

Studying the Semantics of Reproduction: A social systems analysis of new reproductive technologies.

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A Thesis

in

The Department

of

Sociology and Anthropology

Presented in Partial Fulfilment of the Requirements
for the Degree of Master of Arts at
Concordia University
Montreal, Quebec, Canada

August 2003

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ABSTRACT

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This study is a theoretical analysis of human conception in the modern world. Emphasis is placed on Niklas Luhmann's concept of social systems as organisms of meaning creation which communicatively evolve with corresponding environments. Some of the reproductive technologies addressed include in-vitro fertilization, surrogacy, and egg and sperm donation. These forms of assisted reproduction are considered as social systems involved in self-referential communication with larger environments. This purpose of this study is to illustrate the means by which the social observer is able to uncover and objectively understand communication paths traveled by reproductive social systems. The two general social environments addressed are those pertaining to gender and the economy. Overall, reproductive systems are theorized as actively involved in meaningful intimate creation with gendered and economic environments through evolving codes of efficiency. This approach provides a multi-dimensional, and hence more inclusive understanding of reproductive technologies by tracing several of the countless purposeful trajectories between systems and environments.

Acknowledgements

I owe the completion of this thesis largely to my amazingly supportive mother, father, and brother.

I'm especially grateful to Greg Nielsen for hours of invaluable insight, as well as for motivating me beyond my expectations.

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Studying the Semantics of Reproduction: A social systems analysis of new reproductive technologies.

INTRODUCTION

The following is a theoretical study of assisted reproduction in the modern world. Through the use of academic texts and articles I have constructed a semantic understanding of reproductive technologies based on sociologist Niklas Luhmann's concept of system and environment. His systems theory is based on the explicit premise that social systems are intelligent and creative organisms infused with historically relevant essence. I particularly address Luhmann's unique theory of modern intimacy as articulated through the code *Love as Passion* (Luhmann, 1986) as it details the unfolding meanings of modern intimate relationships. I extend these meanings to include current reproductive practices, such as in-vitro fertilization, surrogacy, and egg and sperm donation. These are among the latest systems involved in the intimate relationship of artificially produced life; they are creators of meaning through communicative processes of modern intimacy.

This purpose of this study is to illustrate the means by which the social observer is able to uncover and objectively understand communication paths traveled by these reproductive systems. A study of the semantics of reproduction replaces a simple dualistic model of what is ethically 'right' or 'wrong' with a model of cybernetically connected meanings. This approach will provide a multi-dimensional, and hence more inclusive, understanding of reproduction by tracing several of the countless trajectories between systems and environments. As Luhmann insists, "We thereby start out from the

recent developments in the epistemology of 'natural' operations and claim no privileged 'metaphysical', subjective position for observation, description, or knowledge."

(Luhmann, 1995, p. 178) An ethical, or moral approach is imagined as inhibiting to the process of objective social observation as far as systems theory is concerned. Luhmann thus abandons these methods of observation in favour of systems theory.

Niklas Luhmann (1927-1998) has been rightfully referred to as a *systemic supertheorist of the social* (Vandenberghe, 1998). His theories are grand and abstract, and have forced many to agonize that "his theory is pitched at such a high level of abstraction that it is often hard to see its relevance, even for those who are used to more metaphysical bedtime reading." (Vandenberghe, 1998, para.2) Nevertheless, Luhmann, being well read in the physical sciences, has formulated a scientifically sound theory of the social. Despite the fact that he remained a sociologist until the end of his life, he is best known for his criticisms of traditional sociological methodology. He felt that sociologists become distracted investigating *why* things happen in society, when their time would be better spent studying the semantics of communication paths. Not only did he feel that traditional sociological analyses were ineffective at uncovering objective truths, he went as far as to claim that "A sociological utopia that is incompatible with society emerges through the operation of society's own immune system. Thus sociology becomes a disease of society and society a disease of sociology-if this incompatibility cannot theoretically be brought under control."(Luhmann, 1995, 370) Society becomes a disease of sociology as the sociologist puts it under moral and ethical inspection. Likewise, sociology becomes a disease of society by infecting it with moral and ethical

prescriptions. Luhmann struggled to bring this incompatibility under control by observing communicative social systems.

Through what he calls a study of the *semantics of love* (Luhmann, 1986, p. 41) Luhmann felt that he could solve “the epistemological problems which could not be solved using a sociology of knowledge...” by considering them as problems “...of observing observations, of describing descriptions, of calculating calculations within self-referential systems.” (Luhmann, 1986, 3) In *Love as Passion* (1986), Luhmann employs his elaborate systems theory to the psychic and social systems of love. He reminds us that love is a form of communication, which passes through codes in order to improve the probability of survival for intimate relationships. Much as with love, modern reproduction has become an improbable, yet rectifiable relationship. Infertility, gay reproduction and prolonged reproduction are changing the ways in which communication must efficiently evolve and resolve relationships. I begin by examining certain system-environment dimensions rarely reflected on when constructing moral or ethical narratives of reproductive technologies in order to facilitate an understanding of some of the communicative paths connecting reproductive social systems to environments.

A systems analysis, which is based on second-order cybernetics, requires the observer to observe observers. Luhmann refers to biologist Humberto Maturana when describing the importance of the observer. He writes “A famous dictum of Humberto Maturana (within the context of his biological theory of cognition) says: Everything that is said (including this proposition) is said by an observer.” (Luhmann, 2002, p. 100) I proceed with a semantic study of reproduction by observing observations, i.e., exploring how these technologies are observed, by describing the ways in which these technologies

have been described by other observers, and most of all, by calculating calculations within self-referential systems through tracing the systems reproductive paths and estimating what will be communicated next. Luhmann declares his view on the status of intimate relations by claiming that these are basically “social systems which are expected, particularly by the participants, to do complete justice to the views and needs of those involved” (Luhmann, 1986, p. 172). The following analysis assumes that reproductive technologies are social systems, creatively working to build justified meaning for themselves with the aid of impulse-emitting environments.

While Luhmann describes both *psychic* (individual), and *social* systems, my focus here is on the reproductive social systems that inhabit gendered and economic environments. Although I will emphasize social systems over psychic systems, it must be noted that Luhmann feels these “emerge by the path of co-evolution. One is impossible without the other, and vice-versa.” (Luhmann, 1995, p.97). Psychic systems constitute human relations, which are undoubtedly inherent in the social system. As with psychic systems, the intelligent communication between social systems of assisted conception and their environments is mediated through channels, or *communication codes*, providing the otherwise unlikely result of intimacy. I intend to elaborate upon a selection of communication codes by which systems of reproduction are self-referentially translated. These will broadly include liberal feminist, ecofeminist, socialist feminist, and evolving masculine codes that exist within gendered environments along with newly evolving codes of beauty and intelligence within economic environments.

A common history of these codes stems from artificial insemination techniques, which were first used on humans in the 1940’s, after having been used in the late 1930’s

in order to breed livestock in Britain (Nottingham, 1999). In July 1978 Louise Brown was born in England as the first human to result from in-vitro fertilization, thus beginning a modern social system of assisted reproduction. She was created by scientists Robert Edwards and Patrick Steptoe after many years of attempts (Nottingham, 1999), and caused much controversy as the first human being to have been conceived outside of her mother's womb. By 1984, scientists had produced the first human from a frozen embryo, allowing fertility centers to establish themselves in the late 1980's, especially in states like Virginia and California where local legislation would facilitate their operations. Communication codes then multiplied, as they continue to today. Currently, those who are about to undergo cell-damaging therapy such as chemotherapy, may choose to have their reproductive materials frozen in the hopes that they may one day conceive life. Male and female reproduction may also be delayed until later in life by the use of cryogenic preservation, a process which some say will lead to a major shift in gender relations (Firestone, 1971, Stock, 2003). Economically, the global circulation of sperm and eggs is a recent development, owing largely to the expansion of online communication codes. These are also leading to a shift in social relations.

Although it is tempting to cast Niklas Luhmann's concepts and theories aside as typically functionalist, his exclusive theory of *autopoietic*, or self-creating systems is sufficient enough to set him apart from other sociologists. It is perhaps his background of varied influences that has distanced him from many social scientists, as most are reluctant to refer to much of the physical science from which he draws. Biological organisms, thermodynamics, and other scientific notions are not commonly consulted by sociologists, but are important concepts for observing social system-environment

communication. This study will provide a more complete understanding of the applicability of a social systems model to contemporary problems such as those of assisted reproduction, which are too often immersed in subjective moral and ethical inquiry.

While much of the literature regarding these technologies has been written from a feminine perspective, I address the importance of reading masculine codes, even if this must be done through feminism, in order to more fully develop system-environment relationships. Systems such as surrogacy, in-vitro fertilization and egg and sperm donation owe their existences, along with their power to self-create, to their relationship with larger environments. Luhmann's theory maintains that we must examine the gradients of complexity between these systems and their environments in order to more greatly appreciate how they co-exist (Luhmann, 1995), yet, a preliminary distinction must be made between the roles of systems and environments. Although systems work within environments for their own meaning-creation, Luhmann is clear to point out that the environment does not dictate or directly influence the system's form. An examination of enabling impulses offers insight into the system-environment relationship.

Therefore, one can say that the system *totalizes itself* by referring to the environment and by leaving it undetermined. The environment is simply 'everything else'. All this does not mean, however, that the environment is merely a built-in opposition, pure appearance. Instead, one must distinguish 'the environment' from systems within the environment. (Luhmann, 1995, p.181)

I have distinguished between environments and systems here by referring to social systems as those pertaining to assisted reproduction, and environments as gendered and economically influenced. A social systems theory offers optimistic insight into the state of modern intimacy, as well as an imaginative sociological understanding of

communication processes and meaning via the inseparable system and environment relationship.

The intricate details of systems theory consist of certain elements that have been perhaps justly referred to as 'anti-humanistic'. These include notions of objective, uncontaminated observation, morally void communication, and the practically non-existent subject. Jurgen Habermas (2003) argues that ethics are an integral component to social communication, especially reproduction. Contrary to Luhmann's position of morality as one code among others, Habermas has insisted that ethics and morality are intrinsically embedded in the social. "Cultural forms of life are bound up with systems of interpretations that explain the position of humanity in the universe and provide the "thick" anthropological context in which the prevailing moral code is embedded." (Habermas, 2003, p. 40). He asserts that this embedded moral code as one that is undergoing a current transformation, causing our entire species to experience a shift in ethical self-understanding. Luhmann would no doubt feel that Habermas is situating himself too close to reproductive technologies, infecting them with a subjectively moral virus. Luhmann's theory is admittedly lacking in morality and subjectivity, as well as in the concept of social norms. Social systems theory distinguishes between system and environment, observes communication, and leaves it at that. Since he characterizes propositions for social change as 'infectious' to society, he offers no remedies to social problems. Indeed, it might not be entirely practical if every sociologist were to abandon all forms of subjective action in favour of a strict Luhmanian systems theory. Nevertheless, this social systems theory offers a biologically inspired, networked

observation of living systems, as well as a guide to the semantic translation of communication paths.

CHAPTER ONE: Reproductive Systems, Environments, and Gradients of Complexity

*THUS A MEANING WORLD EMERGES THROUGH EPIGENETIC EVOLUTION
THAT MAKES POSSIBLE COMMUNICATION THAT IS LESS PROBABLE.*

(Luhmann, 1995, p. 149)

A systems theory is useful in dissecting many of the problems posed by reproductive technologies, given that it offers a cybernetic analysis of the social, which simultaneously contrasts and harmonizes the communication and control processes of systems within their environments. Issues of assisted conception contain tangled narratives, which are best read by uncovering the social codes, or structures in place enabling their survival. A close analysis of these codes demonstrates how the problem of intimacy in the modern world rectifies itself primarily through a self-referential process of meaning creation. A social systems analysis removes these technologies from moral inspection and releases them into a multi-layered atmosphere of what Niklas Luhmann refers to as *gradients of complexity*. Reading these gradients is essential to an understanding of the evolving codes of efficiency pertaining to assisted conception.

While Luhmann's social systems theory is variously employed as the basis of this research, the concept of *system and environment* is necessarily highlighted in order to more fully develop the relationships among reproductive systems and larger environments. Not surprisingly, Luhmann has described this distinctive concept as "The central paradigm of recent systems theory" (Luhmann, 1995, p. 176). Overall, systems and environments are said to work constantly with each other toward the meaningful development of new systems and environments. Although systems are regarded as self-referential, he goes to great lengths to stress that the notion of environment is not

necessarily a separate, lingering category, but that it is actually extremely embedded into system formation. “The concept of environment should not be misunderstood as a kind of residual category. Instead, the relationship to the environment is *constitutive* in system formation. It does not have merely ‘accidental’ significance, in comparison with the ‘essence’ of the system.”(Luhmann, 1995, p. 176) Consequently, both system and environment are vital to the ongoing survival of meaningful communication, and creation.

The following sections will more fully explore this concept, beginning with an explanation as to how systems of meaning are generally more intelligent than machines and organisms that lack meaning. This is followed by an examination of Niklas Luhmann’s specific theory of modern intimacy codes, namely, the code relating to love as passion, which enabled intimate relationships in complex societies. As the system travels through these codes and into the environment, it penetrates its environment, and brings with it an accumulation of impulses on the way back. These are the gradients of complexity, or difference, which enable each system to create new meanings through the serial implementation of codes. I conclude this chapter by outlining Luhmann’s outright rejection of morality as a ‘supercode’, insisting that morality is simply one code among others, employed by systems through gradients of complexity.

1.1 Systems of Meaning

I will begin with Niklas Luhmann’s theory of the social, which rests with the assumption that society is a functional system made up of inter-related communicative

sub-systems. While the theory of social systems is often associated with Talcott Parsons, Luhmann has taken this notion further, primarily by removing Parsons' emphasis on action and replacing it with communication. Similarly, he is credited with adding to the Aristotelian idea that social systems are simply made up of living systems by shifting to the premise that these involve a complex series of communications that are above and beyond the mere life forms that exist in the social world. The imaginativeness of this detail is credited to the fact that while organisms are capable of sheer biological reproduction, they are said to not come into focus as autopoiesis (self-creating) until they are removed from the biological. In other words, this theory suggests that we are beyond mere *living* systems, - we are actually *creating* systems through discursive interaction with our environments.

Although Luhmann agrees that previous theories of society as a system were somewhat ambiguous, his work has aimed to resolve any ambiguity concerning the role of the system and parts in relation to one another. This is done primarily by establishing the differences between psychic and social systems, as well as by referring to them as distinct from machines and organisms in terms of the creation of meaning. A cybernetic systems theory is especially unique in that it draws from areas largely unfamiliar to sociologists and social scientists in general. Despite its complexity, Luhmann's work is often admired as an elaborate pastiche of general biological systems theory, second-order cybernetics, modular theory of logic, and constructivist theories of knowledge.

The multifarious theory arose due to his dissatisfaction with older theories of society as a system, which began with the premise that a system by its own definition was a whole made up of parts. He struggled with the idea that a "whole had to be understood

in a double sense: as the unity and as the totality of its parts” (Luhmann, 1995, p. 5). This led to a subjective interpretation of the whole, where one could imagine it as either the sum total of its inter-related parts or as something more than simply the assemblage of pieces (Luhmann, 1995, p. 5). He attempted to resolve this dilemma by incorporating a biological systems theory into his view of the social with the aid of Ludwig von Bertalanffy’s interrelated concept of natural organisms, thermodynamics, and evolutionary theory. This approach conveniently replaced the idea of a whole and its parts with the concept of *system* and *environment* (Luhmann, 1995, p. 6). From this new perspective, larger systems (environments) are actually made up of sub-systems, allowing for “a more accurate understanding of homogeneity and an understanding of the possibilities of simultaneously using varying viewpoints within subsystem differentiation” (Luhmann, 1995, p. 8). Specifically, the particular as well as the universal are accounted for here, whereas the particular was dissolved within the universal in the past. As William Rasch describes it “Luhmann neither longs for the view of ‘the whole’ nor bemoans its absence.” (Luhmann, 2002, p.10)

Luhmann perhaps most importantly incorporated Heinz von Foerster’s concept of second-order cybernetics into his theory of social systems. Unlike first order cybernetics, which had of course been interested in autonomous living systems and machines, second-order cybernetics, also referred to as *second-order observations* (Luhmann, 2002, p. 99), is concerned with the way in which the external observer is able to sort out cybernetic processes. The external observer is considered as situated at a unique vantage point for understanding the system-environment boundaries, as well as for determining which observer to observe. Luhmann explains; “On this level one has to observe not simple

objects but observing systems – that is, to distinguish them in the first place.” (Luhmann, 2002, p. 99) Systems theory borrows from second-order cybernetics, requiring the observer to rest outside of the original site of (first –order) observation.

In addition, Luhmann borrowed the critical concept of autopoiesis from biologist Humberto Maturana and applied it to the characterization of social systems. Maturana, who developed the term, later worked with colleague Francisco Varela on visual perception experiments with frogs, pigeons, and humans. Their conclusions were that the nervous system could not effectively distinguish between illusion, hallucination, and perception, and as such, must be considered as operationally closed, autonomous, and self-referential. (Rasch, 2000, p. 128-129). The word *autopoiesis* is meant to capture the idea that living systems are primarily autonomous machines, endlessly interacting and communicating with one another. As the term literally implies, autopoiesis is a form of self (*auto*), creation or production (*poiesis*). The distinguishing feature involved in the moment of autopoiesis itself is primarily the uniqueness of meaning. While systems work toward the creation of meaning for themselves within environments, William Rasch points out that autopoiesis is necessarily contingent upon “the self-reproduction of a system’s network of elements from that very same network” (Rasch, 2000, p. 128). In other words, a system may only create meaning by referring to itself. The results of Maturana and Varela’s perception experiments provide empirical evidence in support of the premise that systems can meaningfully create for themselves within the confines of their own self-reference. This constructivist influence aided Luhmann in his understanding that knowledge is internally built in the system through an interpretation of experience.

