and fast particles in a closed system in order to retard or reverse the entropic dissipation of energy,² so Calvino invites the Knight of Swords, the Devil, the Fool, and the Wheel of Fortune to participate as generative figures within the narrative engine and as provocateurs of his distinctly contemporary investigation of the combinatorial nature of existence and the ineluctable problems of disorder and unpredictability. In his use of the tarot deck, Calvino combines the very recent and the very ancient to create a literary form that can in fact "change our image of the world".

My epigraph is taken from Calvino's essay on "Lightness" in *Six Memos for the Next Millennium*,³ and I would like to suggest that there is a meaningful conjunction in Calvino's thought between scientific inquiry and game playing; each is a figure of lightness capable of releasing both the imaginative and cognitive processes of the mind. To insist on the 'seriousness' of scientific inquiry would be to deaden it, no less than one deadens sport or a card game by getting 'serious' about it. Like Michel Serres, Calvino finds in the atomist philosophy of Lucretius a predictive instance of the quantum universe in which "the world is supported by the most minute entities, such as the messages of DNA, the impulses of neurons, and quarks, and neutrinos wandering through space since the beginning of time."⁴ Of course, Lucretius doesn't express his scientific findings in monograph form but in the carefully measured dactylic hexameter of Latin epic poetry. According to Calvino, *De Rerum Natura* "is the first great work of poetry in which knowledge of the

world tends to dissolve the solidity of the world, leading to a perception of all that is infinitely minute, light, and mobile."⁵ Although Lucretius's Epicurean theories may be lightness itself, the epic form of his poem in six books has always seemed rather ponderous to me. More playful by far is the combinatory game of cards in which Calvino indulges in *The Castle of Crossed Destinies*, one calculated to express the very qualities of the infinitely minute, light, and mobile that Lucretius espouses. What could be lighter than a house - or even a castle - of cards; what could be more mobile than the cards which sleight of hand casts down, shuffles, or rearranges on the table; what more minute than the designs that grace the 'miniatures' of the Visconti Pack employed in "The Castle"?⁶ In what I would like to think of as a scientific narrative, Calvino intends to exploit the atomistic value of the loose and nearly weightless cards; although finite in number, they are capable of generating an almost infinite number of tales.

On a slightly larger scale of order, the two novellas comprise an equal number of tales (8) of similar length. The intention here is to create a narrative structure that is "accumulative, modular, and combinatory"⁷, so that even longer forms are composed in a serial or rhizomatic fashion.⁸ Tales, not chapters. The enumerated chapters of a novel so often propose a linear (and thus unidimensional) narrative of development and summation. The tale is a more fundamental unit.⁹ Each tale must "have a coherent significance" for Calvino, and yet be capable of intersection with other tales, using "other combinations of the same cards."¹⁰ Segmentation and accumulation. Each tale is thus unitary in its cohesion and multiplicative in its relations, at once unbound and interconnected. The process of reading such a book must approach the process of composition as an exercise in spatial form. Multidimensional in structure and open in form, *Castle* demands a reader - as much as an author - who is willing to accommodate both the free-floating signifier and the intricate design into which it falls.

Concerning this particulate notion of composition, Calvino reminds us that "there is a thread of writing as a metaphor of the powder-fine substance of the world. For Lucretius, letters were atoms in continual motion, creating the most diverse words and sounds by means of their permutations."¹¹ There are only 22 letters in the Latin alphabet; there are 78 tarot cards available to

narrative permutations in *Castle*.¹² Calvino entertains and investigates the relationship between the atomistic quality of his card-playing and the need for a more stable structure into which these permutations might be assembled. On the one hand, he "felt that the game had a meaning only if governed by ironclad rules; an established framework of construction was required, conditioning the insertion of one story in the others."¹³ On the other hand, he endorses the Lucretian proposition of the *clinamen*, the disorderly but creative swerve of the atoms: "Even while laying down the rigorous mechanical laws that determine every event, he feels the need to allow atoms to make unpredictable deviations from the straight line, thereby ensuring freedom both to atoms and to human beings."¹⁴ Without deterministic rules there is no meaning and no higher structure; the entire undertaking becomes gratuitous. But without the unpredictable swerve of the atoms or the random distribution of cards, there can be no freedom, which he considers intrinsic to the "lightness" of science and literature and to the generative-creative power that links physical reality and human action. As both scientific inquiry and ludic exercise, *Castle* explores the interrelations of order and disorder, structure and flux, rule and freedom, determinism and unpredictability.

