

Entropy in an Open System

Maja Barlo

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In Tomas Pynchon's *The Crying of Lot 49* Oedipa is the reader's avatar in the imaginary city, San Narciso. Oedipa attempts to construct the real from an input of observations and experiences from the city. There is an interesting relationship between entropy and the real. Oedipa creates a chaotic and random city in which the real is fleeting and unobtainable. The chaos of the city is parallel to the definition of the behavior of matter in thermodynamic entropy. Oedipa appears to be analogous to Maxwell's demon, which tries to convert heat energy into usable energy, just as Oedipa attempts to convert her experiences into usable information. Using entropy, *The Crying of Lot 49* presents truth as distorted or destroyed in the process of creating meaning. Pure truth is unattainable due to the greater increase of confusion over pure truth, just as absolute order within a system is thermodynamically impossible due to the greater amount of disorder over structure.

The city found in *The Crying of Lot 49* represents a system that adheres to the second law of thermodynamics. This law states that a system tends towards maximum entropy (Zumdahl, A32) and thereby increases entropy of the universe. Entropy is used as a measurement of randomness or disorder (Zumdahl, A32). San Narciso follows the principles of the second law of thermodynamics. It acts as a “macroscopic world [that] illustrates ... the natural progression of things is from order to disorder” (Zumdahl, 401). Oedipa and other characters act as small subsystems that interact with truth and with each other. With each interaction, a character attempts to interpret the truth and coerce it into meaning. This action corrupts truth's initial purity. The coherence and order of truth within a system is lost and it becomes a chaos of different interpretations and distorted meaning. Oedipa acts as the reader's miniature system which increases the entropy of the larger system. As Oedipa acquires more

diluted truth about the Trystero, her world and, by association, the city, becomes more chaotic. Oedipa progresses through the narrative and continues to dilute pure truth and increase the disorder and chaos within her own world and within the city.

San Narciso is a fictional city that behaves like an open system. An open system is one in which mass is able to flow in and out. Truth and meaning flow through the city via the character's minds. San Narciso also behaves like an open system in that there is an increasing lack of pure truth (Birlouin, V). As Oedipa travels through San Narciso it becomes clear to her that the information about the Trystero is limited. The bits of truth she manages to obtain have usually been diluted and altered before she receives them. Truth has “a lot of versions ... with [variations] in [them]” (Pynchon, 127). Oedipa appears to be in a cycle that will not allow her to find a real answer. When she obtains a new piece of information it seems as if more chaos, rather than order, is added. This is due to increasing entropy, which is “always ... larger than the amount of information gained” (Brillouin, V). As a result, Oedipa subsystem is destined to remain without pure truth, since every interpretation will add a greater amount of disorder.

In the novel, entropy refers mostly to information distribution but also energy. The novel expresses that “there [are] two distinct kinds of ... entropy. One having to do with heat-energies, the other having to do with communication” (Pynchon, 84). Maxwell's demon parallels Oedipa. Oedipa is influencing the entropy of information and Maxwell's demon is manipulating energy. While Oedipa is attempting to create structure, Maxwell's demon, as created by Nefastis, is attempting to creating order within its own system.

The Demon could sit in a box among air molecules that were moving at all different random speeds, and sort out the fast molecules from the slow ones. Fast molecules have more energy

than slow ones. Concentrate enough of them in one place and you have a region of high temperature. You can then use the difference in temperature between this hot region of the box and any cooler region, to drive a heat engine (Pynchon, 68).

The demon sorts molecules just as Oedipa sorts information. Studying the demon can help the reader understand the failure of Oedipa's task. Maxwell's demon separates those molecules with more kinetic energy (motion or heat) from those with less. Kinetic energy is “associated with the random motions of atoms” (Zumdahl, 419). The more energy an atom has the more heat it will produce and the more random its motion will be. As Maxwell's demon sorts the molecules “into hot and cold, the system ... [loses] entropy (Pynchon, 84). By sorting, the demon is decreasing the entropy and creating order. This parallels Oedipa's actions of sorting information yet her system is only increasing in disorder. Oedipa's system allows a flow of interpretations. This stream of information into the system will increase entropy (Zumdahl, 419). Since entropy is established as “a figure of speech ... a metaphor ... [which] connects the world of thermodynamics to the world of information flow” (Pynchon, 85) one can make connections between the flow of heat and the flow of information. Within the realm of thermodynamics it is thought that “the entropy changes in the surroundings are primarily determined by heat flow (Zumdahl, 419). The city in *The Crying of Lot 49* adheres to these principles. Oedipa's accumulation of information within the open system of San Narciso will inevitably lead her to more chaos and disorder than truth and order.

Maxwell's demon is only theoretically able to minimize the entropy within its system. The demon, like Oedipa, fails to bring order to its system. The demon is thermodynamically impossible because it only “sat and sorted, you wouldn't have to put any real work into the

system. So you would be in violation of the Second Law of Thermodynamics, getting something for nothing” (Pynchon, 68). Bringing perfect order to a system is only theoretical. A state of absolute order can never be obtained. The demon fails at its task just as Oedipa does. She cannot bring undiluted truth into her system and “as with Maxwell's demon, so now. Either she could not communicate, or [it] did not exist” (Pynchon, 134).

