

Blending Art and Science to Create Fertility

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Are You the New person, drawn toward Me?

ARE you the new person drawn toward me?

To begin with, take warning—I am surely far different from what you suppose;

Do you suppose you will find in me your ideal?

Do you think it so easy to have me become your lover?

Do you think the friendship of me would be unalloy'd satisfaction?

Do you think I am trusty and faithful?

Do you see no further than this façade—this smooth and tolerant manner of me?

Do you suppose yourself advancing on real ground toward a real heroic man?

Have you no thought, O dreamer, that it may be all maya, illusion?

Walt Whitman

The reproductive system is meant to reproduce, and women's bodies were meant to nurture a baby. However, infertility has become a rampant problem which has plagued many men and women, leaving questions unanswered, and hope lost. Infertility is a medical, spiritual, physical, and extremely personal struggle. Infertility is defined as "...the failure to conceive after a year of regular intercourse without contraception." (medterms.com) As with any health problem, there are numerous avenues to pursue regarding fertility, and it is rarely a specific problem involving certain solutions. This

unknown; why infertility has struck, is frightening, however it provides women the opportunity to learn the workings of their own bodies, and as a result develop a peace of mind and a healthier body. Unfortunately, Americans usually take the easiest option by using a pill or a procedure. When women choose to use medical intervention to cure issues of infertility they are robbing themselves of the journey of self-awareness.

Infertility treatments are becoming a simple solution that prevents women from exploring their own mind and body. Infertility strikes each woman for a reason, and by searching for that reason a woman will gain a deeper understanding of herself.

Infertility treatments in Western medicine are a quick fix to a complex problem; therefore women are only robbing themselves of the journey of understanding their own body, women should not rely on a quick fix. Women should first explore their bodies to understand where there is error. Through this exploration involving tactics such as fitness, diet, stress relief and whatever avenues appeal to each individual, a women will learn strengths and weaknesses of her own body. While western medicine has proven to save and cure numerous ailments, the reproductive system will reproduce if the body deems itself healthy and stable enough to foster a child. This is the purpose of the reproductive system. This simple logic is easily glossed over when women are desperate, yet the journey to create a healthy body is the empowering process the body and mind are demanding.

Despite medicine telling me I was “infertile,” I knew I could use food in conjunction with acupuncture and yoga to correct and heal any imbalance within my

body. As a chef, this was both a creative endeavor and a scientific experiment.

Therefore, I was instantly drawn to the chapter “The Essence of Taste” in *Proust was a Neuroscientist*, by Jonah Lehrer. Auguste Escoffier and Kikunae Ikeda mapped a similar journey to mine, yet my experience had personal and selfish goals. While they were scheming to understand and perfect “umami,” the delicious flavor and food experience, I worked to balance the yin and the yang of my body. A challenge I had to conquer, my approach was instantly food; while my goal was a child, food was the method I latched onto in an effort to create symmetry and calm within my body.

In Lehrer’s novel he highlights Escoffier’s journey to understand and create food through uncharted territory and in the process gain a heightened understanding of food and the cooking process. This journey is paralleled in Ikeda’s attempt to define “umami,” the delicious flavor that had no definition and did not fall into the four classic flavor profiles. Lehrer maintains food and taste as the main objective, yet he clearly distinguishes Escoffier’s artistic journey from Ikeda’s scientific journey. With the same goal of understanding flavor and taste, Lehrer uses his literary intuition to cleverly highlight Escoffier’s work as innovative in enlightened, while Ikeda’s discovery of MSG lacks passion and direction. Through Lehrer’s language it is clear that he views food and cooking as more of an art than a science, and while there is a science to cooking there must be passion as well. Above all else, it was Escoffier’s passion that drove him to success.

Both eastern and western medicine can agree that nutrition and a proper diet is a key element to health, and thus fertility. However, their fundamentals of a healthy diet differ greatly. Western medicine focuses on fats, proteins and carbohydrates and the

balance needed for a healthy diet, while eastern medicine focuses on the energy within individual foods. “When I first began working with my acupuncturist, I had an extremely different diet, her recommendations were so different than what I was used to. She recommended specific foods to balance my energy flow.”(Pulver) In fact these guidelines may seem to defy Western logic, and often are not even emphasized by practitioners of Traditional Chinese Medicine because they puzzle Western eaters.”(Wu)