Figures of science and mythology intertwine throughout the text, explicitly addressing the Heraclitean irresolution between order and disorder. Among "All the Other Tales" at the close of "The Castle", the Page of Swords encounters the Prince of Oppositions. The crossed Two of Clubs indicates the intersection of opposing paths. Here the Queen of Swords delivers a monologue that speaks directly to the philosophical and scientific dilemma of the book:

Know then that I am the Joyous Goddess of Destruction, who governs the world's ceaseless dissolution and restoration. In the general massacre the cards are continuously shuffled, and souls fare no better than bodies, which at least enjoy the repose of the grave. An endless war racks the universe up to the very stars of the firmament and spares not even spirits or atoms. In the gilded dust suspended in the air, when a room's darkness is penetrated by rays of light, Lucretius contemplated battles of impalpable corpuscles, invasions, assaults, tourneys, whirlwinds...¹⁵

As a figure for Chaos, the Queen of Swords notably presides over both dissolution and restoration. No structure is ever permanent; yet the particulate and unformed matter of the universe is capable of combination into complex structures. Calvino's conception of chaos admits both the ceaseless and simultaneous processes of destruction and creation. The Lucretian universe describes conditions of constant turbulence, but as Ilya Prigogine and Isabelle Stengers have argued, such states far from equilibrium can be a source of order.¹⁶ Calvino's look back into the mythological and philosophical sources of cosmology anticipates several of the current debates in chaos theory.

The relation of structure and flux in the book is further indicated by the presence of a 'frame tale' that opens and closes each novella. The narrator emerges from "the midst of a thick forest"¹⁷ or Dantesque dark wood, harried to the point of distraction, to find a castle or tavern brilliantly lit and with ample supplies, in which a varied group of fellow travelers have taken their seats around a table (the game board). They find themselves mysteriously struck dumb and have no recourse to communication but through the tarot cards. Each identifies with a card and tells his or her tale by appropriating the necessary cards and intercalating their own story with those of the others as they take shape on the table. When the game concludes, the hostess interposes to "scatter the cards, shuffle the deck, and begin all over again."¹⁸ Even the relation of castle and tavern as sites points to the encounter of the deterministic and the unpredictable, the orderly and the disorderly aspects of existence. The narrator enters a "sumptuous court" whose inhabitants are "clothed with elaborate elegance. But, at the same time, I remarked a feeling of random, of disorder, if not actually of license, as if this were not a lordly dwelling but an inn of passage, where ... all feel a relaxation of the rules by which they live."¹⁹ In the frame tale, the court of highly codified behavior and the tavern of deviation and license begin to coalesce into a single dwelling place, setting the stage for the intersection of tales and the state of non-equilibrium that reigns throughout the text. To invoke a metaphor from the field of computer science, the frame tale is the hardware of the text and the tarot cards which generate the tales are its software. As Calvino states in his essay on "Lightness", "it is software that gives the orders, acting on the outside world and on machines that exist only as functions of software and evolve so that they can work out ever more complex programs."²⁰ The fascination for Calvino

lies in the fact that weightless 'bits' in the flow of information direct the operation of the machine.

If Calvino's *Castle* is a game that instigates scientific discourse, it would also be appropriate to mention that physicists have turned to toys to pursue their investigations. James Gleick notes in *Chaos* the importance of pendulums, or pendulum-like behavior, in the study of turbulence and complexity: "Those studying chaotic dynamics discovered that the disorderly behavior of simple systems acted as a *creative* process. It generated complexity: richly organized patterns, sometimes stable and sometimes unstable, sometime finite and sometimes infinite, but always with the fascination of living things. That was why scientists played with toys."²¹ After securing a federal grant, the physicist might select a spherical pendulum, one that swings not just back and forth but in all directions. Magnets placed around the base of the pendulum will each attract the bob. "The idea is to set the pendulum swinging and guess which magnet will win. Even with just three magnets placed in a triangle, the pendulum's motion cannot be predicted."²² Because this system is subject to "sensitive dependence on initial conditions", in which slight deviations in the initial state are magnified into wide fluctuations in the result, it becomes impossible to predict the bob's destiny due to the slightest imprecision of the calculations.