Oedipa attempts to simplify her system, as the demon is doing, by sorting information. However, when she does so she is unavoidably losing “some information contained in the system” (Klir, 108). Klir outlines the principles of uncertainty which dictate an effort to increase truth actually increases uncertainty; this increase is proportionate to the amount of information that is lost due to simplification (Klir, 108). That is, the process of “simplifying” many complex truths into an overarching understanding. Oedipa thinks of Nefastis' machine and its attempt at simplifying its system, she has “discovered the irreversible process. It astonished her to think that so much could be lost” (Pynchon, 104).

The overall system is initially in a neutral state. Oedipa's former lover has just passed away and she has been requested to execute his will (Pynchon, 2). This initial event is linear and non-chaotic. As Oedipa travels further along in the narrative she learns about an organization called the Trystero. She assigns a meaning to this group and attempts to input truth into her system. This causes a ripple effect of increasing chaos. Like a rock thrown into a lake, multiple meanings travel around a central, pure truth; however, though the truth is present under the surface, it is lost. Oedipa thinks that “each clue that comes is supposed to have its own clarity, its fine chances for permanence” (Pynchon, 95). Oedipa desperately hopes that, each piece of truth should bring her closer to an answer yet an overall look at her search reveals that she is no closer to reality at the end of the novel than she was at the beginning. At the end of the novel she

remains with impure truth and thinks “perhaps she'd be hounded some day as far as joining Tristero itself, if it existed, in its twilight, its aloofness, its waiting” (Pynchon, 150). This increase in the distortion of truth is like the second law of thermodynamics. Oedipa is introducing order into her system and as a result it is becoming chaotic and a singular truth is complicated. In order for truth to be useful it must be clarified and this process of “simplifying” truth will distort it because “when a process that creates an ordered system is examined in detail, it is found that other parts of the process involves an increase in disorder” (Zumdahl, 415). When another system, Mike Fallopian, gives Oedipa a new interpreted truth, she reflects on the motion of her system. By examining the state of her system she realizes that “everybody's changing on [her]” (Pynchon 139). With each encounter and each new piece of information she is establishing more order and yet she ends with more disorder than when she began (Pynchon, 106).

Oedipa is, from the beginning, destined to fail in her search for answers to the Tristero's existence. As time passes, information is allowed to flow in and out of San Narciso. An understanding that Oedipa had once gathered will leave her mind and flow out of San Narciso, taking the truth with it. Oedipa, like Maxwell's demon, is initiating “massive destructions of information” (Pynchon, 104).

Oedipa wondered whether, at the end of this ... she too might not be left with only compiled memories of clues, announcements, intimations, but never the central truth itself, which must somehow each time be too bright for her memory to hold; which must always blaze out, destroying its own message irreversibly (Pynchon, 76).

Her concerns are valid. Oedipa cannot minimize the entropy of her system and she will

never find what is real. Her mind behaves as an open system. She describes her mind in a manner which implies that information is leaving and entering. Her memory cannot retain all the information it receives and therefore some of it will be lost. As she tries to grasp pure meaning, truth is slipping out of her mind. Information is moving in and out of her mind as she attempts to sort and create meaning. Her mind reaches the peak of chaos near the end of the novel where she thinks the Trystero and her search for them has all been an elaborate set up (Pynchon, 140).

Evidence of increasing disorder and chaos is provided by the increasingly strange behavior of the characters that Oedipa interacts with. As she continues to search for undistorted truth about the Trystero, she encounters a number of increasingly random subsystems. The most random and chaotic characters seem to come in succession. The first character Oedipa encounters is the gentleman at The Greek Way. The man remains unnamed but he is wearing a pin with a muted horn. When Oedipa talks to him and begins to take in and sort information the man's story becomes more distorted. He claims that he is "a member of the IA. That's Inamorati Anonymous. An inamorator is somebody in love. That's the worst addiction of all" (Pynchon 91). The meaning the man passes on increases the disorder and confusion in Oedipa's mind. Next is Doctor Hilarius. And, as his name implies, he is in a state of emotional instability. His mind has become unstable and he believes there are "three men with submachine guns" (Pynchon, 109) after him. Doctor Hilarius goes on to tell Oedipa about a face he can make, a face that he has "only made once in [his] life, and perhaps today in central Europe there still lives ... the young man who saw it. He would be ... hopelessly insane" (Pynchon, 110). Doctor Hilarius speaks of a very distorted truth. Both Doctor Hilarius and Oedipa's husband, Mucho Maas, are on LSD. They both claim to have a heightened understanding of truth yet they are part of systems which contain the most disorder. Mucho has gone from a state of orderly to disorderly as well. Mucho speaks

about hearing sounds with an extraordinarily sharp ear. He tells Oedipa that he transcends sound and that:

“everybody who says the same words is the same person if the spectra are the same only they happen differently in time ... but the time is arbitrary. You can pick your zero point anywhere you want, that way you can shuffle each person's time line sideways till they all coincide” (Pynchon, 117).

Oedipa is frightened by her husband and is skeptical of the truth behind his interpretations. Oedipa is encountering other systems that, like her own, have attempted to create meaning by interpreting truth but are only increasing disorder.

Attempting to find the real within an open system will fail. If Oedipa were to obtain pure truth and minimize the chaos within her system then she would be violating of the principles of entropy and the second law of thermodynamics. Oedipa's attempts to find the truth were, from the beginning, destined to fail. She lives within an open system and therefore the value of information will always be limited. By sorting information, Oedipa is only increasing the disorder within her system. In this manner, the real will never be found within the city as long as new people, perspectives and ideas are allowed to enter, leave and manipulate truth.

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