While Luhmann has, for the most part, effectively re-appropriated these various positions, the transfer of a biological theory into a social one is not without its complexities. Eva Knodt even goes as far as to describe the incompatibilities of the two realms by claiming that “If one accepts the proposition that the basic components of social systems consist in living systems (i.e., people), it is unclear how such systems can fulfill the fundamental condition of autopoiesis, namely, recursive self (re) production”(Luhmann, 1995, p.xxiii) Luhmann’s appropriation of Maturana’s theory specifically requires an imaginative understanding that these living systems are primarily communicative, meaningful systems that are in turn influencing structures as they live within them. As such, subtexts are constantly created and re-created, primarily through the use of language. William Rasch adds to this sentiment by positing that it is through informational feedback where “systems are faced with the interesting and circular problem of generating ‘meaningful’ external references where none exist.” (Rasch, 2000, p. 130). Although his theory relies on biological influences by indicating that social systems are capable of existing as simultaneously closed, autonomous and self-referential, Luhmann’s social theory does in fact account for the social systems inability to exclusively refer to itself. He adds, “-but because pure self-reference is always tautological, it always includes impulses from the environment.” (Luhmann, 1995, p. 218) In terms of systems of assisted conception, I will illustrate how this circular problem resolves itself through a self-referentiality which accounts for the points at which impulses from the environment are carried into systems.

1.2 Communication Through Codes

While Luhmann has made important contributions to sociology in areas such as religion, art, ecological communication and risk, his most relevant contribution to the problem of modern intimacy is concerned with the evolution of love codes as enabling social structures. In *Love as Passion*, Luhmann remains consistent with his perspective that communicative systems operate primarily through the use of language by extending upon his semantic interpretation of the western love codes that have transpired within modernity. The codes emerged, as is typical, in order to facilitate improbable relationships in otherwise complex and improbable circumstances. While Luhmann's analysis is specific to the early code 'love as passion', intimacy remains defined by codes in today's complex world. As reproduction becomes increasingly improbable, specific codes develop allowing for new meanings to be created. It is worth addressing Luhmann's emphasis upon the literary meanings of intimacy put forth since the late seventeenth century in order to appreciate the concept of codes as facilitators to improbable relations. As indicated by Luhmann, narrated forms of communication such as these led the individual to places never imagined. He goes on to explain that: "the semantics of love was able to supply everyone with the words and emotions they wished to call up" (Luhmann, 1986, p.57). Upon an analysis of literary contexts, he indicates that the masses were easily provided access to common themes of romantic love through this method. He begins his account of love's literary influence by demonstrating the power of the novel. It seemed that love was "so well suited for narrative portrayal; for it is the subject par excellence of novels" (Luhmann, 1986, p. 58). This was a rational move as far as Luhmann is concerned, since the general paradoxes of love could "only be solved on a

case by case basis and by the actions of the lovers themselves” (p. 58). Clearly, these forms of communication allowed for new meanings to be transmitted by love’s code, where men and women were able to decipher intimate intentions by re-creating fictional narratives.

Luhmann further indicated that the semantics of love would hold the capacity to “in each case therefore provide an understanding of the relationship between symbolic media and social structure.” Love songs, poems and novels contributed to this discourse, while providing a structural basis for intimate communication between men and women. Reproductive technologies, by their own account refer to specific communication structures, such as Internet web sites, feminist grassroots communiqué, queer theories, as well as supply and demand tables. These all represent channels by which information flows between system and environment, allowing for meaningful communication, creation, and above all, the facilitation of intimacy. The condition of ‘modern love’ then, is closely related to that of modern conception, as they are both able to overcome and surpass unlikely communication through the implementation of standardized codes. As with love, the emphasis is on informational transmission through language allowing the system to effectively communicate with its environment.

Conversely, the informational flow between system and environment might also be imagined by some as lacking in efficiency; the state of *postmodern romance* is addressed by Eva Illouz as she refers to the seventeenth century thinker La Rochefoucauld’s early sentiment that “many people would not have fallen in love had they not heard of it” (Illouz, 1998, p. 162). Luhmann’s theory is actually an extension of this, exemplified by his emphasis upon communication through the re-creation of

fictional narratives. La Rochefoucauld's attitude lends support to the fact that there may have always been importance given to the structural meanings of love. Luhmann gives full credit to his predecessors, adding that: "we are not dealing with a pure invention of sociological theory, but rather with something that has long been the subject of consideration in studies of the semantics of love" (Luhmann, 1986, p. 9). Systems, environments, and codes can all be imagined as responsible for the complex forms of intimacy that we are able to experience today. Luhmann's version of La Rochefoucauld's statement would probably be that *many people would not have fallen in love if they had not had access to proper channels of communication.*

Illouz agrees that semantics were established primarily through literary means, yet she argues that today's code is in desperate need of re-evaluation. She theorizes that while signifiers may have related to signifieds in the past, there is no deciphering the contemporary love code. Her point insinuates that individuals may not be able to choose their intimate relations by reading a code, but are in fact confused and manipulated into a situation that more closely resembles a house of mirrors than a social system. Illouz responds to Luhmann's theory by adding that while the novel has offered much to the construction of love's meanings, the extensive forms of media in today's world do not provide for simply drawn narratives. Luhmann's response would probably be that he has accounted for diversity within society by stating, "with the adoption of functional differentiation individual persons can no longer be firmly located in one single subsystem of society, but rather must be regarded a priori as socially displaced." (Luhmann, 1986, p. 15)

Illouz's fear is that Luhmann did not account for the extent of social displacement that the contemporary individual would come to experience. Her argument rests with the fact that print and electronic media have over-represented love as passion, or sexual desire, to the extent that we are now unsure of what it means anymore. The inclination to associate romance with sex has led to a new stage of social displacement, as well as to an extension of love's developing code. The short-term affair has taken over where the long-term romance left off, as exemplified by her observation that love at first sight in today's world is in fact a 'dwindling myth' rather than a guiding narrative. Illouz suggests that to fall in love at first sight is presently equated with nothing more than a sudden attack of sexual desire. Her ultimate synopsis of the state of current intimate relations assumes that individuals are hopelessly confused when faced with their own understandings of love. If Illouz could communicate with Luhmann, attempting to explain how she carries the code love as passion into the present day, she would most likely want to express that

when one manages to distangle the new from the old, it would seem that the postmodern romantic condition brings a crucial twist to La Rochfoucauld's saying that 'few people would fall in love had they not heard about it'; in the postmodern condition, many people doubt they are in love precisely because they have exceedingly heard about it. (Illouz, 1998, p.184)

At first glance, the distinctions drawn by Illouz between former love codes and a present state (code) of lust, or desire seem to resemble Luhmann's theory of *plaisir* and *amour*, yet these concepts are far more complex than simply the division of bodily and emotional satisfaction. As normal, functioning human beings we seek out *plaisir*, both for ourselves and for others. (Luhmann, 1986, p. 86) More than a feeling, it is imagined as a distinct state where the individual is considered a subject without freedom. Illouz draws a distinction between older love codes and today's postmodern fiction by suggesting that

today's affairs are much briefer, and therefore more efficient than older types of romance. Luhmann puts forth the idea of shifting codes, such as from *amour passion*, to one of romantic love to one of sexual gratification. As for distinctions, he writes: "the distinction between frivolous and sentimental love cannot function as a *difference* within any *one* code-as did that of *plaisir* and *amour*." (Luhmann, 1986, p. 110) While he might agree with Illouz's characterizations, he might also insist that the current situation is in fact developing through communication, which is necessarily channeled through a code. Interestingly, just as love is increasingly associated with sexual desire, today's reproduction is progressively severed from the act of sex. These developments need not seem ironic, but are actually indicators of evolving codes of efficiency.

In terms of the emerging fictional narratives concerning reproduction, these have developed in much the same ways as those for love. Reproductive narratives, specifically those concerning assisted conception, have grown in a multitude of directions, enabling meaningful cybernetic communication. Novels may still be considered channels by which these narratives are passed, although we might now attribute a number of other forms of media to this task. Just as women and men once looked to the novel for a world of love's possibilities, our current fascination with the possibilities of life-creation are developed through television, film, cyberspace and other fictional as well as non-fictional mediums. As intimacy decreases in likeliness, codes respond through diversification. Effective system-environment communication assures the fulfillment of new reproductive possibilities, allowing for complex, evolving system development.

In terms of Luhmann's love code, it is the result of much autopoietic discourse and communicative functioning that passionate desires come to be known. The social

significance of the love as passion code is said to have emerged within the specific context of modern society. Again, modernity's emergence with its industrialized realities meant that relationships were increasingly fragmented. These circumstances did not lead to a breakdown in social cohesion, but rather, they encouraged the development of *codes*, or rules for understanding. The shifting social environment from feudal to market society meant that relationships could not be based on old traditions such as those of court society. The new types of relationships between men and women were probably just as subjected to terms of coding as older ones, yet this new 'modern love' was more diverse and inclusive concerning who one could love and why. All of these factors led to a deepening, or 'intensification' of the way that romantic love could be defined.

The state of current assisted reproduction seemingly parallels the 'intensification' of romantic love characterized by Luhmann. Just as love was a form of intimacy potentially jeopardized by a complex modern world, human reproduction would be equally as threatened without systemic communication processes. Through the use of certain structural aides we are able to rectify this potential disaster allowing for more fully communicative forms of intimacy. Hence, it may seem appropriate for some to consider the buying and selling of sperm and eggs over the Internet an 'ethical dilemma', yet this is a structure that allows for communication where other forms may not be possible. Reproductive systems are, again, principally guided by the meaning they create for themselves within environments. As outlined, allowing for increased, differentiated intimate communication will undoubtedly lead to more diverse and inclusive definitions of assisted conception. The following sections will explore many of the ways that structures such as these resolve modern 'fragmentation' allowing for more intense

relationships than would otherwise be feasible. Codes act as facilitators into intimate relations that would be highly unlikely within a modern model of communication, allowing us to socially read one another's motives in order to then proceed accordingly within guidelines.

As he stresses the point of double contingency, Luhmann asserts that: "Everything that happens belongs to a system (or to many systems) and *always at the same time* to the *environment of other systems*." (Luhmann, 1995, p. 177). While he does describe several connections between his theory and that of functionalism, such as the concept of environments with corresponding systems, he takes a standard functional analysis of society much further by adding to and translating traditional functionalist notions. According to Luhmann, "The equivalences used in functionalism are thus operative counterparts of the difference in gradients of complexity between system and environment. A corresponding perception of reality would be neither meaningful nor possible without these gradients in complexity." (Luhmann, 1995, p. 176). His point aims to highlight the functionalist's disregard for *difference* between system and environment. Luhmann deems such differences in the gradients of complexity between system and environment possibly the most important aspect of a social systems analysis. He goes on to refer to this by advising that "The point at which all further investigations into systems theory must begin is therefore not identity but difference" (177) For Luhmann, *difference* "presupposes and overlies a continuing reality." (178). In other words, while the borders between system and environment are not clearly distinguishable, and there is no concept of 'absolute reality', we are able to get a brief photograph of partial reality as it corresponds to the system through an examination of system/environment differences.

Examining the gradients of difference between system and environment allows for a more complete understanding of the communicative relationship between them, while allowing the observer to come as close as possible to an understanding of the social system.

Although this glimpse into the system-environment relationship might seem elusive, Luhmann's understanding, based on the layers of difference that lie between these, dictates that they are always changing due to their autopoietic or self-creating nature. A look at the gradients of complexity between reproductive systems and their environments is simply an investigation into the ways in which assisted reproduction systems are meaningfully creating in their environments with the aid of new and diverse impulses. This in turn leads to change for both the immediate system and environment, along with all other existing systems and environments. As Luhmann describes it, "Above all, the system/environment difference seems to be what obliges the system to force itself, through its own complexity, to make selections." (32). Without this difference, the system would not be able to create new meanings for itself, which would ultimately lead to the death of autopoiesis.

In addition to its essential functionality, difference is characterized as consisting of a triad of dimensions. Luhmann describes a "decomposition of differences", which are outlined as the fact dimension, the temporal dimension, and the social dimension. The divided dimensions constitute what he refers to as the "first step toward the de-
tautologization of meaning's self-reference." (75). Each dimension contains within it a world of possibilities for which the system to self-referentially create within. As

dimensions overlap, systems increase environmental impulse absorption, resulting in heightened differentiation.

The added differentiation of these different environments leads to a healthy, evolving system as they turn what we experience into what we understand, allowing the organism a choice between what is given and what can possibly result. (73-74) Without such difference, the self-referential process of meaning-creation is devoid of its autopoietic power, and can no longer meaningfully evolve. When referring to a systemic theory of the social, it's important to keep in mind that, unlike simple biological systems, complex social systems are capable of meaning-creation. Simple biological systems do not exist with the purpose of intelligently creating meaning for themselves. Through communication with its environment, the social system creates with a purpose, implementing intelligence, and not instinct into a meaningful decision making process. Above all, intelligent, purposeful creation sets social systems apart from all others. The social system creates by referring to itself with the aid of fragments from the environment, which it is infused with along the way. The environment's impulses do not produce directly causal effects in social systems, but rather, as Rasch imagines it, they provide *perturbations* (Rasch, 2000, 130). To be more accurate, these may be credited with being slightly more than 'perturbations', as they are crucial reference points for systems. Social systems such as those of assisted conception would not meaningfully exist as they do without an environment from which to receive impulses. This is not to say that the technologies themselves would not have been developed, but that the gendered and economic significances they hold are primarily related to these environmental reference points, or 'perturbations'. The observer may decide what these

reference points are, depending on a specified distinction between *systems* and *environments*. Luhmann asserts the observer's authority to distinguish among these by stating that "One must specify the system reference that one (as an observer) has in view at any given time, and one must specify whether one has in mind the system or the environment. But the system is neither ontologically nor analytically more important than the environment; both are what they are only in reference to one another." (Luhmann, 1995, p. 177). In compliance with this tenet, I have specified my point of observation as one where reproductive technologies, specifically those pertaining to assisted conception, are to be considered systems of meaning creation within the environments of gender and the economy. Social systems of meaning creation, unlike ordinary, non-creative biological systems, have evolved through codes of efficiency based on self-referentiality. As noted earlier, these codes have facilitated intimate relations, which are able to survive through differentiated communication structures. Meaning is shaped through a process of autopoiesis, or self-referential creation, but not without the important impulse points provided by the environment.

1.3 Penetrating the System

Through the theoretical division of psychic and social systems, Luhmann is able to implement Parsons' form of 'interpenetration' in order to analyze the way that social and psychic systems depend upon one another for survival. This results through an increasingly intensified form of social relationship, leading Luhmann to conclude: "it is a question for laying the basis for social relations in which more of the individual, unique

attributes of each person, or ultimately all of their characteristics, become significant” (Luhmann, 1986, p.13). Interpenetration occurs as systems communicate with environments. The process is inherent to the system’s self-reference, as it involves a circular flow of information. Luhmann explains: “Interpenetration-namely, the contribution of complexity to the construction of emergent systems- occurs, therefore, in the form of communication, and conversely, anytime communication is set in motion, this presupposes a relationship of interpenetration.” (Luhmann, 1995, p.216) All social systems are imagined as those which interpenetrate their environments through codes. Luhmann describes meaning as existing socially primarily through “the support of a peculiar reduplication of interpretive possibilities.” (Luhmann, 1995, p.80) The statement clearly signifies the self-referential component to the act of interpenetration. The reduplication of possibilities takes place through codes, and the interpretive possibilities vary according to the gradients of complexity accumulated in the environment.

As the system refers to itself, it penetrates and picks up small fragments of the environment from which it has traveled to. This information is then returned to the system, where meaning is created within the boundaries of the systems self-reference. Thus, interpenetration is circular, yet not a tautological waste of time. With systems receiving and interpreting fragments of information from environments, the process of meaning-creation continues to evolve and expand. In-vitro fertilization (IVF), for example, is simply a method among many of conceiving life until as a system, it communicates with and receives informational impulses from a given environment. When referring to a capitalist economy, this reproductive system might realize its social demand, along with its capacity for economic gain. These might lead to any or all of

several possible social definitions, including IVF as new hope for modern reproduction, IVF as a form of trans-global reproduction, or IVF as designer service to the affluent. If the systems self-referential feedback loop continues to bring back positive environmental impulses, its development will continue to flourish. In other words, enabled by its environment, the system continues to survive. This concept is fairly simple when the informational flow remains steady, but becomes slightly more complex when a system is exposed to conflicting informational feedback. When referring to a gendered environment, for example, the system might receive negative feedback from one group of feminists and positive from another. This conflict would not cause a breakdown in system formation but would instead aid in its differentiation. The newly formed systems would then engage in their own environmental interpenetration as well as their own forms of autopoiesis.