Traditional Chinese medicine offers a different approach to the Westerners diet, considering the significant rise in infertility women must look at every aspect of their lives and evaluate where they might need restructuring. Diet and nutrition is a significant factor in overall health. The foods we consume can have great affect on eliminating disease, fostering energy, strengthening, and clearly fertility. With the rise in infertility it is natural for women to assess their diets and consider alternative approaches. An Eastern diet provides a new view on foods and their impact on the body. Although, in the battle with infertility it is unclear what the solution might be, exploring every avenue of the body is a first step. Along with acupuncture, many practitioners will suggest that women follow a traditional Chinese approach to nutrition. The root of this practice is energy flow; every food has an energy. As we consume foods, the energy works hand in hand with the natural constitution of one’s body to maintain a healthy energy pulsing through the body. Therefore, we must eat the proper foods to allow for a smooth flow of energy.

In Traditional Chinese medicine, foods are broken down into energetically cool, or cold foods, and energetically warm and hot foods. They act to cool or heat the body’s energy. “My acupuncturist told me I had a cool constitution, so I needed to eat warm foods, after a few weeks I noticed that my hands and feet were not cold anymore,

regardless of the temperature my hands and feet were always cold [before].” (Pulver)

Within Chinese Medicine there is the Five Element continuum for nutrition; foods fall into the five categories of cold, cool, neutral, warm and hot. When combined properly, with an individual's natural constitution in mind one can alter the “weather” and blood flow to create a hospitable environment for a fetus. Chinese medicine refers to blood flow as a key ingredient of overall health; in comparison with western medicine that tends to pinpoint a specific region of imbalance, Chinese medicine views the body as a whole. Therefore, when referring to the blood flow this would encompass energy, hormones and the properties of internal weather that can cause the reproductive organs to be imbalanced.

In alignment with Western medicine, Chinese medicine maintains that there are various foods that women and men should avoid altogether. Processed, bleached foods and refined sweets are universally considered unhealthy for the body. Eastern medicine also discourages many additional categories of food such as cold food and drinks; “Can you hear the voice of your Chinese grandmother? She’s reminding you that chilled foods and drinks chill your body, causing your body temperature to drop and your circulation to slow.”(Wu) Disturbing the blood flow in this manner affects circulation and prevents the body from maintaining an optimal temperature, a factor that is crucial in maintaining energy for conception. Dairy products can create a dampness, which can lead to stagnation and eventually mucus, which will consequently hamper the flow of the blood.

By changing the way we nourish our bodies “we can address whatever internal disharmony stands between our bodies and our babies by changing the way we nourish

our bodies". (Wu) Nourishing our bodies in conjunction with a strong understanding of the reproductive system provides a clear path to conception.

Obviously, a key ingredient to conception is in understanding the reproductive system and the act of reproducing. The scientific explanation of the reproductive system leaves many holes to be replaced with old wives tales and unproven theories. Doctors can only speculate about the reasonable behaviors that can assist in the process of conception. Above all else, the key factor in reproduction is sex. Sex can take on many forms. The timing of sex seems to be the most significant element in attempting to conceive, as there is a very short window, before ovulation, where the egg will be waiting for the sperm. If struggling to conceive, a man and woman must coordinate this act in order to successfully get pregnant. The delicate workings of the reproductive system require timing, positions, gravity, and sometimes orgasms to encourage the sperm to reach the egg. (Weschler)

There has been no conclusive evidence, but it has been considered vital, that a couple achieves a deep penetration while having sexual intercourse. This allows the sperm to be released closer to the cervix, and thus have a shorter distance to travel. With less distance to travel, there is less of a chance for the sperm to be derailed along the way. Although this represents a small step, the reproductive process is so delicate that any minor assistance can be crucial. Therefore, the traditional missionary position allows for the deepest penetration, and shortest amount of travel for the sperm (Weschler). (Missionary position refers to the position during sex where the female lies flat on her back, and the male faces her, while laying on her to achieve penetration.)

“Back when I was trying to conceive I would actually lay on my back for about thirty minutes with my feet in the air; it may have been an old wives tale, but I was so desperate I would try anything.”(Pulver) Gravity is a logical step towards assisting with conception. By simply raising the hips up, it encourages the sperm to swim upwards toward the cervix, and many doctors and specialists believe that it is an important, small step a woman can take towards conceiving.

Sperm will only live for a short time while waiting for an egg to drop from the ovary, therefore a couple only has a small window of 4-5 days where they can have sex to achieve fertilization. After this point, the egg can no longer be fertilized, as the sperm are dead. During this window, if the egg has been released from the ovary it begins the process of traveling down the fallopian tube, where a healthy population of sperm will hopefully meet it.