The properties that Gleick attributes to chaotic dynamical systems are very much present in the tarot cards as they function in Calvino's text. The tarot cards generate such extravagantly organized patterns that their complexity overwhelms even the author's ability to comprehend them: "I drew hundreds of patterns, in a square, a rhomboid, a star design ... The patterns became so complicated (they took on a third dimension, becoming cubes, polyhedrons) that I myself was lost in them."²³ And yet such patterns, stable and unstable, finite and infinite, ultimately provide the creative nexus of the book. Patterns of such complexity or instability do not immediately yield to exegesis, nor are their results any more predictable than the spherical pendulum. The traditional function of the tarot in cartomancy was to predict the outcome of human affairs, to foretell destinies. And literary devices have traditionally been employed to lend form, order, and organization to the welter of an author's subject matter. But Calvino's tarot is an uncertain predictor, a system (provoked of course by the author's investigations) on the cusp of order and

disorder, comprehension and distraction. The book's narrator appears as a doubtful fortune-teller revealed in his confusion before the world. When the card of the Hanged Man appears in "The Waverer's Tale", the narrator - or more properly an extra-diegetic narrator - asks parenthetically, "Is this then the very card that Madame Sosostriis, famous clairvoyante but not very reliable as to nomenclature, in prophesying the private and general destiny of the distinguished Lloyds employee, described as a drowned Phoenician sailor?"²⁴ Calvino suggests in his allusion to T.S. Eliot that, in predicting the mythical plot of *The Waste Land*, Madame Sosostriis misinterprets the card's allegorical image. Throughout the text, Calvino's narrator dwells in the uncertainty of his predictions as he reads the cards.

In her reading of the novel, Claudia Jannone suggests that Calvino's narration enacts a "conditional attitude", one in which the "tales are told, but without any certainty that the narration gets at truth."²⁵ Each tarot demands a conjecture from the narrator. As each line of cards proceeds, the narrator - both as character and as diegetic reader - encounters a series of interpretive cruxes that present themselves for resolution. In "The Tale of the Ingrate", the Knight of Swords presents alternative suggestions: he is "either a mounted messenger" intruding upon a wedding banquet, "or the groom himself" departing armed at some behest, "or perhaps both things at once."²⁶ The cards are rife with indeterminacy and multiple possible solutions. The next "more explanatory card" in the sequence depicts The Sun, prompting the narrator to debate further between the "allegorical significance of the picture" and its "literal meaning". In either case, the narrator admits that "the interpretation of this passage in the tale was not easy."²⁷ The situation presents an allegory of reading in which the tale-tellers or distributors attempt to communicate through often opaque signs that rely heavily on the inventiveness of the listener or receptor for their coherence. But the situation also presents an allegory of science in which it is impossible to determine the absolute value of the particle and, as Heisenberg suggests, impossible for the presence of the measurer not to interfere in the measurements. Both the opacity of the sign and the density of its interpreter preclude a definitive statement. The tarot cards prove to be an uncertain predictor - or interpretant - of human affairs, just as all chaotic systems require impossible accuracy (or paranormal insight) for useful predictions.²⁸

The tarot deck is a complex sign system. It combines representational depictions - a woodsman striking a lion with a club - with allegorical designations: "Strength". The designation may sometimes be lettered on the card, thus combining word and image. The twenty-one arcana are additionally assigned a numerical order, while The Fool (more familiar to us as the Joker) serves as a zero or unnumbered 'wild card'. The four suits are identified by icons of cups, coins, clubs, and swords; these cards are further ranked as ten numeral and four court cards (King, Queen, Knight, and Page). The combination of pictorial, numerical, orthographic, and iconic symbols that may appear on any tarot card reminds us of the impossibility of interpreting any card in isolation. The attraction of the tarot deck for Calvino resides in the nearly infinite and variable semiosis that such a complex system may generate. The significance of each card is a measure of its relation to the tarot system in its entirety and its difference from the adjoining cards in series. In his essay on "Multiplicity", Calvino expresses his fascination with the relationship of the particulate and the interconnected:

[T]he least thing is seen as the center of a network of relationships that the writer cannot restrain himself from following, multiplying the details so that his descriptions and digressions become infinite. Whatever the starting point, the matter in hand spreads out and out, encompassing ever vaster horizons, and if it were permitted to go on further and further in every direction, it would end by embracing the entire universe.²⁹

There is no doubt that concentration on the distinctive detail or unrepeatable instance reveals matter of great significance to the writer. But each detail presents only an incomplete record, one point in the phase space of the system. The distraction that arises in the search for explanatory connections can never be fully resolved, because each particular only signals the need for yet another. The infinite semiosis of the network compels Calvino: each point *is* the center of the network; each point is directly or indirectly connected to every other; and every point serves as the beginning of a series. Calvino treats the word in the linguistic system, the card in the tarot deck, the descriptive detail in the narrative, and the tale within the book as signs within an infinite network. His noted preference for the narrative of component

parts appears in *Invisible Cities* (1974) and *Mr. Palomar* (1985) as well as *Castle*. Each component, to complicate matters further, is variable. Thus, "the same cards, presented in a different order, often change their meaning."³⁰ The incompleteness of the sign is compounded by the indeterminacy of its value. As both a semiotic system and a narrative structure, *The Castle of Crossed Destinies* experiments with the relationship between the semi-autonomous particle and the aggregation that forms a complex entity.

In the same sense that *Castle* experiments with relations of particle and network - or is itself an example of 'experimental' fiction - it is appropriate to evaluate the methodology that directs and shapes the text. Stephen Kellert distinguishes between method and methodology: "A *method* is a procedure for collecting evidence, a *methodology* is a theoretical analysis of the research process."³¹ Calvino utilizes several procedural methods in the composition of *Castle* that taken together enunciate a methodology associated with the Oulipo, or *Ouvroir de Littérature Potentielle* (Workshop of Potential Literature), a collective of mathematicians and writers founded in Paris in 1960. If we substitute for the moment "creative process" for "research process", we may approach the theoretical key to Oulipian methodology: that the imposition of excessive constraints may generate works of literary value. The Oulipo embraces a mechanistic model adapted from mathematics, contesting the romantic theory of an unfettered poetic inspiration and the organic metaphor of an intrinsic form.³² Calvino explicitly describes the tarot as "a machine for constructing stories."³³ The proposed method involves several corollary assumptions: 1. Any order which the constraint would impose on the process of composition would be arbitrary, a provisional restriction of human devising without claim to universal truth or applicability. 2. Rules must be obeyed or they are without purpose; so Calvino declares, "I felt that the game had a meaning only if governed by ironclad rules."³⁴ 3. Rules are predetermined, not the results. 4. And perhaps most important, the constrictive form actually produces the text; restrictions are not a hindrance to but generative of the literary work. The mechanistic model adheres to a concept of text production in which, after an initial arrangement of codes and devices, the operation of the machine compels the author to a series of actions and possible results. If such a machine were a closed system (as a finite set of simple instructions), it would be subject to entropy; all commands executed, the text would run down to a halt.³⁵ But

Calvino has envisioned the tarot deck as an open system with nearly infinite combinations of cards and as many intersecting designs as there are snowflakes or crossword puzzles. Calvino's proceduralism accounts for collocations of cards that are incoherent as well as the coalescing of cards that describe recognizable tales, a limitless process that extends far beyond the author's ability to record. The effect is finally more dynamic than it is mechanistic.

The principal method of the book implicit in the ludic shuffling of the cards is an *ars combinatoria*. No matter how orderly, such a text must always be an incomplete representation, the tiniest subset of all possible narratives. In "The Tale of Astolpho", the angel of The Last Judgment points to the Moon which preserves "the stories that men do not live, the thoughts that knock once at the threshold of awareness and vanish forever, the particles of the possible discarded in the game of combinations, the solutions that could be reached but are never reached."³⁶ The attraction for Calvino in the combinatorial art lies chiefly in the multiplication of possibilities rather than in the limits or rules that govern the combinations.³⁷ When the narrator attempts to tell his own tale in "The Tavern", he points to the first tarot as indicative of his role: "a juggler, or conjurer, who arranges on a stand at a fair a certain number of objects and, shifting them, connecting them, interchanging them, achieves a certain number of effects."³⁸ The writer of the combinatorial text is thus not its producer but its composer or arranger. Lest this seem a minor role for the artist, it remains for the narrator to *recognize* in the ever-shifting cards those connections and exchanges in which meaning arises and just as swiftly dissolves.