Interpenetration begins by travel to the environment and back again to the original system where externally accumulated information is assimilated. One cannot define interpenetration as a fixed phenomenon; it is constantly shifting historically, and changes within historical context as one moves from social to interpersonal penetration. Luhmann insists that a distinction be made between the social and the interpersonal, as “What one expects from another human being can be neither promised nor delivered by society” (Luhmann, 1995, 253). While he maintains that every form of communication is in fact inherently social, or constitutes a social process, these expectations are most likely fulfilled when pursued and created for oneself.

As mentioned, Luhmann describes modern social organization as increasingly differentiated and insists that the world is simultaneously becoming more personal as

relationships are offered the opportunity to develop far more intensely than ever. This type of intimacy extends out of an *impersonal* society, primarily as a response to the fragmentation caused by industrialization. With the help of certain structures, we are able to communicate effectively with both those who we engage on an impersonal level with, as well as those who we share our intimate relations. These codes enable us to communicate with one another while feeling the difference between a 'close world' and an impersonal one. Luhmann believes that "it is by virtue of this difference that individuals can channel the flow of the information that they receive." (Luhmann, 1986, p. 16) The only condition that is applied here is that the individual receive social affirmation, that is, approval from the social system in order to meaningfully interpret and send information. Likewise, in order for effective communication to ensue among social systems and environments, appropriate channels of information processing must first be established. A social systems model may outline paths of communication, while the systems and environments themselves are able to attribute meaning to these.

This process of interaction then leads to the creation of communicative paths from which to send and receive information. For Luhmann, meaning is assigned in the social system through communication, with conflicts tending to lead to change. Conflicting discourses create new subject positions, which in turn follow their own course until larger conflicts ensue. Since sub-systems exist within larger systems, just as sub-environments exist within larger environments, gradients of complexity tend to develop through complicated lines of meaningful communication. Assisted Reproductive Technologies are thus formed and transformed systems that leave complex paths of discourse behind as they carve out new meanings in their corresponding environments.

It may be obvious by now that social systems theory characterizes the contemporary world as one that is lacking previous metanarratives, however, while Luhmann relies on distinctions between pre-modern and modern societies, Eva M. Knodt notes in the forward to *Social Systems* “For Luhmann, the end of metanarratives does not mean the end of theory, but a challenge to theory, an invitation to open itself to theoretical developments in a number of disciplines which, for quite some time, have been successfully working with cybernetic models that no longer require the fiction of the external observer.” (Luhmann, 1995, p.xi). I support Luhmann’s position that, as the *fiction of the external observer* disintegrates, we are left with multiple communication paths, or *gradients of complexity* from which to analyze the social world. The application of a *cybernetic model*, such as systems theory to the study of assisted reproduction allows for an infinite and descriptive picture of these technologies as they actually exist, rather than a finite guideline of moral and ethical conduct. This non-linear analysis of society affords a view into the complex organization and communication paths taken by reproductive systems.

In addition to its inclusive nature, Luhmann’s theory is useful to the extent that it provides a map for organizing the communication between systems and their environments. A social systems approach assumes that we are living within constellations of psychic and social systems, with the psychic referring to conscious states, and the social referring to communications. While he acknowledges that there are other systems in existence, it remains clear that Luhmann’s social theory is exclusively based on these two. This study of assisted conception is based on reproductive social systems which are doubly contingent upon their environments, and is not intended as a direct examination of

intricate psychic systems. Despite the absence of a psychic system analysis, certain inferences between psychic systems and their environments will become apparent as relationships between social systems and given environments begin to unfold.

Autopoiesis, as described, is a term borrowed from evolutionary biology which directly refers to the creation of meaning that an individual or system is capable of. While a hermeneutic approach aims at understanding and interpreting differences in consciousness, Luhmann's use of autopoiesis distinguishes itself by relying upon the notion that "the intransparency of the consciousness from the viewpoint of the social is no longer an obstacle to be removed but the very condition that makes communication possible" (Luhmann, 1995, p.xxv). Systems are seen here as self-creating, as they constantly shift through processes of communication. This type of systems theory is said to displace "the entire hermeneutic tradition, together with its perpetual self-doubt." (xxv) Luhmann is therefore not interested in trying to understand subjective meanings, but instead works toward the way that "consciousness emerges together with and encourages the formation of social systems" (xxv).

With communication assigned as the basic element to society's sub-systems, the autopoietic nature of these exchanges can be understood as that which arises exclusively through systemic communication, creating and re-creating itself with every turn. When accounting for Luhmann's tendency towards an autonomous, self referential systems theory, William Rasch writes: "The task of social theory, he maintains, is not to wish for an alternative universe but to account for the social aspects of the one we inhabit." (Rasch, 2000, p. 130) Meanings are individually developed here, resulting within the larger system's web of communication. The point is especially relevant where the analysis of

reproductive systems is concerned, as the focus shifts to meaningful threads of communication and away from generalized, moral assumptions.

Luhmann has indicated that we are socialized as a result of interpenetration (253). Penetrating the world then, is no more than an act of understanding communication processes. As we reach for the aspects of the world we inhabit, we must keep in mind the many possibilities of further creation. If social systems are to be considered intelligent, rationally operating movements, we may penetrate the social world through an analysis of complex system-environment communication.

1.4 Complex Relationships

Given that Luhmann draws his unique theory of the social largely from biological evolutionary theory, it is clear that the complex status of system-environment relationships have not always existed as they do today. While he is careful to avoid metatheorizing, he has drawn certain distinctions between pre-modern and modern forms of intimacy which remain pertinent to an examination of artificial human reproduction. These distinctions, as mentioned, are based primarily on the increasingly complex nature of relationships in the modern world, which have led to the evolution of certain 'codes' or ways of communicating. Whether the observer is referring to a system of love or of assisted conception, relationships with outer environments are necessarily complex in nature, and become more probable through the use of structured communication codes.

As noted, Luhmann's examination of the development of western intimacy codes was realized through an analysis of love and its various discourses throughout history.

Love, as he refers to it, constitutes a 'symbolic code', a statement which he later continued to elaborate on in claiming that social systems of all dimensions rely on communication for survival. He sites the code *love as passion* as one that has emerged since around the time of the 18th century. Luhmann positions France as the original starting point for passionate love codes, which began to emerge with courtly desire around the late 17th century (*amour passion*), and continue with romantic love around 1800 (Luhmann, 1986: 43). The love code *amour passion* was so strong that it is said by Luhmann to have forced a re-consideration of French Puritan sexuality by the eighteenth century. He follows the movement of the love code up to Victorian England, and then to a German context, where shifts in historical and cultural differences are appropriately noted. The modern reproduction of life has now emerged as an intimate form of communication, infused with entangled, often paradoxical meanings of love, eroticism, and marriage. Consequently, as relationships become less probable, it would then follow that reproduction would become increasingly unlikely, hence the development of certain codes, or paths of communication by which to rectify this atmosphere of improbable relations. While Luhmann did not address the problem of artificial reproduction per se, he did analyse the development of certain love codes in order to illustrate the indispensable nature of communication codes in the modern world. Familiarity with the stages of modern communication codes is useful in dissecting intimate communication paths, specifically those between reproductive systems and environments.

As he describes it, intimacy codes emerged in three distinct stages. The early form is said to have been representative of an ideal, where women were often desired from afar and carefully courted. The next stage of the code is described as representing a paradox,

where Luhmann explains, “one does not yield to the resistance a woman puts up, for this would amount to sinning against the holy spirit of love” (Luhmann, 1986, p. 64) As the eighteenth century progressed, a more efficient stage of the love code emerged, being that of a function. This allowed the domestic sphere especially to organize itself in such a way as to constantly produce and reproduce itself. (Luhmann, 1986, p. 130) Reproduction codes might also reflect the stages of ideal, paradox and function, beginning with an ideal, where the pre-modern family produced children at a ‘natural’ (early) stage of the lifespan. The next stage of the reproductive code might be imagined as paradoxical, where technologies such as in-vitro fertilization were being developed, yet were not accepted as ‘normal’ or ‘right’ within most social environments. His theory of paradoxicalization seems to mark the dawn of extended autopoietic closure, as he insists “One could distance oneself from ideals only by referring to the unsatisfactory nature of fulfillment, whereas paradoxical forms invite self-distanciation and self-preservation in the process of distanciation.” (Luhmann, 1986, p. 66) This paradoxical element requires extended deliberation, as it is a crucial component separating Luhmann’s systems theory from others that rely far more on strict functionalism. Finally, assisted conception has moved towards its functional role, and much as with love, these technologies are allowing the domestic sphere to reproduce itself, only this time, quite literally. The code allows for a more diverse understanding of reproduction, as well as an increasingly inclusive form of intimacy. The primary function of the assisted conception code then, is to serve as a facilitator to improbable intimate relations, just as love’s code has in the past.

As has been noted, the love codes are said by Luhmann to have developed primarily out of 18th and 19th century literature, and are deemed essential towards the experience of intimacy. Although the rules to this code have changed over time, the fundamental aspect of Luhmann's theory is that love is essentially a modern, systemic phenomenon. As with reproduction, an analysis of the 'semantics of love' emphasizes the shift from traditional to modern societies, where relationships have become increasingly complex and improbable. It is important to recall that Luhmann's concern lies not with emotions, but with social systems, and the way in which relationships operate within them "...love will not be treated here as a feeling, (or at least only secondarily so), but rather in terms of its constituting a symbolic code which shows how to communicate effectively in situations where this would otherwise appear improbable."(Luhmann, 1986, p. 8) Intimate relations are said to be inherently improbable due to the fact that they are complex and dependent on subjective thoughts and feelings. As such, the development of a certain code, or set of ideals emerged which aided in the facilitation of rational discourse, whereby the 'players' in love's game came to know the rules. It is important to mention here that the 'players' in the game of assisted reproduction must also know the rules that apply to their specific system-environment relationship in order for the development of effective communication. Systems theory dictates that intimate relationships have very little chance for survival in the modern world unless these conditions are met.

The point that Luhmann stresses throughout *Love as Passion* is that love is not as subjective a phenomenon as we would like to think that it is. It is in fact attributed to a social code, or set of values far more than to biology, requiring the interpenetration of

expectations along with acceptance of these. Luhmann's understanding of the interconnectedness of these systems leads to his quest for love's essence, where the code of passionate love is historically traced, and understood as the 'channel' from which intimate information flows. The point is relevant, as I attempt to understand the 'channels' by which information flows among reproductive systems and environments. As with love, modern reproduction has become more complex and improbable than ever, which has led to the development of socially specific codes from which systems may meaningfully communicate with environments. As with love, modern human reproduction is attributed to far more than simple biology. The complex communicative paths among systems and environments are attributed to certain codes, as will be discussed further in the coming chapters. The stages of the code as ideal, paradox, and function aid in the understanding of evolving social systems, as they are representative of the social system's adaptation to increasingly complex circumstances.

1.5 The Ethical Vortex

As advances in reproductive medicine continue, so do the tireless debates over their ethical meanings. As noted, an inspiring aspect of systems theory is that it draws us away from binary debate, and towards communicative understanding of social relationships. In the case of assisted conception, the complex relationships between system and environment are examined, while issues of ethics are delegated to mere components of these. This is in keeping with Luhmann's theory, as he asserts, "The true sociological interest is to investigate how the semantic equipment of morality varies with the typology of social systems, above all, with sociocultural evolution." (Luhmann, 1995,

p. 238) This position does not abandon morality altogether, but rather, considers that the role of morality evolves with systems and environments, allowing for an adaptable variable, implementation of moral codes. The observer is able to interpret communication through a code of ethics, but is conscious of the relationship paths that are developed through this.

Luhmann is careful to note that the identification of such variations does not translate into a kind of 'unchecked relativism' (238). What is deemed 'moral' is not left entirely to the discretion of the individual, but rather, is the result of an act of interpenetration which survives both "in binding the conditions under which one can relate to another as a person and as a human being" as well as the inclusion of the others complexity and autopoietic power into their own self-interpretation. (238). Morality, as far as the entire system is concerned, does not serve as a directly functional mechanism. Contrary to this one-sided view, "Morality repels, quarrels, and impedes the resolution of conflicts- an experience that has resulted, among other things, in the separation of law and morality." (235). Evidently, we rely on laws to rationally solve conflicts, and while these are by no means acts of complete social consensus, they can resolve situations with much greater ease and efficiency than a moral model can. Given that morality may not be considered a rational solution to conflicts, systems theory removes it from the sphere of human beings and society, and places it into the more appropriate dimension of "the relation between relations: to the coordination of two distinct relationships of interpenetration" (235). Secure inside *the relation between relations*, morality remains a communicative code, and does not interfere with the systems further differentiation. This idea of morality will undeniably lead to deeper and more complex forms of intimacy, as

Luhmann concludes, “intimacy between humans cannot deepen if it remains bound to considerations of societal morality. Thus when society enables more intimacy, special codes for passionate love, an appeal to nature, and aesthetic formulations take the place of a universally binding morality.” (234). It is important to note that moral codes may enable or disable system formation, but are not pre-programmed, or embedded into system formation in any way. As far as Luhmann has concluded, the functional capacity of a social system depends on the extent to which the consensus of esteem or disdain is bestowed. (236). This esteem must pass through structures and survive the process of interpenetration in order to enable intimate relations.

Morality impedes the formation of the codes meant for us to read esteem or disdain, resulting in the breakdown of intelligent system formation. William Rasch elaborates on this point by observing that “It is Luhmann’s contention that morality represents the foremost impediment to the continued working of the political, both on the ‘macro’ level (in terms of ‘the good life’) and the ‘micro’ (e.g., ‘family values’ or ‘empathy’), because it acts as a virus, destroying the codes of the function systems to which it attaches itself.” (Rasch, 2000, p. 127). Morality then, can be imagined as a virus, certain to infect the organism and inhibit normal functioning if left to transcend all codes. When reproductive technologies, as with other social systems, are infected with the moral virus, they face the extinction of self-referentiality. While Luhmann concedes that no society would ever completely forsake morality, he goes on to explain that this is primarily because “reciprocal esteem is continually reproduced in interaction between human beings”. (Luhmann, 1995, p. 240) This continual flow of esteem is what aids in the functionality of morality, allowing it to (indirectly) survive. The resulting problem is

that a complex society requires many “different kinds of expectations for its autopoiesis- including possibilities for entering into and living out intimate relations- that it is impossible for it to sanction all of these expectations via the acquisition, maintenance, and loss of esteem.” (253)

Most important in Luhmann’s understanding of morality is his insistence that moral codes do not contain value within them. A structural code is neither positive nor negative. “The differentiation of functional systems instead presupposes that these codes, independently of one another, fulfil functions that direct operations, and that it is also impossible to integrate them through a supercode, for instance through the code of morality.”(Luhmann, 2002, p. 124). This is to say that systems theory requires codes to carry out functions and work independently of one another, hence the impossibility of morality to enter into all communication structures equally. Morality must function as a communication code of its own among others, without imposing universal notions of good/bad on systems as they create. (124)

While Luhmann recognizes that the tendency to attempt the systematization “between and the compatibility of moral demands”, he goes on to acknowledge that “Since the time of Aristotle, their theoretical form has customarily been called ethics”(Luhmann, 1995, p. 236). Ethics, as far as systems theory dictates, should be of no great concern to sociologists. While Luhmann maintains that the sociological interest should be to sort out how morality relates to the system (as a code), ethical matters impede this process. It is Luhmann’s contention that the sociologist should pursue social problems by considering morality as simply one code among others. (Luhmann, 2002,

p.124) Ethics are to be considered everything outside of that code which operates to lend credibility to it.

In keeping with his non-static view of morality he writes; “The esteem of other human beings thus becomes an anchorage of the requirements of social order, and at the same time these requirements vary what is signalled back to the other as a condition of esteem or it’s loss.” He concludes “According to this hypothesis, morality will be a source of difficulty or will have to transfer functions onto the social system if these two forms of interpenetration drift apart.” (Luhmann, 1995, p. 236-237) The complex communication in the modern world has then, altered, or evolved, the role of morality as conditions of esteem or loss of it become increasingly impalpable. Luhmann primarily attributes morality’s semantic shift to the decline of religion, the privatization of friendship, and social reflexivity of love (Luhmann, 1995, p. 217). The private and public spheres can no longer rely on a single understanding of morality, providing the sociologist with “the possibility of identifying moralized themes and clarifying their socio-cultural conditions” (238). The following examination of reproductive system-environment communication will identify moralized themes while illuminating cultural contexts of meaning creation through a variety of codes, especially those enabling intimate relationships.

CHAPTER TWO: Structures of Expectation and Gendered Impulses

CODIFICATION IS A KIND OF SEMANTIC DUPLICATION OF VIEWS THAT FURTHER THE ACQUISITION AND PROCESSING OF INFORMATION. (Luhmann, 1986, p. 170)

While intimacy remains in perpetual jeopardy in the modern world, structures of expectation assist in resolving potential fragmentation or social displacement. These structures, or codes, remain crucial to the system-environment relationship, as well as to the formation of new systems and environments. Meanings are filtered through these codes and passed on. Structures evolve and multiply, as do systems and environments. Just as the difference in gradients of complexity between system and environment are of great consequence, so too are those among environments. While the previous section explored how we are able to get a glimpse of system-environment reality through differing gradients of complexity, the following sections will address the ways codes are employed within these gradients. The observation of these codes effectively leads to a more fully developed analysis of the semantics of human reproduction.