A traditional menstrual cycle is 28 days, placing ovulation at day 14, however many women’s cycles differ from this average. Women are taught that day 14 is the de facto day of ovulation, and therefore their attempts to conceive revolve around that day. However, this cycle is merely the norm, with many women differing greatly from this average. “I discovered I was actually ovulating on day 18, so I wasted a lot of time aiming for day 14.” (Clark) The key factor is not the length of the cycle, but pinpointing the day a woman ovulates.

Before ovulation is the follicular stage, which also encompasses menstruation, this is the beginning half of the cycle. This is the time before ovulation when the uterus is preparing for the release of the egg. Towards the end of follicular stage a women will

enter the short stage before ovulation when the semen can meet with the egg. Semen can only live for upwards of five days, therefore there is only a five day window from which the sperm will survive to meet the egg. There are various cues that signify an impending ovulation. These cues consist of an egg white texture to the cervical mucus, a raised cervix, and various other signs that may be unique to each individual. Pre ovulation, the cues a woman will witness clearly fosters the meeting of the sperm and the egg. Every woman has a unique system and set of symptoms, therefore it is important for a woman to learn the workings of her own body in order to read the cues and anticipate ovulation. (Weschler)

Once ovulation occurs, it is no longer possible to conceive; therefore conception becomes a tricky game of predicting ovulation before it occurs. Post ovulation is the Luteal Phase, the phase from which an egg will fertilize and hopefully lodge into the lining of the uterus. This is a fragile stage of the cycle considering this is the point from which the embryo will either lodge or fail to survive. The cycle as a whole is a delicate process that, under the right circumstances, will nurture an embryo to fruition. (gynob.com)

Overall, the timing of sex can greatly improve a couple's chances of conceiving. The natural workings of the body are clearly encouraging the sperm and egg to meet. Sexual positioning, gravity, and timing are logical steps that could urge conception to occur faster; however there is little proof of what steps can definitively help.

"For ourselves, who are ordinary men and women, let us return thanks to Nature for her bounty by using every one of the senses she has given us."

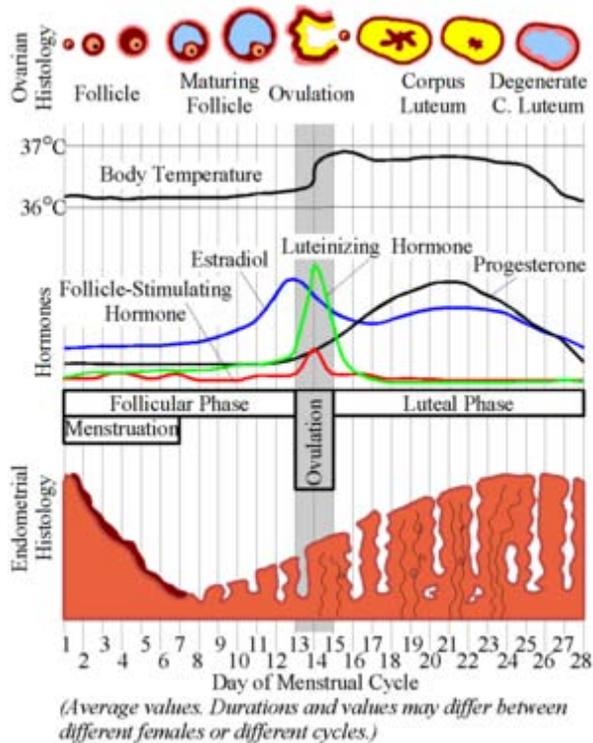
— Virginia Woolf

While nurturing your body in preparation for conception can be an art form, the reproductive act of conception is purely science. Fertility awareness largely revolves around different paths to conception and lifestyle changes, however awareness of the reproductive organ is the most important element of conception. The first step towards reproduction is for a woman to understand how her body works and the signs her body uses to signal every step of the reproductive cycle. “ When I first started trying to get pregnant I thought I knew how my body worked, after learning about some of the signs of ovulation I was surprised to realize how off base I was.”(Marshall)

With a strong understanding of the reproductive system, and the timing of intercourse, a woman has made the first necessary steps toward understanding her fertility. Once these steps are made a woman can then look at the cues her body gives off to signal ovulation. There are three main signs that occur during the onset of ovulation: a waking temperature, cervical fluid quantity, and cervical position are all indicators of impending ovulation. “At first I hated having to figure out my cervical position or judge the consistency of my cervical fluid but eventually it became part of my morning routine.” (Rosenthal) “Instead of feeling like the whole process was some great mystery, I felt like I knew this great secret trick, like I was cheating the system. It suddenly felt like all I had to do was master this scientific formula and I would get pregnant, I wasn’t taking a shot in the dark” (Marshall)