The combinatorial method provokes consideration of the dilemma of chance and choice. The blackjack player knows that the random distribution of the cards complicates the decision to hit or stick. More reassuring perhaps would be an absolute (rather than compromised) dualism in which one factor did not impinge on its opposite number. But Calvino explores the complex relationship of the random and the determined; throughout the text "chance pairings"³⁹ of the cards lead to obliged choices that in turn lead to further aleatory encounters. Nowhere is this relation more extensively examined than in "The Waverer's Tale" in "The Tavern". According to Calvino, this was the first tale to emerge from the cards, and no doubt the Two of Clubs that appears in it as

"the crossing of two roads"⁴⁰ suggested the "crossed destinies" of all the tales. The waverer's dilemma is thus described:

To decide which road to take he could only rely on chance: the *Page of Coins* depicts the youth as he throws a coin in the air: heads or tails. Perhaps neither; the coin rolls and rolls, then remains erect in a bush, at the foot of an old oak, right in the middle of the two roads. With the *Ace of Clubs* the youth surely wishes to tell us that, unable to decide whether to continue in one direction or the other, he had no course save to get down from the chariot and climb up a gnarled trunk, among the branches which, with their succession of repeated forks, continue to inflict the torment of choice on him.⁴¹

Intersecting roads, tossed coins, and forking branches combine to reinforce the proposition that every decision is shot through with risk, every chance juxtaposition leads to further decisions. The interpenetration of the random and determined suggests for Calvino the similar co-dependence of order and disorder. The tree, or more properly the Ace of Clubs, serves as an icon of ramification, the branching structure of combinatory logic. The literary precedent for this figure is Borges's well-known story, "The Garden of Forking Paths", which describes an infinite, labyrinthine and "chaotic novel".⁴² It seems to me that Borges himself is invoked in "The Waverer's Tale" by the figure of an angel (the arcanum of The Devil) "who dwells in the point where lines fork."⁴³ This instance of intertextuality in turn suggests an elaboration of Borges's premise on the part of Calvino. Simple ramification - in which a trunk forks into two branches which themselves fork into four branches - signifies a hierarchical structure and irrevocable choices. Calvino pursues Borges's suggestion in "The Garden" that simple ramification could be superseded by a more complex form of the interconnectedness that supported the simultaneous existence of all possibilities. The Marseilles tarot figure of The Devil holds two smaller devils on a leash who in turn, the narrator suggests, hold their own twin offspring, "so that from branch to branch stretches a network of ropes which the wind sways like a great cobweb, amid a flutter of black wings of decreasing size: noctules, owls, hoopoes, moths, hornets, gnats."⁴⁴ Like an infernal fractal, the network of connections proposes an infinite regression and an all-entangling cobweb of existence. Calvino is thus able to "unite density of invention and expression with a sense of infinite possibilities."⁴⁵

A still higher level of complexity is proposed near the conclusion of the text. The narrator observes, amid the jostling of the tavern's customers for the appropriate cards, that "the more the stories become confused and disjointed, the more the scattered cards find their place in an orderly mosaic."⁴⁶ How is it that order emerges from the midst of chaos? Is this, he asks, "the result of chance" or some unseen design? The interlocking tale of Faust and Parsifal describes a pendulum "oscillating between two poles: all and nothing":

"The world does not exist," Faust concludes when the pendulum reaches the other extreme, "there is not an all, given all at once: there is a finite number of elements whose combinations are multiplied to billions of billions, and only a few of these find a form and a meaning and make their presence felt amid a meaningless, shapeless dust cloud; like the seventy-eight cards of the tarot deck in whose juxtapositions sequences of stories appear and are then immediately undone."⁴⁷