Given that the social system is an entity without meaning until it communicates with the environment, certain *environmental influences* are accounted for in relation to modern systems of reproduction. As the system travels through to the environment, passing through codes which simplify system-environment communication, it works to create a meaningful existence for itself. Since the systems self-referential capacity implies environmental impulse absorption, the translation of the code is necessarily dependent on the nature of the environment. The important role of the environment in the determination of meaning, as well as the functionality of the code, adds to the warranting

of an examination of environmental categories. The gendered communication between and among men and women are important paths to decipher, as these indicate a partial history of the meanings of reproductive technologies today. As we move into an elaboration of environmental gradients for systems of assisted conception, I will illustrate how systems implement coded structures in order to facilitate intimate relationships.

Approaching the problem through a second-order analysis is necessary in order to embark upon an observation of the many observers of assisted conception.

Communicative trajectories are actually created by a number of categories of men and women concerned with issues of reproduction. These in turn work toward the creation social meanings. I will examine several of these relationships and meanings by observing liberal feminist environments of autonomous self-determination, and continue with the evolving environments of ecofeminism and socialist feminism. The ecofeminist movement has been particularly successful in the communication of meaning, specifically through certain organizations such as FINRRAGE (Feminist International Network of Resistance to Reproductive Medicine), which affect efficient structures of expectation. In addition to an examination of feminist groups such as these, I have included an overview of certain surfacing masculine codes, which have largely been overlooked by many feminists preoccupied with creating communication codes exclusively in the interest of women. The masculine codes that are explored are read largely through women, as I found that there was far more female communication over what these technologies meant to men and their bodies. Hopefully, this will change, as men become increasingly creative and communicative with regards to their intimate

reproductive capacities. Overall, this section is concerned with the gendered realities created for and by social systems of assisted reproduction.

These realities begin with a human conception necessarily requiring a man's sperm, as well as a woman's womb and ovum. The gendered division of these materials places reproductive systems into the realm of gendered environments, resulting in new forms of system differentiation. Given that reproductive systems are continuously spinning within many types of environments, gendered environments have unquestionably played one of the largest roles in their development. In order to stress the importance of structural codes that lie between assisted reproductive technologies and their corresponding gendered environments, I will begin by examining certain evolving communicative codes that permit the self-referential creation of reproductive systems. Again, Luhmann's concept of social systems is unique, as it goes beyond the capacity of biological systems and claims that social systems are primarily communicative, meaningful systems which in turn influence structures as they live within them. Unlikely and complex relationships are able to survive among social systems through the use of communication codes, while systems are able to create self-referential meaning passing through these on paths to environments. As noted, these communication processes are a significant aspect of systems theory. Luhmann stresses that "Communication is the social system's only guarantee of reality- not because it reflects the world as it really is or describes it correctly (which would presuppose access to independent criteria or the God of Descartes), but because it can be conditioned by the form of its closure and thereby subject itself to the test of proving its success." (Luhmann, 1995, p. 446). The system communicates with its environment for feedback on how to autonomously create.

Structural codes form the basis of system-environment communication and are thus fundamental to the systems concept of reality; they are the only existing evidence that system and environment ever communicated in the first place. Although getting a picture of the world as it *really is* might seem elusive, Luhmann insists that one may come the closest to reality through the observation of these communicative trajectories. The following examination of important environments of assisted conception is in keeping with Luhmann's emphasis on the environmental role in system creation. As William Rasch points out, the environment is central to "one of Luhmann's most radical and controversial theses- namely that the individual not only does not form the basic element of society but is excluded from society altogether, being situated instead in the environment of the social system."(Luhmann, 2002, p. 30). The individual, as a player in the environment, as creator of social systems, is therefore a vital element in the creation of meaning. An analysis of these active environments is necessary, although impossibly all-embracing. While I have decided upon specific environmental existences, these are not to be imagined as definitive. As indicated, a social systems approach dictates that systems communicate with environments via codes, or structures, where what exists meets what is possible. An analysis of gendered environments then, is a look at how individuals work within environments to create codes of communication in order to generate what is possible with what exists. As articulated, systems theory communication takes place through codes, which Luhmann loosely refers to as 'general structures of expectation'. He claims that "these structures of expectation can foresee in detail how and about one should communicate in the supermarket, on the football field, at the bus stop, at lunch at home, in buying a plane ticket over the phone, and so forth. Spontaneity can

appear in highly standardized forms, such as bumper stickers or graffiti.”(Luhmann, 1995, p. 197). Interestingly, what might otherwise seem spontaneous, such as radical feminist resistance to assisted conception, is imagined as perfectly standardized from a systems theory approach.

2.1 Liberal Feminist Environments

As with all environments, liberal feminist ones have selectively evolved over time. The codes used by these communicators bridge a gap between reproductive systems and gendered environments, allowing systems to purposefully develop. These discourses developed within liberal democratic societies of the seventeenth century, which emphasized rights inherent in man, causing women to argue for their own place in the rational spectrum of things. By the nineteenth century,

feminists could use existing arguments about individual rights to argue that if women are treated as autonomous, self-determining individuals, rather than simply as daughters, wives and mothers to be owned, controlled, or protected by men, they can transcend the limitations of their ‘womanly condition’ and lay claim to citizenship rights on the same basis as men. (Bryson, 1999, p. 11)

Autonomy and self-determination are the basis of liberal feminist codes, and since the second half of the twentieth century, these have led to the insistence upon ‘a woman’s right to choose’. Although the code for an autonomous ‘right to choose’ was implemented early on in terms of abortion rights, the code quickly evolved to encompass all reproductive choices. Feminists who supported reproductive technologies such as the birth control pill and abortion led the contemporary women’s movement of the late 60’s. These were seen as “progressive because they could sever the link between sexuality and

reproduction” (Wajcman, 1991, p.56). Reproductive systems were communicating through codes of social independence, causing an empowerment that enabled women to pursue careers by putting off childbearing until later in life. The liberal feminist environment enabled these, causing the codes to multiply.

Liberal feminist theory remains active as the producer of evolving codes of efficiency, enabling reproductive systems to survive meaning creation within the gendered environment. These codes had once been mostly translating meanings of anti-conception, such as the birth control pill, but are now allowing for creation with new reproductive technologies with the same goal of gaining autonomous reproductive rights. The liberal feminist codes of the 1960’s dictated that women were to overcome biological obstacles in order to win the fight for equality of the sexes. They further expressed that women would never be able to compete socially with men unless their reproductive capacities were left to their own control. The liberal feminist codes ultimately advocate that a woman should be able to exercise total control over her own reproductive faculties under all circumstances. These codes communicate the idea that women will make rational decisions concerning their own well being, choosing whether or not to have a child upon their own will (Bryson, 1999). The code interprets autonomy as an overcoming of biological obstacles.

Valerie Bryson speaks of the amazing possibilities of reproductive technologies available to women, and goes as far as to explain; “in some societies, this has combined with a relaxation of restrictive sexual codes to increase women’s freedom of sexual choice and expression”. (Bryson, 1999, p.2) A combination of codes, as seen here, leads to increased system differentiation. Luhmann explores an example of this differentiation

when he investigates how the code love as passion allowed love, sex, and marriage to take on various meanings, especially in relation to one another. The most distinguishing feature of these is the paradox brought to the meanings of matrimonial intimacy, where the modern context is described as the separation of physical attraction and love. Semantics of the paradox involved here is represented by Mary Evans, as she points to the way that expressions such as 'the honeymoon is over', suggest that the period of romantic courtship has ended, and reality will now set in. (Evans: 1998, p.262) Bryson's observation that reproductive choice seemingly parallels sexual freedom might be evidence that liberal intimacy codes are increasingly shifting from the paradoxical to the functional. This simply means that things are moving from the not-so-probable to the probable, - whether the honeymoon is over or not is irrelevant, the reality that is evident is that a woman's sexual freedom is directly related to reproductive choice. Luhmann elaborates, by explaining that the paradox need not be considered a state of inactivity or indecisiveness, but "Rather, the paradox refers to the level of expectations made of one's partners in an intimate relationship..." (Luhmann, 1986, p. 55) The liberal feminist wants her reproductive intentions to be of no surprise, - she lives in the functional by relying on birth control until she wants to reproduce.

As Luhmann describes it, the environment does not necessarily cause a direct impact on system formation. However, 'perturbations', or 'impulses' from the environment are necessary factors in the development of the system and the progression of meaning creation. The system reads and processes environmental impulses, resulting in a unique interpretation of its own capabilities and restrictions. Mass numbers of women buying birth control led to many consequential system-environment

communication paths. Meaningful creation within the environment requires the help of these impulses, as they are indispensable reference points for the system's knowledge of itself. (Luhmann, 1995, p.218) As reproductive systems create meaning within gendered environments, they are necessarily absorbing environmental impulses. In keeping with the liberal feminist code to delay childbearing in order to compete socially with men, today's liberal code is created by environmental impulses, including assisted conception possibilities such as sperm and egg banking, surrogacy, and in-vitro fertilization. Bryson adds to the liberal feminist position, and declares that; "a woman should be as free to contract out her womb or sell her eggs as to let her house or to sell her labour." (Bryson, 1999, p. 155) More than an ethical, or moral statement, this is a code to be read and interpreted by individuals in gendered environments. They become impulses, absorbed into a code of technological acceptance. Access to assisted conception allows for more control over fertility by the liberal code, just as access to anti-conception (birth control) had been associated with fertility-control in the past.

Liberal feminists have always valorized the double role of career and family, and early liberal feminists believed that an unplanned pregnancy would jeopardize future career opportunities. The liberal code dictated that women should avoid 'dropping out' of the workforce, in order to gain as much experience, seniority, and skill as possible. Birth control aided in this process, preventing these women from falling into a lengthy maternity leave which would put skills, seniority, and experience on hold, allowing others to advance. Bryson seems to indirectly suggest that the liberal feminist environment might not be exclusively rational since it simultaneously advocates freedom from government intervention and state support for fertility treatments (Bryson, 1999,

p.155). Again, Luhmann describes the development of intimacy codes in three distinct stages, from the ideal, to the paradoxical, to the functional. An ideal version of this code might reveal itself as one of either against government intervention or in support of government funding. As the code evolves, both types of impulses are emitted into the system, creating the paradoxical phase of the code. A functional phase will emerge as these two types of impulses merge and rationally complement each other. Bryson's comment that the liberal feminist position is not entirely rational might be evidence that the liberal code has not completely shifted out of the paradoxical phase, where government involvement in the reproductive process is imagined as both oppressive and liberating. As far as this stage of development is concerned, it is important to remember that systems theory dictates: "Even a contradiction or paradox has meaning" (Luhmann, 1995, p.95).

While birth control devices helped keep many liberal feminists in the work force, those women who did eventually wish to reproduce often found it difficult, and often impossible to conceive after a 'career delay'. The liberal reproductive code began to change slightly, around the mid 1970's, the time of Louise Brown's amazing test-tube birth. These liberal women began to realize that they weren't bound to biology, allowing for the launch of meaning-creation with the knowledge of new modes of reproduction on the horizon. In light of the fact that liberal feminist codes are applicable to all dimensions of intimacy (ideal, paradox, function), they are possibly best described as in transit from the paradoxical to the functional. We know that expectations might still hinge on the paradoxical, especially when speaking of concepts such as individual rights, where an unborn baby is concerned. What is good for mother might not always be good for baby

and vice-versa. The preliminary shift into the functional realm of things is evidenced by the technological drive to align the needs of these two. In terms of future developments, artificial wombs could lead to a less frequent rate of abortions, as potential mothers who are not physically, mentally, or emotionally ready to carry a child might prefer this. These artificial wombs (McPherson, 1993, Stock, 2003) are described as an ideal solution for increasingly complicated reproductive decisions. They could possibly provide a healthy environment for fetuses otherwise in jeopardy, either due to a mother's drug or alcohol addiction, or to a medical condition which would hinder development of the fetus. These might also radically alter the need for surrogate mothering, with all of its paradoxical baggage, as well as offer a starting point for negotiations between both sides of the abortion debate.

As mentioned, the primary function of the assisted conception code is to serve as a facilitator to improbable intimate relations, just as love's code had in the past. An important code directly created through the popularization of birth control was simply that women were capable of *controlling* birth, which meant that they could be in *control* of the reproductive process. This code made the improbable intimate relation of reproduction more probable by allowing women to choose 1.) when to reproduce, 2.) whether or not to reproduce naturally, and 3.) whether or not to reproduce at all.

In offering an explanation for the phenomenon of birth control devices, Valerie Bryson indicates how "the one thing that appeared to unite feminists was the belief that women have a right and a need to control their own fertility" (Bryson, 1999, p.148). Granted, while feminists today are still aiming to control their own bodies, there is much less consensus over what that really means. While many are familiar with vocal liberal

feminist politics, the less visible ecofeminists are completely in disagreement with methods of assisted conception and fertility control. Liberal feminism provides a code for the most efficient means of reproducing by advocating the pursuit of a career followed by optional reproduction, but the ecofeminist's code of efficiency is one in which all *natural* considerations are taken. Natural fertility is venerated and the otherwise expected shortcomings of the female body are certainly not considered a disappointment to these women.

2.2 Ecofeminist Codes

As I continue with radical ecofeminist codes, it is important to remember that these tend to often translate meanings of assisted conception into male dominated endeavours that negatively impact upon women's social lives. The ecofeminists feel power through their natural biologies; any move to scientifically alter natural childbirth is taken as stripping them from their natural right to reproduce. The ecofeminist codes, or, *structures of expectation* evolve by referring to previously constructed structures. When faced with existing positive structures of assisted reproduction from which to create meaning, the reproductive social system purposefully chooses it's own path to take. Reproductive systems create specific meaning for themselves with the aid of ecofeminist codes. These might arise on either a collective or individual basis. It must be noted again, that while the environment is sending negative impulses to reproductive systems in terms of ecofeminist communication, Luhmann's system's theory does not require that all communication operate in search of agreement. He specifies that

Often, it is more or less implicitly supposed that communication aims at consensus, and that it seeks agreement. The theory of rationality of communicative action developed by Habermas is built upon these premises. One can also communicate to mark dissent, one can desire to argue; and there is no compelling reason to hold the search for consensus to be more rational than the search for dissent. (Luhmann, 2002, p.162)

Although liberal feminists are mostly in agreement concerning the new reproductive technologies being developed, their communication is no more relevant, or rational from a systems theory perspective than the dissenting communication developed through ecofeminist codes.

As noted, liberal feminists of the 1960's women's movement read the gradients of complexity between system and environment as a positive step towards the separation of reproduction and sex, which could potentially free them from the confines of their 'naturally intended' social roles. The codes read by reproductive systems thus enabled communication causing technological advancement, along with cultural acceptance. Despite its somewhat homogenous start, reproductive systems at the time of the liberal feminist movement were beginning what was to be a long era in meaning creation. As these systems meandered autopoietically throughout liberal feminism, other more complex environmental impulses were causing reproductive systems to redefine themselves accordingly. Radical ecofeminists used these impulses to argue that major technological developments in reproduction were traditionally developed by men resulting in the increased control of women. (Lublin, 1998, p.44) These social interpretations assign women the role of victim, as men are forced as a whole into the role of technological oppressor. The communication code is established here as one where assisted reproduction is to be avoided at all costs in order to not fall victim to male-dominated control. The importance of the communication code is apparent as an

inherent device of meaning creation. As the reproductive system self-referentially communicates with a gendered environment through a serial implementation of ecofeminist codes, the intimate act of reproduction is filled with meaning and is enabled its survival. While the *absolute reality* may not be that men are generally technological oppressors, observing the observers of this communication code allows for a certain understanding of ecofeminist reality.

The radical ecofeminist position is read through codes such as the Feminist International Network of Resistance to Reproductive Medicine (FINRRAGE), which has translated systems of assisted conception as evil and destructive. Nancy Lublin (1998), Jana Sawicki (1991), and Judy Wajcman (1991) have cited this particular group of women as the most vocal, radical opposition to reproductive technologies. FINRRAGE members have taken it upon themselves to expose reproductive exploitation, and to explain the ways in which “the female body is being expropriated, fragmented and dissected as raw material, providing ‘living laboratories’ for the technological production of human beings” (Wajcman, 1991, p.59). The evolution of the FINRRAGE code for reproductive systems is one that has evolved over the past two decades, and is historically traced by Nancy Lublin. The beginnings of the code were set in motion, as she describes it, in 1979 at a conference at Hampshire College, Amherst, Massachusetts, entitled *Ethical Issues in Human Reproduction Technology: Analysis by Women*. She continues,

By 1984, despite low success rates, more than one hundred IVF teams had set up clinics advertising ‘treatment’, surrogacy was a growing industry, access to abortion in the United States was increasingly restricted to adult women who could afford to pay for it, and the world’s first IVF baby derived from a frozen and thawed embryo was delivered by caesarean section. Perhaps in response to these events, a few of the activist-authors who participated in the first conference became increasingly agitated. A handful of women decided it was necessary to approach technological intervention

in the womb more seriously. They asked, 'Who benefits from reproductive technology?' (Lublin, 1998, p. 62)

From this one question, conclusions were formulated, and a communication code was born. These women were acting within gendered environments, infusing reproductive systems with their beliefs about the meaning of human conception.