As discussed by Weschler, the waking body temperature is the most explanatory signal the body will give with regard to its current place in the reproductive cycle. This is

a method of reading a woman's temperature in order to understand her body's natural rhythm. During the first half of the cycle, the waking body temperature ranges from 97.0 F to 97.7 F, once ovulation occurs there is a shift in the waking body temperature. After ovulation occurs the body temperature will rise to 97.8 or higher and then remain high throughout the Luteal phase of the cycle. The Luteal phase is the phase that lasts from ovulation until the onset of the next period. The rise in temperature is due to the heat-inducing hormone, progesterone. The rise indicates that ovulation has occurred, therefore it is too late for the egg and sperm to fertilize. Therefore the preliminary signs to indicate ovulation are the key factors to look for when trying to pinpoint the timing of intercourse. Therefore the waking body temperature is best used in conjunction with other signs, such as cervical fluid quantities and cervical position changes. Together these signs will all help to isolate the small window when conception is possible, and intercourse is most effective. "It was maddening taking my temperature every morning, but after a couple of months I figured out when I usually ovulated. Then it was kind of like a game, as soon as I would get a sign that I was going to ovulate we knew to start having sex."(Frankel)



“And if you are like most women who learn how to observe their fertility signs, the second thing you might experience is the sense of frustration and anger when you realize how little you understood your body before.”(Weschler) Cervical fluid is a clear sign to follow throughout a cycle. Cervical fluid resembles the workings of men’s seminal fluid, however unlike a males ability to be fertile at all times women have a small window when they are fertile. Sperm requires an analogous substance to survive, therefore the women’s cervical fluid acts as the alkaline substance to promote survival and protect the sperm in the acidic vagina. When approaching ovulation the vagina will begin to produce the necessary fluids to protect semen. In the days leading up to ovulation, cervical fluid is a cue that ovulation is soon to come. While each woman’s body works differently, this is a symptom of ovulation women can watch for in order to

understand how her body responds. Once ovulation occurs, the egg can no longer be fertilized therefore the vagina forgoes the production of fertile cervical mucus.

Lastly, the position of the cervix will also change to assist in conception and as a cue to a looming ovulation. Similarly to the uterus, the cervix prepares itself for ovulation. Every cycle the cervix prepares itself for ovulation by becoming a “biological gate” for the sperm to easily pass through. The cervix becomes softer and open around ovulation, making it easier for the sperm to pass. This opening and rising of the cervix is caused by the release of estrogen. The cervix only rises and opens as a result of high levels of estrogen, the remainder of the cycle the cervix is lower and firm, not open to accept sperm. In conjunction with the cervical fluid, the positioning of the cervix acts to promote conception.

In addition to the three main biological symptoms of cues the body gives off there are other, more slight signs surrounding ovulation. These other signs are not as reliable since the severity of the symptoms varies greatly from person to person. These other signs of ovulation include: mid-cycle spotting, pain near ovaries, increased sexual feeling, abdominal bloating, water retention, increased energy level, heightened sense of vision, smell, and taste, increased sensitivity in breasts and skin, and breast tenderness. Each woman can experience a unique set of symptoms, and by learning to read the symptoms associated with each stage of the cycle women will be one step closer to achieving conception.

The science of conception is merely a process of breaking down the signs of each stage of the reproductive cycle. By learning this process a woman increases her chance of

conception, and learns to understand the intricacies of her own body. Considering the small window of fertility for women, the timing of intercourse is crucial, thus understanding the cues of the body will direct a women as to exactly when her body will ovulate. Considering the body's desire to procreate the blatant signals given off adds up to a clear road to conception; even as simple as a heightened sexual desire nearing ovulation.