The pendulum swings between order and disorder. For the archetypal man of science, Dr. Faustus, the Lucretian cosmos of swirling elemental dust presents a desperate paradox. In the midst of the entropic haze there arise small pockets of negentropy, the momentary focusing of a higher level of organization. Out of the combinatorial shuffling of the finite cards, stories emerge and just as quickly dissipate. From the scattering of atoms all human existence takes its shape and ultimately returns. Calvino's Faust anticipates the controversial thesis advanced by Prigogine and Stengers of the "bifurcation point" where in an open system order may arise out of chaos through a process of "self-organization". Prigogine and Stengers argue that "far from equilibrium, new types of structures may originate spontaneously. In far-from-equilibrium conditions we may have transformation from disorder, from thermal chaos, into order. New dynamic states of matter may originate, states that reflect the interaction of a given system with its surroundings. We have called these new structures *dissipative structures* to emphasize the constructive role of dissipative processes in their formation."⁴⁸ In the random and ceaseless combinatoria of cards there must be some spontaneous collocations around which the organization of a tale suggests itself. Thus the orderly disorder of the cards as they find their places on the tavern's table.

The emergence of order out of chaos must be accompanied by another swing of the pendulum: the dissolution of every order into formlessness. Parsifal observes that "'The kernel of the world is empty' ... and he points to the empty rectangle surrounded by the tarots."⁴⁹ Into that vortex of nothingness swirls every tale ever told. As confirmation of this process the tale of Roland in "The Castle" concludes with his complete emotional collapse and the loss of his sanity, a figure for the cosmic breakdown. "Roland descended into the chaotic heart of things, the center of the square of the cards and of the world, the point of intersection of all possible orders."⁵⁰ If the dissipative process of chaos is capable of generating isolated and sporadic orders, all those possible orders are bound to convene and to dissolve finally at the blank nexus of disorder. The world with all its complex formulations, and the narrative with all its complex fabulations, circulates about an absent center. The chaotic heart of the world is both creative and destructive of the order of things.

Calvino's Oulipian methodology pursues the combinatoria of signs and investigates the relation of chance and determinism in support of an epistemology that confronts the interaction of order and disorder on scales both greater than and less than - but surely not divorced from - human existence. *The Castle of Crossed Destinies* evinces a knowledge of the incommensurable relation of chaos and order, and yet shows how these fundamental opposites require the play of the one to produce the other. The tarot cards present an allegory of the universe both as Lucretius intuited it and physicists now theorize it. We find the convergence of methodology and epistemology in *Castle*, so that "the pursuit of a definite structural project and the imponderable element of poetry become one and the same thing."⁵¹ The work of literature must be an instance of negentropy, an area of self-organization in the vast and anarchic domain of experience. But literary form must also remain cognizant of its own arbitrariness and impermanence, and of the unrelieved presence of a profound and chaotic universe. In his essay on "Exactitude", Calvino declares the importance of a "bond between the formal choices of literary composition and the need for a cosmological model."⁵² The practice of writing should enact the processes of the physical world as best the writer understands them. In Calvino this process manifests itself as a "taste for geometrical composition ... based on the contrast of order and disorder fundamental to contemporary science." He explains

this principle in terms familiar to readers of Ilya Prigogine or Michel Serres:

The universe disintegrates into a cloud of heat, it falls inevitably into a vortex of entropy, but within this irreversible process there may be areas of order, portions of the existent that tend toward a form, privileged points in which we seem to discern a design or perspective. A work of literature is one of these minimal portions in which the existent crystallizes into a form, acquires a meaning - not fixed, not definitive, not hardened into a mineral immobility, but alive as an organism. Poetry is the great enemy of chance, in spite of also being a daughter of chance and knowing that, in the last resort, chance will win the battle.⁵³

The unfathomable complexity of the dissipative universe cannot obscure the sometimes coming into meaning of natural forms or their arrangement into intricate and significant design. Nor can the human mind endeavor to grant permanence to its own literary and scientific inquiries or prevent the dissolution of human constructs. Thus, for Calvino, the geometrical arrangement of tarot cards enacts - neither as overconfident 'proof' nor as resistant denial - the relation of order and disorder in the cosmos as contemporary science, chaos theory, proposes it. As a literary 'experiment', *Castle* explores new approaches to a boundless universe and looks to science for both physical confirmation and visionary provocation.

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NOTES

¹ Italo Calvino, *The Castle of Crossed Destinies*, trans. William Weaver, New York: Harcourt Brace Jovanovich, 1976, p. 123.