Wajcman explains that this group has since then, taken it upon themselves to expose reproductive exploitation, and to explain the ways in which "techniques such as in-vitro fertilisation, egg donation, sex pre-determination and embryo evaluation offer a powerful means of social control because they will become standard practice." (61) She continues with a strong belief that "Techniques such as in-vitro fertilisation, egg donation, artificial insemination, and surrogacy have the potential to place the whole notion of genetic parenthood, and thus family relationships, in jeopardy." (Wajcman, 1991, p.62) An ecofeminist code such as this will claim that these technologies remove the self-control that women should naturally have over their own bodies, as well as over those of their unborn children. The code communicates a critical assessment of assisted reproduction, which has extended toward systems of reproduction such as the mass sterilisation programs of the World Health Organization.

Women's groups such as FINRRAGE have effectively organized themselves over the Internet. The tool provides these women with an effective channel for codes of ecofeminism, as it offers an opportunity to reach a wide audience when addressing topics of reproduction, allowing men and women with alternative points of view the chance to join in on discussions relating to the issue. Just as the code *love as passion* had been read through literature, codes of assisted reproduction are increasingly communicated through grass roots Internet sites such as the one organized by FINRRAGE. Whereas Luhmann

spoke of the seventeenth and eighteenth centuries, we must now fast-forward to an age where the World Wide Web and other communicative media reign. Judith Richter, one such participant in this new hyper communication, wrote a strong reaction to the World Health Organization's report on anti-fertility vaccines in 1994, which is still available through women's online newsgroups (Richter, 1994) Her plea is for an open debate on the prospects of research into these new forms of reproductive technology. Richter's work here provides an example of the type of resistance that those such as Judy Wajcman (1991) and Jana Sawicki (1991) have advocated.

Richter was asked to write a reaction to the World Health Organization's *Human Reproductive Program* concerning an anti-fertility vaccine that is currently being developed for women in under-developed nations. She is basically aiding in the creation of a communication code for reproductive systems from a gendered environment, one that defines these systems as generally inappropriate for everyone, claiming that they aim primarily to control, and not improve the overall reproductive process. "The aim must be to enable people- particularly women-to exert greater control over their fertility without sacrificing their integrity, health and well being." (Richter, 1994) Unlike other radical ecofeminists, Richter's code does not translate into war against men specifically, although it does borrow from her peers in that it stresses the well being of women above all else. She urges women to beware of reproductive control, and even goes as far as to indicate the specific names of those involved in manipulative reproductive technology development and implementation. The transmission of her code is a fight against powerful organizations such as the World Health Organization and the United Nations in order to end the research into anti-fertility 'vaccines'. Her argument is basically aimed at

protecting human rights in relation to reproductive freedom; her code aims to essentially provide a path to women who have been left out of the discourse of new reproductive technologies. In doing this, Richter supports a code of technological suspicion while simultaneously strengthening codes of reproductive awareness as she calls for women to control their own reproduction, predominantly through taking part in the decisions that are made over their own bodies.

These women have chosen to create their own communicative codes, as they characterize the “medicalization of childbirth as the transformation of pregnancy into a disease and the takeover of a female-centered natural process attended by skilled and caring midwives by a group of male physicians interested in establishing and expanding their practices, their occupational status and authority, and their control over women.” (Sawicki, 1991). Read through this code, any form of technological intervention into the process of human reproduction is unnatural and oppressive. The female body is decoded here as continually manipulated and surveyed by patriarchal medicine. Again, an ecofeminist perspective is communicated just as rationally as liberal, socialist, or masculine perspectives are, despite its resistance to reproductive medicine. The code simply claims that these technologies remove the self-control that women should naturally have over their own bodies, rendering childbirth unnatural. Nancy Lublin stresses; “The fundamental creed of ecofeminism is woman’s intimate connection with nature” (Lublin, 1998, p.45)

Gena Corea is a core founder of FINRRAGE, and has been a feminist activist for the cause of reproductive freedom. Her position is that reproduction is a ‘woman’s unique source of power’, one that is far removed through technological processes. She speaks of

reproduction in much the same way that other ecofeminists do, yet she offers a stronger set of environmental impulses to systems of reproduction by stressing her hatred for oppressive patriarchal manipulation. The beliefs of FINRRAGE are centered on ecofeminist principles, where oppression from patriarchal forces is often imagined as domination over reproduction. Examples of Gena Corea's concerns would include the way that birth control devices have been more often developed for women than men, along with the way that new reproductive technologies have fragmented "the once unified biological process of motherhood into separate functions-that is, egg donor, womb donor, and social mother-as a dangerous degradation of motherhood" (Sawicki, 1991).

FINRRAGE hardliners such as Corea are especially concerned with ending research on new technologies aimed at women's reproductive systems (Wajcman, 1991). Among the environmental impulses generally transmitted by this group, most have centered on bans for in vitro fertilization and anti-fertility vaccines, although they are generally concerned with resisting any form of reproductive technology. Their message to women around the world is to "resist the hegemony of the Western medical model of pregnancy and childbirth by separating or withdrawing from it altogether". (Sawicki, 1991) By spreading this message to other feminist and world health groups, the ecofeminist code develops and evolves.

Judy Wajcman's notion that social forces carry patriarchal influences is a common starting point for the eco-feminists. As it stands, radical ecofeminists define technology as patriarchally influenced, and women as technologically oppressed. By removing the moral component to this attitude, Luhmann might distinguish this as a perfectly legitimate form of communication, "In this sense, a system of communication is

an autopoietic system that produces and reproduces through the system everything that functions for the system as a unit. It is self-evident that this can occur only within an environment and under conditions of dependency on limitations set by that environment.” (Luhmann, 2002, p. 161). As systems of reproduction pick up gradients of complexity in ecofeminist environments, social meanings are created. Systems reproduce themselves over and over again with reference to the same environment evolving slightly depending on the gradients absorbed from the environment. This is exemplified by differences among the slightly varied, yet semantically common ecofeminist codes of Gina Corea, Judy Wajcman, and Jana Sawicki. While the communication codes created by these women insist upon a woman’s distinct capability to reproduce, the following codes of socialist feminism emphasize the many distinctions among women.

Although both ecofeminists and liberal feminists focus on a woman’s need to control her own reproductive destiny, the semantic differences are clear. For the ecofeminists, reproductive control requires staying within the range of naturally occurring biological processes, whereas for liberal feminists, reproductive rights include the power to shape, and possibly change naturally occurring biological processes. In between these two perspectives however, is another semantic divergence. Clearly, control of one’s own reproductive destiny is the main concern for all feminists, however, new codes developed once certain women began to feel as though the two preceding perspectives had not properly addressed their needs. They began to come up with their own meanings of personal reproductive control, and freedom over their own bodies. These women will be loosely referred to here as *socialist feminists*, a term meant to include minority feminists and others who felt that identifying with either the liberal

feminists or the ecofeminists would compromise personal reproductive freedom. These women believe in reproductive autonomy, only they do not believe that this autonomy is equally accessible to all. They use their positions in the gendered environment in order to infuse reproductive systems with their own meanings.

2.3 Socialist Feminist Codes

As more attention has been given to the voices of socialist feminists in recent years (Bryson, 1999, p. 156) increasingly diverse reproductive social systems continue to develop. While these often less visible branches of feminism do agree that women should have the right to make their own reproductive choices, they do not believe that lower classes of women are being offered the same social choices as middle or upper class women. In this case, they are observing a somewhat complex assortment of codes for systems of assisted reproduction, yet their additional impulse contribution to these existing structures is unique. Luhmann would characterize this as perfectly expected system-environment communication, and a biologically standard process of meaning creation. He specifies; "The phenomenon of meaning appears as a surplus of references to other possibilities of experience and action." (Luhmann, 1995, p. 60) By referring to what is real or as Luhmann describes it, "presumably real" (60), as well as to what is possible, meaning is self-referentially formed. The system picks up the many socialist feminist impulses from the environment and creates meaning with these. A somewhat ambiguous aspect to Luhmann's concept of meaning is that reference be made to outside meaning in order for the claim of reality; "At any time, meaning can gain actual reality

only by reference to some other meaning;”(Luhmann, 1995, p.61). While the concept seems clear enough, he does not account for a presumably original starting point for meaning without reference to outside meaning. In the absence of this original point of departure, social systems will be assumed as those which generally build meaning upon previously established meaning.

In terms of socialist feminist environmental impulses and their ability to infuse reproductive systems with meaning, these have mostly been built upon the established meanings behind liberal feminist praise for assisted reproduction. The ecofeminist response to these technologies is a reluctance to accept what has been deemed *reproductive control*. Although free access to contraception and abortion have been available to many women in western democracies who fought for them in the 1960's and 70's, there has been concern raised over *where* these devices are most often directed. New socialist feminist codes are developed by meanings surrounding certain classes of women in the United States which have been encouraged to sterilize themselves with long-term contraceptives. These include techniques such as the infamous *Depo Provera* injection, which socialist communication has translated into an insidious form of social control. (Bryson, 1999, p.151) A socialist feminist code is one that generally translates how these systems will affect certain groups of women according to their social status, while building upon already existent reproductive paths. It is simply a different way of communicating the need for reproductive autonomy.

While reproductive socialist feminist codes, as with liberal and eco-feminist codes, allow for the communication of women's reproductive autonomy (Bryson, 1999, p.156), they are likely defining autonomous control as that which allows free

reproductive choice regardless of social status. Bryson professes that “Disabled feminists have further argued that genuine reproductive choice for all women requires rejecting the assumptions that disabled women should not have children and that the life of a disabled person is not worth living.”(Bryson, 1999, p.156). A disabled feminist believes that she has the right to reproduce, even if it means reproducing her disability. Recent issues of autonomy concerning the rights the disabled have been raised when discussing the future possibilities of genetic engineering.

Some deaf couples say that in their culture a deaf child fits in more easily and therefore would be better off than a hearing child. If such a couple decided to use embryo selection to guarantee that their child was deaf- and some have expressed that wish- no one could argue that they were injuring a healthy child. They simply would be choosing deafness. (Stock, 2003, p. 168).

Clearly, autonomy is a common issue, but the semantics involved make it difficult for the eco-feminist to understand that genetically engineered deafness is actually very close to her own position on reproduction. Socialist feminists work to change the code to include the value of all life, regardless of social or physical identity. In this case, the code communicates the inclusion of those habitually left out of reproductive system-gendered environment communication.

Again, the actual technologies are not the immediate issue; more important are the meanings drawn from the system-environment relationship. These perspectives draw to our attention the specific contexts from which reproductive ethics are drawn, while emphasizing the point that women do not constitute a single category as a whole. Diverse feminist systems such as these take into account the economically disadvantaged point of view by asking if a low income woman is really exercising *choice* over her own body when she decides to sell her reproductive materials on the market. As she refers to the

larger environment, one that is economically enabling might emit impulses allowing her to justify this path to herself and others. In the same vein, positions that include the physically disabled draw attention to the fact that disabled mothers are often encouraged not to breed, as well as the fact that abortion is more likely to be sanctioned if the fetus is disabled. The law is then, less of an ethical consideration, and more closely related to what is seen as rationally, or systemically fitting. Valerie Bryson offers an example of this circumstance, by describing the way in which British law considers a fetus over 24 weeks as entitled to human rights, yet those rights are lost if it is diagnosed as being disabled (Bryson, 1999). Bryson's message is for women and policy makers to consider alternative points of view when constructing their own theories relating to reproductive technology. In order for there to be meaningful examinations of reproductive medicine, feminists must engage in open dialogue with one another, as well as with other members in society. This type of exchange would allow women insight and understanding into worlds that they may never have known, while allowing them an opportunity to *add to* and not necessarily *change* their principles. As Bryson indicates;

In the real world of politics, compromises have to be made, and if feminists want to enable women to control their own fertility, they have to capture the middle ground of public opinion, and enter into the kind of dialogue that makes political negotiations possible. This involves the power of language to control and construct social reality, but it need not represent the cynical abandonment of principles. (Bryson, 1999, p.170)

Translated from a social systems approach, Bryson is advocating system environment exploration through a variety of codes.

Socialist feminist codes communicate, among other things, that social categories be a prime source of reproductive meaning creation. They are referring here to meaning that involves middle or upper class women benefiting from these procedures, while lower

class women are left behind; “Insurmountable excluding factors are inability to pay high out-of-pocket medical costs, lack of high-end medical insurance, and/or lack of informational or cultural familiarity with high-technology reproductive options like gamete donation.”(Kaplan and Squier, 1999, p. 30). One survey is said to have found that those who are willing to engage in these procedures will pay between \$170 000 and \$1.7 million of their own finances in order to artificially conceive life (Kaplan and Squier, 1999, p. 82). It becomes increasingly evident to socialist feminists that these services are not easily accessible to everyone in society. The code established here treats technological reproduction as an unattainable goal for many women, as it lies within the realm of paradox. The dream of autonomous reproduction is stifled by the fact that it is in fact often unfeasible.

Mary Evans offers a similar review of the manifestation of romantic love within Post-Enlightenment literature, and demonstrates how eighteenth and nineteenth century narrative fiction gave rise to the idea of romantic love as an unattainable goal (Evans, 1998). Her argument lies most closely with Luhmann’s idea of love as a paradox in which the “context is for contradiction to force something to occur which would otherwise be impossible.” (Luhmann, 1986, p.64) For example, a disabled woman might be told that, as a woman, she is free to take advantage of all of her reproductive freedom, but as a disabled woman, she might find this message contradictory once she realizes that that her disability makes this improbable. Similarly, Evans sees love as paradoxical for women, since it simultaneously empowers and disempowers, especially noted within a post-Enlightenment context. Unlike Luhmann, she suggests that there is absolutely no function to these relations, and that literature has actually hindered the development of

love rather than helped it “Indeed, narrative fiction has taken a skeptical view of love and a great many words have been employed to demonstrate that romantic love is one of the most futile of human relationships.” (Evans, 1998, p.265). Evans is tracing this impossibility to English post-Enlightenment fiction, and authors such as Jane Austin, who satirized the romantic code.

She makes reference to Luhmann and to the fact that cultural representations (such as those in Victorian novels) have contributed to the notion of love as an unattainable ideal, yet she neglects to credit Luhmann’s description of the functional character of the paradox. Although a paradox exists where the socialist feminist and reproduction are concerned, system-environment communication persists. This paradoxical element requires extended deliberation, as it is a crucial concept separating Luhmann’s systems theory from others that rely far more on strict functionalism. While there is a functional element to a social systems analysis, it is to be found only within the communicative relationship of system and environment. Luhmann elaborates on this point by explaining, “The concepts of function and functional analysis no longer refer to ‘the system’ (in the sense of a mass that is preserved, or an effect to be brought about) but to the relationship between system and environment.” (Luhmann, 1995, p.176). Nadine Taub investigates the socio-economic history of reproductive technologies by examining the role of surrogacy for contemporary women. In doing so, she addresses the fact that feminists are often divided as to whether or not surrogacy is to be taken as a form of social control over women’s bodies. Clearly, a technology cannot stand on its own without penetration from environmental impulses. She goes on to demonstrate that, while certain men and women may approve of the technology for one reason, others who

approve might do so for entirely different reasons. She advises caution in dismissing either side of this debate as semantically static, and continues to illustrate the complexity of meaning involved by explaining “Some proponents of the permissive approach focus more directly on women and their need for autonomy.” (Taub, 1992, p.51). She adds to this though, by indicating that those in opposition to this technology might also be focused on women’s autonomy, but within a different context. It is evident that an analysis of individual system-environment communication processes is important in order to carry on with a second-order cybernetic analysis.

While many feminists acknowledge internal differences, most seem to convey environmental impulses which communicate that issues of reproduction should be far more concerned with women than men. This one-sided development of reproductive communication codes within gendered environments continually carries with it a feminist belief in male oppression, possibly relieved once masculine codes are read. William Rasch argues “Each system uses environmental perturbations as the ‘excuse’ to generate information by way of it’s own code, and these codes, as Luhmann puts it, stand in an ‘orthogonal’ relation to one another. Simply put, they do not overlap. (Rasch, 2000, p.145). An attempt to read many different *types* of codes is not an attempt to overlap these; I intend to remove the “moral bacterium” (Rasch, 2000, p.147) within these codes in order to preserve system identity. Rasch continues with this argument by stating “Such a debilitating moral ‘infection’, or parasitic overlay of the good/bad grid, would paralyze the autonomous functioning of the system, eventually causing it to lose its identity and disappear.” (146). The quest for autonomous reproductive rights is not any more relevant for liberal feminists than it is for the ecofeminists, socialist feminists, or men. All travel

different paths of communication, and neither should be subjected to the *debilitating moral infection, or parasitic overlay of the good/bad grid*. While this statement might in itself be conceptualized as a moral position, Luhmann's theory requires, at the very least an isolation if not a removal of the moral component in order to observe systems in an clear, untainted condition.

2.4 Masculine Codes

Unfortunately, the role of men in reproduction is often communicated by women, with most communication passing through codes enhanced with meaning from feminist environmental impulses. Lesley Sharp (2000) creates part of this discourse when she comments

Set against the context of current biotechnologies, (post) feminist critiques offer an obvious analytical framework, driven by the understanding that women's bodies are consistently manipulated, fragmented, employed, and raided in ways altogether different from men's bodies. Thus women's bodies are constantly privileged, rendering men virtually invisible within the literature. (para. 27)

A woman is creating meaning here for men's bodies by distinguishing them as *altogether different from men's bodies*. Her code has translated a paradox where women's bodies as simultaneously victimized; *fragmented, manipulated, employed, etc.*, and privileged; *rendering men virtually invisible within the literature*.