In striving to understand my body and the balance I needed, I possessed an underlying passion for a baby. I vigorously fought the notion of a chemical substance or a synthetic hormone disturbing the balance and rhythm of my body. Thus I set out on a journey to heal this "infertility" through fitness, acupuncture, stress reduction, and most importantly, food. While this attempt was ultimately successful for myself, it is unclear if such a path would be successful for all women. For mine, and others' bodies, it is that balance that a body craves to create harmony and calm, and is therefore the perfect environment for a child to grow. With the stress, poor diet and lack of exercise our society has grown accustomed to, it is clear why women's bodies are fighting pregnancy. Thus, there are two defined paths to achieving conception, and I am clearly biased. As with Lehrer's depiction of Escoffier and Ikeda, the simplicity of Escoffier's passion to perfect his creation was the preferred approach. My journey enabled me to understand myself, my body, and I embraced my conception as a personal triumph. This triumph was a balance I had achieved via personal discipline and passion. If I had chosen the route of western medicine I would have lost this opportunity. My exploration through Eastern medicine was a fascinating and enlightening experience. I discovered the dramatic differences in comparison to the familiar Western approach. While western medicine

would heal instantly, Eastern medicine was a slow process to heal from the root of the imbalance, therefore, in my mind, a more thorough solution.

Acupuncture (an eastern based, holistic approach to medicine), does not define problems to strict degrees, but instead looks at medicine as a means to improve wellness. “To tackle infertility we use a big picture approach. What kind of foods are you eating? How stressful is your life? What is your environment like?” (Wong) This approach can be difficult for both doctors and patients to digest. Doctors find acupuncture difficult to scientifically test, as it’s impossible to identify single variables when looking at broad pictures of health. Because acupuncture has its foundations in broad wellness, testing it by western methods proves impossible. (Zyga) “Patients who advocate western medicine can find this [acupuncture] approach strange since it doesn’t specifically address infertility.” (Wong) Instead the focus of acupuncture is one of general wellness and balance, which is achieved by various methods: change of diet, activity, and pressure points in the body based on environmental factors.

Amongst infertile women, acupuncture has been statistically shown to increase chances of pregnancy. Depending on each study, this number ranges from 15-40% of “infertile” women achieve pregnancy following acupuncture treatment. (Crosta) Common specifics of treatment include focuses on stress relief, correcting hormone imbalances, improving the immune system, and increasing blood flow. While these don’t specifically “treat” infertility, as considered by western methods, they do have a positive impact on the body’s well being. It makes sense that this can aid a pregnancy, and help create an environment stable for fostering life.

Treatments with acupuncture are mainly the use of needles to stimulate pressure points, a treatment many people are familiar with. Acupuncturists also insist on diet, meditation, and massage as a part of a whole treatment. “Along with the treatment I strongly encourage women to make changes to their diet and overall lifestyle, you can’t look at the body as individual systems, it operates as a whole.” (Wong) Taking a full course of treatment, including the lifestyle changes and treatments are crucial for pressure point stimulation to work, and just using needles alone is considered incomplete treatment as defined by an acupuncturist. (Tanaka)

While acupuncture alone can be used to treat infertility, it is curious to see that many Western doctors are starting to recommend it in conjunction with an in vitro fertilization treatment. In fact, there have been many studies in the west that show acupuncture helps make traditional medical treatments more effective. It’s been effectively used in treatments of disease, chronic ailments, and has been shown to aid in recovery from surgery and cancer treatments. (www.nurtureacupuncture.com) With specific regard to infertility, studies show that in vitro fertilization alone increases chances of pregnancy by 25-35%, but this number increases to 40-50% when done in conjunction with acupuncture treatment. As a result of these findings, some doctors have begun working with acupuncturists, although many still do not. “My doctor didn’t seem to care if I did acupuncture or not [while undergoing in vitro fertilization]. He told me it wouldn’t hurt, but didn’t seem sold on the process at the same time.” (Sather) Some doctors argue that the 40-50% effectiveness of acupuncture with in vitro can also be achieved by patients monitoring their diet and fitness, and taking steps to lead a more

active life. This view does seem to be losing traction, however, because of the specific benefits acupuncture provides the in vitro process.

To harvest a small collection of eggs during the in vitro process, drugs are administered to encourage multiple follicles containing eggs to develop. Acupuncture increases blood flow to the ovaries, which nourishes these follicles, and encourages better egg quality that has a direct impact on a stronger embryo. (Hays) Further, the Chinese herbs a woman takes during acupuncture makes the blood more nourishing for the ovaries, so a woman will have increased amounts of blood, and more nourished blood to make better eggs that will be fertilized. A drug often used during the in vitro fertilization process is Clomid. While this is a fertility aid, a common (and ironic) side effect is a reduced, specifically thinned, uterine lining. This lining is crucial for the fertilized egg to stick on when the eggs are put in the uterus during in vitro. Acupuncture helps counteract the thinning of the uterine lining by increasing blood flow to the uterus in the same way as the ovaries. This increased blood flow is what naturally causes the uterine lining to thicken and become more uniform. By increasing blood flow to the reproductive organs acupuncture is able to “assist” with in vitro fertilization in both the harvesting and implanting stages. (Hays) Since both of these stages are crucial, and contain wide margins for error, it makes sense that pregnancy rates increase as acupuncture helps reduce bodily risk.