² N. Katherine Hayles (*Chaos Bound: Orderly Disorder in Contemporary Literature and Science*, Ithaca: Cornell University Press, 1990) explores the fictive nature of Maxwell's proposition of the Demon near the end of his *Theory of Heat* (1871): "Maxwell's Demon is a fantasy about an animistic figure who

can control dissipation through an exercise of will ... The subtexts for this fiction are other fictions, intimately familiar to Victorians, about dissolute heirs who squandered their inheritance and who consequently were subject to dire penalties - in this case, to the heat death prescribed by the second law ... From the point of view of science the story is a scandal, for the 'being' turns out to be a demon who demands the sacrifice of a scientific truth as the price for his intervention. Like guardians of portals to other realms in ancient myths, the Demon is a liminal figure who stands at a threshold that separates not just slow molecules from fast but an ordered world of will from the disordered world of chaos" (p. 43). Maxwell's Demon continues to attract the attention of physicists precisely because it is a fictive proposition that suspends the second law of thermodynamics and provokes speculation. In a complementary fashion, Calvino's application of the demons of the tarot provokes him into propositions about that very same threshold between an orderly and a disorderly world. Maxwell the scientist resorts to fiction; Calvino the novelist resorts to science.

³ Italo Calvino, *Six Memos for the Next Millennium*, trans. Patrick Creagh, Cambridge, Ma: Harvard University Press, 1988.

⁴ *Ibid.*, p. 8.

⁵ *Ibid.*

⁶ In his note to the text, Calvino identifies the Visconti Pack as the pictorial source for "The Castle", originally "painted by Bonifacio Bembo for the Dukes of Milan around the middle of the fifteenth century. The surviving originals of these miniatures are now divided between the Accademia Carrara in Bergamo and the Morgan Library in New York" (*Castle*, p. 124). "The Tavern" employs the "*Ancien Tarot de Marseille* of the firm of Grimaud, reproducing a deck printed in the eighteenth century" (*Castle*, p. 125). Obviously the differences in the pictorial designs of these two decks significantly alter the interpretive 'readings' that constitute the two novellas. The most prominent difference is that the older and more stately Visconti Pack is employed for "The Castle" while the Marseilles deck, still used as popular playing cards in Italy, is used in "The Tavern".

⁷ *Memos*, p. 120.

⁸ For a discussion of the rhizome as a literary and cultural figure for multiplicity and unlimited interconnection, and thus opposed to an arborescent or ramified structure, see Gilles Deleuze and Félix Guattari, "Introduction: Rhizome" in *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi, Minneapolis: University of Minnesota Press, 1987, pp. 3-25.

⁹ Larry McCaffery relates the tale as a fundamental unit to structuralist poetics, arguing that "the structure of *The Castle of Crossed Destinies* implies that fiction arises from the transformational possibilities inherent in minimal narrative units being operated upon by fixed laws of association. The seventy-eight tarot cards can be compared to the 'minimal units or fictional universals of narrative' that recent structuralist critics have postulated as lying at the basis of all fiction" ("Form, Formula, and Fantasy: Generative Structures in Contemporary Fiction", in George E. Slusser, Eric S. Rabkin, and Robert

Scholes, eds., *Bridges to Fantasy*, Carbondale & Edwardsville: Southern Illinois University Press, 1982, p. 21). Himself a compiler, arranger, and interpreter of tales in *Italian Folktales* (New York: Harcourt Brace Jovanovich, 1980), Calvino was well aware of Vladimir Propp's *Morphology of the Folktale* and the scientific approach to cataloguing the components of literature and literary form inherent in structuralism (see *Memos*, p. 27).

¹⁰ *Castle*, p. 126.

¹¹ *Memos*, p. 26.

¹² Calvino includes within the tradition of the "combinatoria of signs ... the *Ars Magna* of Raymond Lully, the Cabala of the Spanish rabbis and of Pico della Mirandola", and extending to Galileo and Leibniz. The nearly infinite permutations of orthographic characters are posited by Jorge Luis Borges in "The Library of Babel" whose "shelves register all the possible combinations of the twenty-odd orthographical symbols (a number which, though extremely vast, is not infinite): in other words, all that it is given to express, in all languages" (*Labyrinths*, Donald A. Yates and James E. Irby, eds., New York: New Directions, 1964, p. 54).