Other feminists have created meanings for men while theorizing women's reproductive positions. Jana Sawicki's theory is that once women become more involved in the discourse related to new reproductive technologies they will influence the shaping of them in the future. While Sawicki agrees with Wajcman's rejection of the ecofeminist

notion that women have been passive consumers of these technologies, she takes Wajcman's theory further by offering a Foucauldian interpretation of reproductive technology. Her analysis in general indicates that women have always been a force in the development of reproductive medicine. While patriarchal meanings are often created, Sawicki considers that

the history of women's procreative bodies is a history with multiple origins, that is, a history of multiple centers of power, multiple innovations, with no discrete or unified origin. It is a history marked by resistance and struggle. (Sawicki, 1991).

Men must be included in all types of codes, as masculine impulses are necessarily part of meaning creation, whether oppressive or not. Again, Luhmann's system's theory does not favour consenting communication over dissenting communication, as they are both powerful creators of meaning (Luhmann, 1995, p.162). These power struggles have shaped the meanings behind these technologies as much, possibly more so than consenting communication over these has.

Foucauldian feminists have perhaps most thoroughly acknowledged the diverse roles of men in reproductive system development. Jana Sawicki emphasizes that despite certain negative male influences in the technological advancement of reproductive medicine, many more positive influences have created meaning for today's technologies. Luhmann might characterize the multiple social positions involved in this effort as each emitting important environmental impulses to the system.

While some women claim to have become victims of these technologies, a cybernetic analysis allows the observer to realize that men often occupy potentially victimizing positions as well. The idea of posthumous semen retrieval might seem like an ethical dilemma to many faced with the concept, but read from a systems perspective,

it is simply a reproductive system with intensely communicative potential. A woman who unexpectedly finds herself a widow before she and her husband are able to have children might read this as an opportunity that she wouldn't dare pass up. Environment communicates with the reproductive system here through a code of matrimonial dreams. She is sure that her husband intended to have a family, and feels justified in extracting his sperm posthumously with the intention of impregnating herself. Upon observation of this communicative trajectory, an understanding of her position comes to light. She means no direct harm to her husband; she simply reads a code which acts as a facilitator to the improbable relation she faces. Others however, might choose different structures to pass through when observing this problem. Of course, Luhmann would insist that observing another kind of observer leads to no more of a moral position. Lori Andrews, for example has been cited as criticizing this procedure as 'perilously close to rape'. (Orr and Siegler, 2002, p.301) She is a lawyer, and is reading a code of consent and of concern for the welfare of the child-to-be. The point clearly illustrates the way that social codes and environments can influence the ways in which technology is perceived and implemented. While emphasizing that no one is completely locked into technological oppression, this perspective encourages individuals and groups not to simply resist new technologies, and to play an active role in the shaping of these.

In terms of gendered relationships, Luhmann's most interesting points lie with the paradoxical distinctions that he makes between the various social systems of love, sex, and marriage. When addressing the state of marriage specifically, he declares that certain forms of the code meant that "nothing would be further from the mark than to think of marriage when thinking of love" (Luhmann, 1986, p. 71) While this sentiment might

seem especially strong today, it is important to remember that there is still an underlying paradox to the concept of matrimonial love. When Eva Illouz asks a married 30-year-old woman to recount her most memorable love story, she does not choose one involving her husband, but rather, one with an exciting stranger, away from her everyday routine (Illouz, 1998, p.173). There have been various interpretations of the role of intimacy within, as well as without, the context of marriage. As Luhmann himself writes, romance held the code of love “together for nearly two centuries and only became problematic once love was called for as the basis for matrimony; for it is then that the semantics of love raise the question of whether marriage can also be understood as a paradoxical institution.” (Luhmann, 1986, p. 83).

As noted, Mary Evans has responded to this question by citing such popular modern expressions as ‘the honeymoon is over’ (Evans, 1998, p.262). Although paradoxical, this shift from romantic love to unromantic marriage offers the understanding that intimate relations between men and women are always communicated through codes. Similarly, today’s reproductive codes have paradoxically shifted, as meanings become increasingly diversified. Charles Lindholm put forth the view that the division of marriage and romance is evident as far back as imperial Rome, and that “traditionally, conjugal love between husband and wife was considered ridiculous and impossible” (Lindholm, 1998, p.252) According to Luhmann’s analysis, the semantics involved here are of great importance. For example, he refers to the way that the word ‘romantic’ itself is loaded with multiple meanings, such as the contrast between the French *amour passion*, and the American ideal of just being there for one another. (Luhmann, 1986, p.159). Interestingly, the paradoxes between love, sex, marriage, and

reproduction can also be traced to the interchangeable semantic expression of reproduction in the modern world. The multiple meanings of reproduction might reflect that which is the result of the love between two people (ideal), a marital union (paradoxical), or a brief sexual encounter (functional). New technologies such as sperm and egg freezing, coupled with surrogacy, and gamete donation offer and even richer possibilities for the interchangeable expression of these.

Evelyn Fox Keller illustrates the cultural and historical dependence of reproduction by examining the social meanings of looking versus touching, and its relation to the development of technology over time. Her focus is upon the development of biological instruments for “peering into the secrets of life” (Robertson et al., 1996, p.107), and her argument is representative of the way that social forces may lead to technological development. She begins with the premise that “In scientific discourse, looking is associated with innocence, with the desire to understand, while touching implies intervention, manipulation, and control.” (107). The fact that social meanings are attached to scientific ones in this way indicates that they do play a critical role in technological outcomes. The innocence of observing versus the vulgarity of touching led to the development of instruments that could look into microscopic elements that could never before be touched. The social desire to scientifically observe reality in turn led to developments such as the magnifying glass, the microscope, and the X-ray. Environmental impulses do not only create meanings, they create technology as well.

The idea that a system is best observed as it is doing what it naturally does, which is *observing*, is a central understanding in Luhmann’s systems theory. Luhmann might suggest that the qualities ‘feminine’ and ‘masculine’ are arbitrary assignments, no more

important to the system than morality or ethics. In fact, a pre-occupation with these concepts will likely lead to a system virus, just as morality might. As with morality, gender does not constitute a 'supercode', or 'superenvironment' for that matter. The gendered individual rests in the environment, communicates through gendered codes, and aids in the creation of gendered communication paths. As outlined, an environment may contain multiple systems, and these systems might refer to many different environments at any given time. As with systems, environments may overlap in time and space, co-existing with one another while autonomously creating their own destinies. As we move on to an analysis of economic environments, it is necessary to keep in mind that gender and the economy are environments that frequently coincide, and that social systems may simultaneously interact with these.

Rather than requiring one to abandon all beliefs, a socio-cybernetic analysis highlights the integration and awareness of others, and an understanding that one is not alone when constructing social reality. Given the fact that women constitute a variety of social groupings, a singular definition of feminist morality is not possible. Codes are developed as the system self-referentially communicates with the environment. Working with their social differences, both women and men create together on a multitude of levels through an emission of environmental impulses to reproductive systems. As imagined earlier, a social code might be best understood a magical door to communication, with transformational properties. One is never the same once passed through the communication code; gradients of complexity, and environmental impulses add to the self-referential process which allows the system to travel back through the code and understand its relation to the environment from an ultimately unique

perspective. Men and women might create different meanings through their environmental impulse influence, however, a systems analysis reveals that they all ultimately work to create semantically similar paths of reproductive autonomy.

This chapter has explored how systems of reproduction self-referentially create meaning with the aid of environmental impulses from gendered environments. As Luhmann argues, these impulses are integral to system formation, and must be closely observed in order to grasp the reality of the system. By comparing and contrasting the codes of liberal, eco, and socialist feminists, a communicative reality emerges whereby the observer can distinguish how improbable relationships are truly formed. I have explored the evolving codes of liberal feminists, which translate reproductive autonomy into the power to select from a choice of technological opportunities, and contrasted these with codes of ecofeminism, which translate reproductive autonomy into the absence of technological intervention. Socialist feminist codes were also explored, which generally translate reproductive systems as forms of social status. These feminists are most closely reading masculine codes, as they feel victimized *along with*, and not necessarily *by* men, and are thus able to communicate an understanding of assisted reproduction as social status.

I have not observed male observers of the code here, primarily a result of having observed so many women assume the role of creator for these systems in relation to men. With this in mind, there is no doubt a need for more thorough analysis of the masculine reproductive code as translated by men. The following chapter on economic environments is intended to extend the observation of communicative reproductive codes which resolve intimate improbable relationships. An exploration of global capitalist

impulses is complemented by a sampling of the semantics involved in the reproductive codes of beauty and intelligence. A systems theory affords the opportunity of many creative possibilities for intelligent systems, leaving the observer to simply translate these through their meaningful, communicative pathways.

CHAPTER THREE: Economic Environments and Evolving Codes of Efficiency

ONLY WHEN A SYSTEM, IN ITS AUTOPOIETIC REPRODUCTION, ADAPTS ITSELF TO THE FIELD IN WHICH IT OPERATES CAN IT DETERMINE ITSELF THROUGH ITS OWN STRUCTURES. (Luhmann, 2002, p. 172)

Economic environments are as significant and prevalent as gendered environments are, requiring many different types of structures of expectation for systems of reproductive technologies to create with. In terms of their far-reaching communicative scope, economic environments are intricately connected to most forms of communication in the contemporary world, and as such, worth examining. Luhmann emphasizes the importance of a capitalist economy specifically by insisting that

By accumulation, aggregations of this kind produce a sort of effect that today determines society more strongly than the schematism of morality- especially if the public's political orientation to consumption hold in store a special sensitivity to this. It all presupposes a weakened, temporary, but sensitive capacity for binding among individuals. (Luhmann, 1995, p. 237)

This modern *binding among individuals*, then, takes over where older bonds left off by uncovering paths of communication which rectify the improbable relationship between system and environment. In view of the fact that these technologies are inextricably tied to economic conditions, and that medical science in general is dependent on fluctuations in the market (Van Dyck, 1995, p. 44), globalization has meant that reproductive systems absorb diverse economic impulses, most strongly from capitalist economies with varied interests. The economic environment sends out assorted impulses to reproductive systems, which are interpreted accordingly through each systems self-referential process. As outlined, the communication is efficiently interpreted through codes, or *structures of expectation*. Unlike the love as passion code in the past, which was predominantly

transferred through the novel, channels for today's reproductive codes include diverse forms of art and media. I imagine the most recently developing channels for these codes to be Internet websites, which are considered here as enabling communication links between reproductive systems and impulse-emitting economic environments.

3.1 Reproduction in a global economic environment

As a multi-billion dollar industry in the United States alone, new reproductive technologies constitute a lucrative undertaking for the increasingly profit-oriented medical industry and other financially minded groups. Pamela Moore insists "Infertile couples are seen as an underserved, infinitely expandable market, a market willing to supply substantial out-of-pocket funds when denied access by insurers to managed care organizations." (Kaplan and Squier, 1999, p. 81) Strong capitalist environmental impulses feed reproductive systems with consumerist want, causing them to self-create with these interests. By reading the system-environment relationship as communication unfolds, and especially by understanding the codes passed through for communication, the meanings behind these can be observed as objectively as possible. Luhmann insists that "self-referential systems are closed systems and meaning can be related only to meaning." (Luhmann, 1995, p. 79). Tracing the semantic meanings behind why so many are *willing to supply substantial out-of-pocket funds* begins by understanding some of the messages communicated through codes as they work in the interest of self-referential systems. When a reproductive system interacts with its economic environment, it passes through a code and selectively absorbs environmental influences. A reproductive social

system such as sperm donation refers to the larger economic environment for a selection of impulses. If the code that is passed through reflects the impulses of a global capitalist economy which is enabling to the reproduction of intelligent genes, the economic impulses that are absorbed will be integral to this. The system then comes back to itself, and defines its own meaning, referring to how much economic value is given to the sperm of someone with intelligent genes. A semantic understanding of what intelligent genes *are* comes about through the code, which effectively translates this meaning. Observing the system as it observes the code and selects from the environment allows for a second-order, and hence more focussed definition of reality. This necessarily includes observing the system as it engages in the process of self-referential meaning creation from beginning to end. Intelligence in this case is not only a form of social capital, but becomes a tangible consumer product in high demand.

For this section on economic environments, I will focus primarily on evolving codes as they are represented through Internet web sites. These are increasingly travelled by reproductive systems resulting in efficient meaning-creation with economic impulses. New cyber forms of the reproductive code act as facilitators for the improbable, intimate relationship of modern-day reproduction. In order to grasp the economic power of these services, it is necessary to review some of the immense profits generated by reproductive technologies in today's market. Perhaps the fastest growing area in assisted reproduction has been in-vitro fertilization. These techniques alone were estimated in 1999 as generating an annual income in of approximately \$2 billion (Kaplan and Squier, 1999, p. 81, Napoli, 1999, para. 4). While individual fertility centres do not typically disclose their annual incomes, these are usually higher than those of other medical centres, since the

conception of a single live birth using IVF procedures is likely to range between \$66 667 and \$114 286 (Kaplan and Squier, 1999, p. 82). The environmental impulses produced by the economy in these cases are capitalistically influenced, causing systems to creatively develop themselves in response to the laws of supply and demand.

Since the market increasingly serves as environment for systems of assisted conception, original codes of meaning are beginning to develop through new communicative channels. The most recently evolving channels are developing online, through electronic fertility centres, personal websites, and sperm and egg auctions. Given that systems refer to environments via codes that are passed through channels facilitating the flow of communication, an online clinic can cut fertility costs by providing detailed database information pertaining to donors without a prior meeting with a physician. This all contributes to the enabling of otherwise improbable relations, and allows for yet a new path of system-environment communication to develop. The economic impulses that are absorbed by the reproductive system here are translated by personal websites, and semantically infused with the reality that sperm and egg donors will receive a larger profit from the sale of their own materials by shipping directly to the customer without paying for a doctor's intervention. Sperm and egg auctions take the commercial aspect of reproduction even further by insisting that these materials must be awarded to the highest bidder. The code continues to act here as a translator to the capitalist market value of reproductive materials. The details of these structures of expectation will be elaborated on in the coming sections as I proceed to explore evolving codes of beauty and intelligence within environments of economic influence.

Again, Luhmann's argument was that, "societal change enters when productive labour no longer (or no longer only) proceeds domestically but is connected with the economy by the mechanism of money." (Luhmann, 1995, p. 239) The intensity of societal change with respect to these technologies is obvious, as they connect reproduction deeply to the economy in terms of the *mechanism of money* and have largely distanced childbirth from the domestic sphere. It is precisely this departure from the domestic, and absorption into the mechanism of money that is leading to a dramatic social change in human reproduction. Issues to be explored in the coming sections will include capitalism's implication in the meaning creation of reproductive systems, as well as the more general status of the relationship between reproduction and the global economy. I will continue with an exploration of the Internet as a new form of communication code that has revolutionized reproductive system development. Although I emphasize beauty, intelligence, and overall genetic health as evolving codes translating today's new reproductive technologies, these are only to be considered as a selection among countless others allowing for meaningful reproductive communication.

3.2 Translating codes

Luhmann's modern translation of codes is perhaps not a unique interpretation of contemporary intimate communication. Zygmunt Bauman, for example, tries to untangle the triad of love, sex, and eroticism by examining some of the effects of late stage capitalism. While he agrees that the three have related to each other accordingly within social climates throughout history, his argument is focused on free eroticism within what

he deems a post-modern world. He adds to Luhmann's observed distinction between feudal and market societies, by claiming that love is increasingly tailored to market values. However, Bauman admits "It takes more than greed for profit, free competition and the refinement of the advertising media to accomplish a cultural revolution of a scale and depth equal to that of the emancipation of eroticism from sexual reproduction and love" (Bauman, 1998, p. 22) Luhmann refers to this essential component as *communication*, and he would no doubt argue that the study of the separation of these three forms of intimacy should begin by observing the communicative self-creation of each system.

Bauman's theory is ironically connected to Luhmann's on a variety of other levels. Interestingly, the *Cultural Revolution* to which he refers might be characterized by Luhmann as a *system evolution*, that evolves through extensive communication. Luhmann also portrays a shift from the division between domestic reproduction and outside love affairs to a code where "eroticism became directed towards something which one could obtain from only one particular woman (and not from every woman), thus forcing the knight to fall to his knees." (Luhmann, 1986, p.44) Bauman is not content with the idea that a monogamous code is in place at the moment, especially as he argues "the postmodern eroticism is free to enter and leave any association of convenience, but also an easy prey to forces eager to exploit its seductive powers." (Bauman, 1998, p.21) Ultimately, he concludes that it is no longer explicitly clear how norms are defined today, and that sex, rather than love is most often the basis for what he deems postmodern intimacy. He is no doubt concerned that eroticism is more often consumed today than in the past. The knight is no longer forced to his knees, but instead is compelled to reach for

his credit cards. This is especially true if the object of his desire wishes to reproduce, is unable to, and wishes to turn to assisted reproduction. Psychic systems aside, reproductive social codes today have evolved in much the same way as the psychic and social codes for love and eroticism have. Just as sex and love were once the basis for reproductive intimacy, today's codes are often devoid at least one, if not both of these concepts. The meanings that have taken their places emphasize consumerist impulses, heavily fed from the global economic environment. Nonetheless, Luhmann would argue that whether love, eroticism, and reproduction are more involved with the mechanism of money today than in the past is not a matter for concern, only observation.

As observed, those who are undergoing treatment for infertility may be especially influential in the process of bringing reproduction in to the mechanism of money, as they are the ones who will be supplying the finances that will eventually translate into future product development. The industries in charge of these services have realized that it is simply good business to understand the needs of their customers.

Terri Langhans, president of First Strategic Group, a health care marketing consulting firm based in Whittier, California, says infertile women are 'more educated than any other consumer in the marketplace'. Because the standard definition of infertility is a full year of unsuccessful attempts to conceive, patients already have been dealing with the medical issues involved for some time before seeking treatment. (Kaplan and Squier, 1999, p. 84)

It is clear from this example that many reproductive technologies are carefully absorbing capitalist influences from economic environments, and that some of the individuals who are using these are inside of these environments, sending out impulses. By choosing which codes to read, systems can fine-tune their environmental impulse absorption. As a group, the users of reproductive technologies then provide an essential environment for the development of new systems of reproduction. They send out impulses to the system

indicating that there is a specific market to be targeted with these, and the system creates meaning with this information accordingly.

Codes are of course, as with all intimate communication, strictly to be observed within specified cultural-historical perspectives. A social systems theory approach as outlined by Luhmann includes both theoretical and historical elements. He indicates that the theoretical must borrow from social theory, evolutionary theory, communications theory, and attribution theory (Luhmann, 1986, p.40), and that

This theoretical corpus is then coupled with investigations into the evolution of ideas, that is to say, into evolution in the context of an historical semantics, which, depending on the adaptive capacity afforded by the development of social structures, reacts in communication to experiences it has made with its respective conceptual resources. (40).

Lesley Sharp (2000) offers insight into the semantics of reproduction by contrasting the economic meanings created for childbirth by Bangladeshi and Western women. For the western women, these would most often include “a host of medically valued by-products, including the umbilical cord, placenta, and fetal brain matter and other tissues from neonates who did not survive.”(para. 29). A Bangladeshi activist for women’s rights however, reads the code for these much differently, choosing not to absorb capitalist influences from the economic environment. She would read the “Western feminist constructions of the body as property as mirroring capitalist, patriarchal interests”(Sharp, 2000, para. 29). This view is enabled by a code that translates economic impulses from the environment into the understanding that the sale of reproductive materials is a step towards the diminishing of the body into “a reproductive factory” (para. 29). It is worthwhile noting here, that although the Bangladeshi activist is referring to Western

feminist constructions in general, she is actually strengthening and reproducing Western eco-feminist codes which also equate capitalism with patriarchal interests.

The following sections examine certain evolving codes linking systems of reproduction to economic environments. I will extend upon Luhmann's theory of the evolving code *love as passion* in order to illustrate how necessary these channels are to the communication of reproductive intimacy today. While novels seemed to change *why* and *how* we love, the Internet is now changing why and how we reproduce. Clearly, understanding this process must begin by observing the communication processes between system and environment. A history of the economic codes being developed online begins with an understanding that the system and environment, while separate entities, are also an inseparable combination for communication. Luhmann explains how these concepts can be simultaneously distinct and united.

This difference is not an ontological one, and therein lies the difficulty in understanding it. It does not cut all of reality in two parts: here system, there environment. Its either/or is not absolute, it pertains only in relation to the system, though objectively. It is correlative to the operation of observation, which introduces this distinction (as well as others) into reality. (Luhmann, 1995, p. 178)

The observer begins by drawing a distinction between system and environment, as I do here, with reproductive systems and economic environments, and as earlier, in the case of gendered environments. The communication between these two fundamental entities becomes a single reality as communication is observed. I will proceed here with a brief history of today's reproductive cyber codes and continue with an observation of communicative reproductive systems and economic environments as these are created with codes of beauty, intelligence, and overall genetic health. While these common codes have existed in other forms, I intend to explore the exceptional global reach of web sites

as code-carriers, and some of the rapid social transformations that these might bring. These will specifically be observed as they translate absorbed economic impulses for the self-referential creation of systems of assisted conception.

3.3 Cyber-codes; a history

In 1999 there were over 300 clinics offering reproductive services in the United States. (Napoli, 1999, para.1). At these facilities, ova and sperm are bought and sold as freely as any other commodity on the market. Since many countries, such as Canada have banned the sale of human gametes, the United States has become a host to foreign consumers of reproductive technologies. Internet sites are now beginning to take over as channels by which reproductive meaning flows, a position formerly occupied by the novel in the case of the love as passion code according to Luhmann. The Internet today serves the same function, which constitutes enabling the development of otherwise improbable, and in these cases intimate, relations. It serves as a channel for communication codes, and as an arena for self-referentially-closed communication.

As mentioned, environments and systems often overlap, adding to the meanings created pertaining to reproductive technologies. Gendered and economic environments extend into one another significantly; one example being the notable difference in the economic value attributed to the reproductive materials of men and women. A woman is able to inseminate herself within her own home, but a doctor's assistance is required to remove or implant an egg, necessarily bringing her into the economic sphere through the mechanism of money. The need for medical intervention in the case of egg removal and

implantation in women is a reality understood by these systems which receive impulses from these two environments. The systems of sperm and egg donation create themselves accordingly with this information. The result is an unequal distribution between sperm and egg banks, with women who are not as 'charitable' as men are with their reproductive materials, often demanding considerable financial compensation (Williams, 1999; Van Dyck, 1995; <http://surromomsonline.com>) While the extraction of an egg from a woman's body is more complicated and painful than the extraction of semen from a man, women have demanded between \$3000 and \$150 000 for their eggs through websites (<http://www.eggdonor.com>) versus the average \$100 that a man (unless he is a model or otherwise 'genetically gifted') will be provided for his sperm online. (<http://candilynd.com/tim.html>, <http://fairfaxcryobank.com>, <http://lifeseed.jumpfamily.com>). 'Niki' advertises her eggs at *Surrogate Mothers Online*, and is one of the few egg donors that is not necessarily exchanging her reproductive materials directly for cash. She writes: "I am willing to 'trade' egg donation for IVF, or tubal reversal. I am also open to compensated donations (so that I can raise funds to have my tubaligation reversed)" (<http://surromomsonline.com>). The system does not absorb the traditional capitalist impulses for reproduction here, at least not directly. In this case, the system of egg donation passes through Niki's code; an online classified ad. Her code translates a blend of directly and indirectly capitalist influences. It is clear that once again, engaging in online reproduction necessarily includes the mechanism of money.

While the new technological and economic transformations of the western world might be imagined as socially fragmenting, others may celebrate the immense diversity that has come with innovative forms of global communication. The latest information

technologies allow us to communicate with the outside world through screens and terminals, and there is no doubt that we are capable of knowing more about each other than ever before. The Internet, as a revolutionary communications device, means that instant, or 'live' communication can translate meanings more quickly and efficiently than in the past. Efficient communication has become fully integrated into our lives, and as such, electronic communication channels such as the Internet constantly multiply a countless number of communication codes. The exchange of wombs, sperm, eggs, and embryos on the Internet is incalculable, and continues to grow in diverse ways through a range of codes translating the meanings of these. Luhmann argues that "codification is a kind of semantic duplication of views that further the acquisition and processing of information" (Luhmann, 1986, p. 170). While the English translation of this phrase refers to codification as a semantic 'duplication', it might make more sense to describe this as a *cloning* of views, where views are semantically similar although not thoroughly identical due to environmental differences. The codes represented through websites all aid in the acquisition of information for reproductive systems by semantically *cloning* pre-existing views, and environmentally infusing them with new meanings.

Physical borders can be transcended by means of the Internet, which allows for someone in one area of the globe who is unable to conceive life to rely on the entire world for help, rather than only on those within their own limited area. The global economic environment has notably infused systems with impulses into semantically duplicated pre-existing views such as homosexual reproduction. This point is illustrated by examining the case of Doris Graham, a gay woman, and Dave Anderson, her Internet sperm provider. It seems that Graham found Anderson through his sperm donation

website, and trusts that he is a disease-free member of *Mensa*, the high IQ club. When Doris Graham's partner is ovulating "Anderson produces a sample in New Jersey and sends it via Federal Express to the women in Kansas. Despite the fact that the lesbian couple have never met Anderson, Graham says, "We really trust him" (Laliberte, 1999, para. 17). The fact that reproductive materials may now be produced somewhere other than where they are consumed is evidence that globalization may have transcended boundaries that were never imagined, while duplicating, or cloning, pre-existing semantics of reproduction. Fortunately, new codes of communication evolve in order to rectify the improbable relationships that ensue. The trajectory of the system of sperm donation here includes the absorption of global economic impulses, which are communicated through codes of homosexual reproduction. The online form of the code, in this case, Anderson's sperm-donor website, is travelled through and works to rectify the improbability of intimacy.

There are a multitude of genetic services available on the Internet. Richard Laliberte (1999) has reported that these services, although often monitored, are difficult to regulate. While the Society for Assisted Reproductive Technology (SART) offers guidelines for sperm donors to follow, there is nothing that they can do to enforce that these "donors" are screened for their medical and sexual histories. The most commonly offered services on the Internet include sperm and egg donations, but there are classifieds for surrogate mothers, embryo, sperm/egg freezing, and adoption. A capacity for global communication allows the Internet to facilitate and expedite the exchange of goods and services. For example, egg and sperm banking is a system presently working through structured communication codes while being infused with environmental impulses from

the economic environment. The goods are instantly accessible to prospective consumers of these systems, and explanations of technical procedures are commonly outlined, allowing for efficient, effective communication. Shipping and overnight delivery charges are also made available if needed, including fees for the storage of frozen eggs, sperm and embryos. Internet sites may offer free donor videos and detailed information about donors such as their ethnic background, occupation, and medical histories, along with legal advice concerning their products. Economic environments are obviously implicated in all of this. The impulses that are selected by the system are enabling to their own formation, they pass through these online codes and are transformed into communicative meaning concerning assisted reproduction. The Internet-as-channel is essential to the developing codes of reproduction, as it can simultaneously connect an otherwise global, fragmented society to a multitude of reproductive codes.

The history of the Internet-as-channel began in the early 1990's as global electronic communication became extremely widespread and accessible to the western world. During that time, the Internet outlined a new 'electronic geography' (Morley and Robins, 1995) where communication could be accelerated to an incredible pace. With global borders dissolving, a new unregulated marketplace opened up allowing consumers to explore territories that had previously been restricted. The Internet then, became a tool that could provide easy access to goods or services that were inaccessible within one's own geographical area. The United States is one of the few countries in the world that does not hold a ban on the sale of human gametes. The codes develop beginning with the possibility of ordering sperm and eggs off the Internet, conveniently allowing these to be sent through the mail by the use of either a rented liquid nitrogen tank, or an at-home

cooling kit (sperm banks will usually ship in a returnable tank, while ‘privately’ ordered specimens are often sent in relatively inexpensive cryogenic mailing devices). The global distribution of sperm and eggs has allowed new reproductive systems to enter another phase of communication, complete with developing codes and economic influences.

As discussed, reproductive services are available on the Internet in a variety of forms. The first of these types are web sites that represent traditional fertility centres. These often have the highest donor screening available, and may charge extra for special services such as donor videos, or audiotapes. At these sites, prospective online parents are offered the same services as the clients who physically enter their facilities, such as the chance to examine donor summaries, which would consist of detailed medical, physical, and psychological profiles. The *Fairfax Cryobank* (<http://fairfaxcryobank.com>) located in Fairfax, Virginia, claims to possess the largest bank of reproductive materials in the world. Their massive selection of sperm and eggs on the Internet allow them to remain competitive on a global scale. They encourage their online clients to take advantage of discounted shipping with the purchase of 6-11 units of sperm, offer free delivery for 12-17 units, and waive overnight-shipping charges with the purchase of more than 18 units. A schedule of fees posted on their website also warns that an \$825 deposit is required for a liquid nitrogen tank to deliver the frozen materials to your geographical area. The *Fairfax Cryobank* dates back to 1984, when Dr. Joseph D. Schulman first founded the laboratory in order to provide the first comprehensive infertility treatments in the United States. By 1986, there was a full sperm bank in operation, which could offer frozen semen that had been screened for disease, and even *washed* in an “egg yolk citrate buffer”. Clearly, the purveyors of these technologies aid in the creation of new meanings

for reproduction, ones within an economic environment that was previously unaccustomed to dealing with washed sperm. A systems approach would stress the importance of codes, such as the one represented by the Fairfax Cryobank, as enabling devices to the modern problem of intimacy.

While this category of reproductive services might be safer or more regulated than other types of services, their prices are often much higher than those who advertise these products privately on the Internet. In order to address this concern, the *Fairfax Cryobank* initiated their *Family Solutions* program in 1998. This allowed the code to shift slightly, and the unlikely relationship of low-cost assisted conception was resolved. The program offers its clients the same quality of reproductive materials without all of the extra services, which could allow the client to purchase semen at a reduced rate (\$115/dose instead of \$175-\$275/dose). This effort might be simplistically understood as a tactic to stay competitive within the market of sperm, but an observation of system-environment communication reveals that there is much more to it than that. Communication between system and environment has been enabled by a structure representing a more inclusive, financially affordable form of assisted conception. Whether or not it also refers to a moral code is irrelevant to systems theory, but the idea that a moral 'supercode' is inherently integrated into this code, or any other is out of the question from a Luhmanian perspective (Luhmann, 2002, p.124). The system selects environmental impulses and creates with them. In this case, the environmental tendency is not simply a supply response to a demand, or a moral definition, but actually a cybernetic interplay of systems, codes, and impulse selections; a communication process.

A main channel for reproductive systems on the Internet is in the form of classified ads. One example of this is the *Virtual Classifieds*, which are available through *Surrogate Mothers Online* (<http://surromomsonline.com>), a free service for those looking to exchange reproductive materials over the Internet. While individuals are not charged to post their ads, there is a fee for professionals such as lawyers and doctors who wish to advertise their services. This site differs from the bureaucratic nature of the *Fairfax* site, in that individuals are able to connect with each other directly concerning the exchange of these materials. Donors have not been screened the way that they are at the *Fairfax Cryobank* but there are often ads offering free sperm, providing that the donor is supplied with a cryogenic freezer that will cost the consumer seventy-dollars. While economic impulses do not come into play directly here, the code has translated the exchange of sperm into the exchange of a commodity by 1.) Announcing that the sperm is *free*, which insinuates that this is ‘good deal’ not seen very often, and by 2.) Specifying the necessity in purchasing a cryogenic freezer for seventy-dollars, which implies that the receiver of the donor’s specimen must engage in a capitalist exchange at some point.

The *Surrogate Mothers Online* site, another communication code, offers a “quick search” section for surrogates, egg donors, sperm donors, and embryo adoptions in order to make the procedure as easy as possible. In addition to reproductive services, the site also addresses psychological concerns that the participants of these might have by including a section called “e-mail pals” to provide comfort. There are also chat rooms, articles and a glossary of reproductive terminology available at the site, in order to help those who are interested to make wise decisions. *Surrogate Mothers Online* is not alone in offering these services, in fact many others offer some way for donors and recipients to

lend emotional support to one another. Communication through this code comes about through what Luhmann has referred to as “a synthesis of three different selections” (Luhmann, 2002, p. 157) He elaborates on his theory of the communication process by stating

Like life and consciousness, communication is also an emergent reality, a self-generated state of affairs. It comes about through a synthesis of three different selections, namely, the selection of *information*, the selection of *utterance* (*Mitteilung*) of this information, and selective *understanding or misunderstanding* of this utterance and its information.

None of these components can appear on it's own. Only together do they generate communication. (Luhmann, 2002, p. 157)

Clearly, the communication processes through the code for *Surrogate Mothers Online*, as with other reproductive systems, are within this definition. These processes represent a synthesis of selected information, for which then an utterance is selected, which most importantly leads to a selective understanding or possibly misunderstanding of this. The emergence of the communicative reality between the system of surrogacy, and users of *Surrogate Mothers Online* for example, comes about as the system selects *information* from the environment. In this case, it happens to be a globally accessible non-profit community. The system then selects the *utterance* or utterances, possibly best understood as a unique interpretation of the environmental influences. Surrogates can meet each other and exchange references, or get to know women who they might eventually carry babies for. Likewise, women in need of a surrogate mother might prefer to meet the future incubators of their child for a while without the pressure of an economic commitment. The communication that runs through the code then allows for the system to define itself through this process, while remedying improbable intimacy.

Although reproductive technologies have been widely available for the past two decades, they have traditionally been made available to infertile couples, and not necessarily to single parents and gay couples. The Internet removes the hierarchal process normally involved in these procedures, and allows donors and recipients of these materials to interact without much mediation. The communication of online reproduction has also allowed those who already had access to these technologies to choose from hundreds of donors instead of from the limited selection in their area.

Another way to communicate the sale of reproductive materials over the Internet is through personal websites. This method takes the informality of the *Virtual Classifieds* one step further by connecting those who are interested in becoming parents with donors quite directly. There is not much anonymity here, and although many find the practice alarming, there is full consent between the two parties involved, just as there would be with any other two people who chose to produce life. Many of the men who advertise through their own websites do not want any money in exchange for their services, and most state that they would be comfortable with either mailing a frozen specimen, or meeting the woman to do it the “natural way”. Often, these men will have done this type of thing before, as Timothy Shields of Kuna, Iowa states: “I am healthy and have donated before several times. I have children in different parts of the country”.