¹³ *Castle*, p. 127.

¹⁴ *Memos*, p. 9.

¹⁵ *Castle*, pp. 45-46.

¹⁶ For a discussion of turbulence in Lucretian physics and its relation to the instigation of order in far-from-equilibrium systems, see Ilya Prigogine and Isabelle Stengers, *Order Out of Chaos: Man's New Dialogue with Nature*, New York: Bantam, 1984, pp. 140-42.

¹⁷ *Castle*, p. 3.

¹⁸ *Ibid.*, p. 48.

¹⁹ *Ibid.*, pp. 3-4.

²⁰ *Memos*, p. 8.

²¹ James Gleick, *Chaos: Making a New Science*, New York: Penguin, 1987, p. 43.

²² *Ibid.*, p. 43.

²³ *Castle*, p. 127.

²⁴ *Ibid.*, p. 62.

²⁵ Claudia J. Jannone, "Plato's Fourth Bed: Italo Calvino", *New Orleans Review*, No. 9 (1982), p. 37.

²⁶ *Castle*, p. 10.

²⁷ *Ibid.*, p. 11.

²⁸ Stephen H. Kellert argues that chaotic phenomena are identifiable by their sensitive dependence on initial conditions, such that "*chaotic systems require impossible accuracy for useful prediction tasks*" (*In the Wake of Chaos: Unpredictable Order in Dynamical Systems*, Chicago: University of Chicago Press, 1993, p. 35; Kellert's italics).

²⁹ *Memos*, p. 107.

³⁰ *Castle*, p. 41.

³¹ Kellert, p. 45; his italics.

³² For a discussion of the Oulipo and the mathematical basis of its membership and program, see the Introduction in Warren F. Motte, ed., *Oulipo: A Primer of Potential Literature*, Lincoln: University of Nebraska Press, 1986, pp. 13-17.

³³ *Castle*, p. 126.

³⁴ *Ibid.*, p. 127.

³⁵ Warren Motte correctly notes that the "mechanistic model must be tempered, though, as the cards are both more and less than mere narrative integers: a comparison of the rigid, linear structure of 'The Castle of Crossed Destinies' with the far more supple structure of 'The Tavern of Crossed Destinies' demonstrates this clearly" ("Calvino's Combinatorics", *Review of Contemporary Fiction*, Vol. 6, No. 2, 1986, p. 84).

³⁶ *Castle*, p. 37.

³⁷ Other critics have arrived at similar findings on Calvino's combinatorial art. McCaffery comments that "*The Castle of Crossed Destinies* demonstrates that fixed patterns are a sham, that meaning and truth make sense only within specific contexts, that the potential always exists for new combinations, new insights, new fictional patterns which can free us from exhausted perceptual systems" (p. 36). See also Warren Motte, "Calvino's Combinatorics", p. 84, and JoAnn Cannon, "Literature as Combinatory Game: Italo Calvino's *The Castle of Crossed Destinies*", *Critique*, Vol. 21, No. 1 (1979), p. 86.

³⁸ *Castle*, p. 105.

³⁹ *Ibid.*, p. 15.

⁴⁰ *Ibid.*, p. 56.

⁴¹ *Ibid.*, p. 57.

⁴² *Labyrinths*, p. 26

⁴³ *Castle*, p. 61.

⁴⁴ *Ibid.*, p. 62.

⁴⁵ *Memos*, p. 120.

⁴⁶ *Castle*, p. 89.

⁴⁷ *Ibid.*, p. 97.

⁴⁸ Prigogine and Stengers, p. 12.

⁴⁹ *Castle*, p. 97. In fact, the design of the board for "The Tavern of Crossed Destinies" (see p. 98) contains an empty square at its center. It employs, nevertheless, all seventy-eight cards in a mirrored symmetry reminiscent of crossword puzzles. And, as JoAnn Cannon points out, "a *parole incrociate* is a crossword puzzle" (Cannon, p. 92).

⁵⁰ *Castle*, p. 33.

⁵¹ *Memos*, p. 121.

⁵² *Ibid.*, p. 69.

⁵³ *Ibid.*, pp. 69-72.