(<http://candilynd.com>) Timothy is 39 years old and open to doing it the “natural way”. He claims to have full support from his girlfriend, and says that his main goal is to “help any woman who needs help having a family”. Timothy’s code allows systems to reproduce themselves using the same reference to his ‘natural way’ over and over. Luhmann carefully refers to this type of communicative reproduction as an *operation*, explaining

that “To emphasize that we do not envision the unchanged preservation of a system, but rather an occurrence on the level of elements, which are indispensable for the preservation of and change of the system, we will call the reproduction of eventlike elements *operation*.” (Luhmann, 1995, p. 49) At <http://lifeseed.jumpfamily.com>, Jeff Turner is also offering his semen for free to anyone who needs it. He claims that he is intelligent and genetically stable, with an average sperm count and a good sense of rhythm. These types of sites are highly unregulated, and there is no guarantee of the psychological or physical health of those who post them. Despite these risks, Tim and Jeff’s personal websites represent communication codes which are being variously reproduced. As with Tim, Jeff’s code allows the system of sperm donation to create itself as economically valuable with the aid of capitalist impulses. In these cases, their codes translate sperm donation into economically valuable aid for those who are unable or even unwilling to pay for it.

In terms of online intimacy codes, another way that reproductive materials may be ordered through the Internet is through what I will refer to as ‘designer services’. These codes do not simply translate meanings for the infertile. They are elite services, specializing in reproductive materials belonging to those who are either extremely intelligent or beautiful, and always healthy. They translate the message that it is possible to produce intelligent or beautiful offspring through a financial transaction, and communicate the legitimacy of consuming life in this way. Added to the number of infertile couples looking to reproduce, there are many gay couples, fertile couples and single fertile mothers seeking out reproductive services on the Internet. The consumers of reproductive services will read meanings of the services that they are being provided

through capitalistically infused communication codes, again, translating reproductive materials into valuable commodities.

Systems theory assumes that as systems evolve, they become more and more complex. This complexity, gives rise to codes, which, far from inhibiting communication, are imagined as increasingly conducive to the resolution of relationships. Some such as Manuel Castells have addressed the way that contemporary communication is more physically alienating and fragmenting than ever before. He represents the fear that technology may be separating us from one another when he writes: “new communication technologies, the coming of the ‘electronic home’, and the ‘electronic office’ have stimulated territorial sprawl, suburbanization, and the individualization of sociospatial relations.” (Castells, 1985, p.29) Luhmann might not share this pessimistic view of technology, but might instead find that rather than reality duplicating, or stemming from electronic communication, it is communication that duplicates reality. He continues on this point by stating that “precisely therein lies the autopoiesis of a system, which guarantees to itself its own ability to continue.”(Luhmann, 2002, p.163) If the technological sprawl continues, it is only due to a duplication of reality; a reflection of the increasingly complex social communication which has evolved. Seen from Castells’ perspective, the market for sperm and eggs over the Internet is essentially alienating, and contributes to the destruction of society. He warns that an increase in focus on screens and terminals tends to decrease our focus on each other, in effect, producing his destructive vision of human experience, communication, and society. Luhmann, would no doubt disagree with Castells’ one-dimensional characterization of these services. Instead, he would most likely respond by pointing out to Castells that his dissent toward

the technologies is in itself a form of communication. Castells then ends up strengthening the importance of communication, becoming closer to the problem than alienated and weakened by it.

While it is easy to fall into the idea that we are increasingly fragmented and alienated from one another, David Morley and Kevin Robins offer hope for imagining the new types of communities that are being created. They borrow from Raymond Williams in order to argue that: "Postmodern culture must be elaborated out of differential and plural identities, rather than collapsing into some false cohesion and unity. It must be about positions and positioning in local and global space: about contexts of bodily existence and about existence in mediated space" (Morley and Robins, 1995, p. 40). The fact that such an intimate act, such as the conception of life, is now possible between two people who have never touched each other's bodies but who have engaged in a meaningful financial transaction, is an indication that there must be a re-evaluation of what human reproduction means within the context of a global economic environment. The following examination of beauty and intelligence as enabling communication codes indicates that reproductive systems are increasingly immersed in economic impulses.

3.4 Beauty codes and surfacing intelligence codes

It would be fair to say that fertility treatments have been around for centuries, although not necessarily with the same machine intervention that is apparent today. In the Middle ages infertile couples were advised that exposure to beautiful music, incense, or soft silk sheets would help to conceive a child (Classen, 1998). These sensory remedies

were discredited during the Enlightenment as science began to explain the biological process of reproduction, and people began to wonder how much of human behaviour was determined by genes. At ronsangels.com, fashion photographer and Playboy television producer Ron Harris holds auctions for the sperm and eggs of models. Bidding on human reproductive materials at this customized website is not much different than what bidding on a pair of shoes would be like at E-Bay. The auction opens at a set price, and the 'winner' (the highest bidder), is notified by e-mail at the closing. Harris assumes absolutely no shame in his work, or from the percentage that he gets from the auction sales. Upon entering his site, a bold comment is relayed:

This is Darwin's 'Natural Selection' at it's very best. The highest bidder gets youth, beauty and social skills. 'Natural Selection' is choosing genes that are healthy and beautiful. This 'Celebrity Culture' that we have created does better economically than any other civilization in our history. We are excited by beauty, why?
(<http://ronsangels.com>)

It is interesting that Harris refers to Natural Selection in this case as that which relates directly to financial, rather than genetic health. While the 'survival of the fittest' has traditionally meant that only the best/strongest genes will carry on, Ron Harris has re-defined best/strongest as the 'most beautiful', and the "fittest" as those with the largest bank accounts. His code translates these reproductive meanings with the input of economic environmental impulses. While he allows anyone on the Internet to participate in his auctions, bidding usually starts at about \$15 000, and may only be increased by increments of \$1000. By confining his 'superior stock' of genes to a certain sub-section of the population, Harris' code is creating a shift in reproductive intimacy. The system travels through his code of beauty-as-reproductive ideal, and picks up an economically feasible path of survival from environmental influences.

Harris' website is currently auctioning the sperm of a male model with the title 'heterosexual' clearly heading his list of attributes. Since ronsangels.com claims to be aiming for a type of "survival of the fittest", we may assume that this characteristic was not included by accident. The model of selective breeding that Harris seems to support was used in the early 1900's in the U.S., when homosexuality was considered to be the result of a genetic defect. This sort of biological determinism was popularized, and even legalized in the 1950's when eugenics practices such as the sterilization of the 'feeble minded' were thought to enable the proliferation of 'good genes' (Nottingham, 1999). Interestingly, although physical sex is not involved in this case, the code here most closely links the aesthetic of sex to reproduction, as the models are showcased using high-gloss playboy style photography. While some might lean towards making a morality judgment when interpreting meanings here, it's important to remember that a systems theory does not require it, and is actually impeded by it; Luhmann characterizing this as an infectious virus, destroying codes of function systems (Rasch, 2000, p. 127). Moralizing over this code will destroy it, rendering it unrecognizable from its original state.

The code of beauty is passed through by reproductive social systems in other ways as well. At <http://www.eggdonor.com>, the site clearly specifies that they are currently seeking, among other things, women who are "between the ages of 21 and 30 years old, bright and attractive, of any ethnic background, preferably pursuing a college degree, in excellent health, and height and weight appropriate." The code here is what is described as a duplication of the ronsangels beauty code, although as noted, it is best imagined as a cloning of the code, semantically similar, but developed through slightly

different impulses. Capitalism has not infused this code as intensely as the ronsangels code, and sex, even in an aesthetic sense, is absent from eggdonor.com.

While ronsangels.com attempts to capitalize on the growing number of those 'shopping' for genes on the Internet, there are other ways to create customized children through these codes. *The Repository for Germinal Choice* is one such code, located in Escondido, California. The RFGC started selling the sperm of Nobel Prize Winners in 1980, and is available online today, specializing in the reproductive materials of "thousands of men with high IQ's, particularly scientists and other academics"(Nottingham, 1999). Just as Doris Graham and her partner trust that Dave Anderson's *Mensa* membership might offer them a chance at intelligent offspring, the *Repository for Germinal Choice* translates a code of intelligence with the aid of economic impulses. The semantics of sperm donation is read here as a possibility for increasing the intelligence of the entire human race. At the site, Robert Graham, co-founder of the service says that 'germinal choice' is about selecting the 'best' genes to reproduce with. However, unlike Dave Anderson's code, which, from his *Mensa* mention, includes underlying assumptions about improving the intelligence of future generations, this service is clearly aimed towards heterosexual couples only, as Graham maintains that "The repository for germinal choice not only enables wives of infertile men to become mothers, but increases the chances of giving their children a genetically advantaged start in life." (<http://xenith.com/articles/interview04>) Although Anderson's code includes selling 'intelligent' reproductive materials to a homosexual family, these two systems have created slightly different communication paths. When asked in an interview as to whether or not he would offer these exclusive materials to anyone other than a married

couple, Graham commented that his service even goes so far as to require a copy of the couples' marriage certificate. While the *Repository for Germinal Choice* made headlines in the early 1980's, Graham has insisted on reproducing traditional conservative values with his code:

Vancourt: Then it's an absolute requirement that a woman be married? Or would you consider any exceptions, say if a woman wanted to have a child, and had the economic and psychological resources to raise it on her own?

Graham: No, it's absolute. It's a matter of principle with us. We feel that we're innovative enough without having to disrupt the mores of our society.

(<http://xenith.com/articles/interview04>)

Graham's concern with *disrupting the mores of society* is a result of his interaction with a moral system that has served as an environment essential to his self-understanding as a morally corrupt sperm dealer, as well as to his understanding that homosexual reproduction is risky ethical business. Only by reading the semantics of his code, and by understanding communicative paths, is it possible to avoid drowning in moral and ethical consideration. As with ronsangels.com and other codes within economic environments, Graham restricts the communication code to those who can afford it. Again, the mechanism of money comes into play, inevitably producing societal change.

In order to register with Graham's 'Nobel Bank', a \$100 application fee is required, along with a \$200 cryogenic tank fee, and a \$3000 program fee, which will expire after six months. Graham's insistence that "This puts more of our best genes in the human gene pool" indicates that his code is involved in the creation of reproductive meanings with the necessary use of capitalist impulses. Whether the resulting meanings are morally appealing or not is unnecessary to the point of observing the communication between the system of sperm donation and a global capitalist environment. We can observe the communication through a code of genetic intellectual determination and see it

as it exists and nothing more. These services are among several types of codes that work to transmit information from system to environment and back to the system for self-referential creation.

Communication codes will continue as efficient, improbable-relation-rectifiers leading to a reduction in complex social situations. Luhmann's theory of the future of intimacy argues that fragmented relationships are enabled and infused with meaning through these codes that translate information to systems for self-referential creation. The preceding sections have emphasized the economic impulses which aid in the creation of economic codes. Economic structures, as with gendered structures, are historically specific, and serve the interests of systems as improbable relationship rectifiers. This exploration of the transformational capabilities of economic codes has emphasized capitalistically influenced reproductive systems, especially through the global network of the Internet. More specifically, I have focused here on the evolving codes of beauty and intelligence, as they are most recently leading these systems into the *mechanism of money*, towards societal change.

CONCLUSION

Luhmann had feared that society would become a disease of sociology, and sociology a disease of society if moral and ethical speculation continued. By asking “why criminals commit crimes... why drop-outs fail, and why protesters protest” (Luhmann, 1995, p.370), he imagines that society becomes a disease of sociology, and that looking for a cure then becomes its ultimate goal. When this happens, sociology becomes a disease of society, as it unintentionally infects it with well-meaning moral prescriptions. In order to escape this predicament, the sociologist should examine social communication, as it is set in motion and as creative meanings unfold. I have attempted to adhere to Luhmann’s recommendation to theoretically bring the incompatibility of the sociological utopia and society as it exists under control by observing social systems of reproductive technology from a second-order perspective, and by refraining from considering morality as a *supercode*.

Through an exploration of the ways in which reproductive systems such as in-vitro fertilization, surrogacy, and egg and sperm donation communicate and self-referentially create meaning with the aid of gendered and economic environments, a more objective understanding of society unfolds. This constitutes observing essential environments inhabited by systems of assisted conception today, as meanings are continuously evolving in response to new technological developments taking form. The fact that Luhmann’s social systems theory incorporates the idea of changed meanings through communication is evidence that he would be open to my proposed extension of his theory. The study of intimate relations will most likely become increasingly complex,

as relationships no longer adhere to expected guidelines. This study illustrates how assisted reproductive technologies not only abide by evolving codes of efficiency, but also are intricately communicative and creative with selective environmental impulses.

Luhmann's theory of social systems draws from a biologically explicit model of evolving system-environment communication, while accounting for the power of the human conscience and purposeful evolution. Although moral and ethical considerations should not be completely abandoned, they are best delegated, for observational purposes, to the realm of separate social systems, since embedding them in all systems could lead to what Luhmann describes a debilitating moral infection of society. As the future of these technologies lies largely unknown, they are predominantly imagined from a systems theory perspective as continuously evolving systems of meaning creation, thriving in new self-understanding with each passing moment of system-environment interaction. In addition to exploring the semantic meanings of these relationships, I have released some of the tireless moral debates over assisted conception into a multi-layered analysis of system-environment communication in the hopes of providing a more inclusive understanding of modern reproduction as it meaningfully exists.

The social world described by Luhmann is one where relationships both determine, and are determined by, social structures. The larger environment in which we live is representative of an ongoing system, ready to provide meaning for sub-systems existing within it. At the same time, these subsystems are constantly communicating with their own environments through meaningful exchanges. These contexts give rise to functional devices, namely those of codes, where information may be meaningfully 'channelled' from system to environment and back. The code *love as passion* studied by

Luhmann was clearly not meant to be all-inclusive. He deliberately distinguishes the code as context specific to a western modern era. The codes facilitating reproduction today, which are also specifically modern, are as necessary to the development and sustaining of intimate relations as Luhmann's love's code was in the past. The diverse new narratives surrounding reproductive technologies are sure to bring about new codes of communication, allowing for the continuous evolution of communicative processes.

Luhmann may have been slightly ahead of his time in predicting the theoretical possibilities that lay beneath socio-structural development. As Illouz, Evans, and Bauman now see it, the emancipation of sex from reproduction, as well as from love has caused a distinction between past and present forms of intimacy. Luhmann would trace these developments through a systems approach, one that is not entirely impossible to relate to postmodern theories of the social. While we may not be able to deconstruct meanings as easily as we have been able to in the past, there are possibilities of untangling certain threads of past codes in order to make some sense of where we stand today. Postmodern theories speculate that there is a distinction between past and present intimate communication, specifically one of increased fragmentation, a sentiment highlighted by Luhmann in *Love as Passion*.

Indeed, one of the shortcomings of Luhmann's social systems theory is that it only intends to offer a look at the world as it operates and exists. It cannot, nor does it attempt to, find solutions to problems, or offer specific courses of action for change. The theory is wide and abstract, rather than defined and descriptive, causing some to rightfully agonize over the elusive details of it. I believe that Luhmann might have meant for a multi-faceted interpretation of his work, as he indicates that his theory "does not by any

means exclude the possibility of the theorist learning and adjusting his theory to the findings” (Luhmann, 1986, p. 7) Unlike Habermas, who has argued explicitly in favour of an ethical understanding of these technologies in particular, Luhmann has rejected this course. Habermas continues to insist that “In the normative disputes of a democratic public, only moral propositions in the strict sense will ultimately count. Only if they are neutral with respect to various worldviews or comprehensive doctrines can propositions on what is equally good for everybody claim to be, for good reasons, acceptable for all.” (Habermas, 2003, p. 32). Clearly, Luhmann would characterize this approach as one headed for the infection of society, as it aims to prescribe moral remedies where they will unavoidably not be wanted in some cases. Just as Luhmann overlooks the subject in reproduction, Habermas leaves out an analysis of the many communicative paths surrounding new technologies, turning to ethical self-understandings he effectively eliminates any attempt towards an objective understanding of the social.

As outlined, gendered environments feed reproductive systems with impulses from which to select from, and are constantly aiding in the creation of new systems. Likewise, the consumer culture of today’s western world has influenced the way that we experience intimate relations, from the products directly marketed towards reproduction, to media portrayals of reproductive possibilities. The *mechanism of money* creeps into today’s intimacy codes from the environment, sometimes directly as through the sale of sperm and eggs, and sometimes less literally, such as through the calculating, cost-benefit analyses of today’s short-term affair. I speculate that the future of intimate relations will become more focussed on these cost benefit analyses, as the economic sphere leaks continuously into intimate social systems. The overview of economic environments and

their evolving codes of efficiency which has been presented was intended to highlight the strong capitalist impulses which are feeding systems of reproduction with meaning. Further studies into the impulse absorption of these systems might focus on other forms of economic influence.

This study was meant to reflect the general condition of modern reproductive intimacy and it should be noted that as with Luhmann, I have focused mostly on heterosexual dimensions. Although certain references have been made to the communication of homosexual reproduction, I acknowledge that these are by no means inclusive. Future studies in this area could include a study of the semantics involved in homosexual intimacy, especially with regards to reproduction. The theory could also be extended by adding to the semantics involved in the creative role of men and reproduction, as read through men's creative impulses, and not simply by women's. A social systems theory is meant to be applicable to every kind of social system and environment, as long as the observer is able to make a distinction between the two. The observer then only has to observe trajectories unfold, as the improbable is increasingly made probable through endless autopoietic communication.

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