It is encouraging to see Western and Eastern medicine working together, and can be likened to the melding of both the art and science of medicine. If more studies are done that show positive correlations between acupuncture, and how it increases effectiveness during traditional medical treatments, we could potentially enter a

renaissance in the medical field. Difficulties in pregnancy may potentially open the door for this new line of thinking as doctors strive to provide greater comfort, and better treatment for their patients.

Doctors have struggled to find a perfect answer to the painful struggle of infertility. They have removed themselves from the art of conception and they have examined the moment the egg is fertilized by the sperm as the truth that needs unraveling. This is much like the path Ikeda sought when attempting to understand the exact flavor he was experiencing, and how to label and recreate such an experience. In essence, Ikeda removed the art and passion of cooking to produce a formula that would solve and simplify cooking. In contrast, Lehrer masterfully glorified Escoffier for his excitement in perfecting food and the environment surrounding the food he created. As Lehrer supported the artistic approach, in this instance, I also supported the artistic balance of resolving infertility. Much like Lehrer's, *The Essence of Taste*, there is either the path of art or the path of science to every solution.

Traditional medicine, defined by some as Western Medicine, takes a scientific approach to infertility. Fertility is a problem to be solved by specifically addressing the fertilization process, along with the directly corresponding reproductive organs. This viewpoint makes sense for many people, as they practice in vitro fertilization: a process by which eggs are harvested, fertilized and placed as strategically as possible to ensure pregnancy is reached. Basically, this removes some of the risk inherent in the natural process of fertilization in order to improve chances of a successful pregnancy. While not always successful, this process does make sense to most Westerners.

The 1970's marked a change in the battle for fertility. There was finally help for the many women that wanted a child but struggled to conceive. Embryologists discovered a revolutionary way to bypass the workings of the human body and manually insert a fertilized egg in a woman's uterus. This scientific discovery is known as In Vitro Fertilization. This has enabled numerous women to achieve pregnancy despite their own failure to conceive, so a feat that previously was impossible for many couples or single women, was now attainable.

In Vitro is a Latin phrase meaning *Within the Glass*, this refers to the test tubes and Petri dishes made of glass, from which the eggs and sperm are fertilized. In Vitro Fertilization was first created in the 1970's and by 1978 the first healthy baby was conceived and born via this method. This method continues to evolve and gain praise from the medical community. This year, 2010, The Nobel prize in physiology and medicine was awarded to Robert E. Edwards, who, with his colleague developed the Western solution to human infertility. This development changed the lives of an enormous population of infertile women. The majority of couples that resort to this method suffer from blocked or damaged Fallopian tubes, Endometriosis, or low sperm count. The process of In Vitro Fertilization is extremely complex and challenging for all of the family members. Both male and female are forced to go through numerous tests, procedures and possible hormone injections throughout the process.

The process begins with hormonal stimulation to excite the follicles of the ovaries. Hormones are sometimes administered through injections that require very close monitoring. Medication is then given to block the natural surge of Luteinising hormone, and instead a medication is given by the doctor to trigger ovulation. The normal stages of

a reproductive cycle are altered to assist in the success of the manual fertilization. The release of Luteinizing hormone is a necessary stage in a natural cycle, which enables the egg and sperm to meet and implant in the uterine wall. The hormone then administered is the human chorionic gonadotropin, a hormone naturally released during pregnancy from the developing embryo. At this point they retrieve the eggs from the female by using an ultra-sound guided needle, they pierce through the vaginal wall. This process is minimally invasive for the woman. Once the eggs are retrieved, they are analyzed in a laboratory to identify those with the greatest chance of survival. Semen is also being prepared and analyzed for success factors concurrently. At this point the egg and sperm are now introduced and incubated together, a process that lasts approximately eighteen hours. The egg should be fertilized at this point. If the male suffers from a very low sperm count, the sperm will be injected directly into the egg. The embryo must reach a desired cell stage, and depending on each doctor's methods, they may wait two to five days before transferring the embryo. The laboratory will then judge the quality of each embryo by a highly specific technique of grading. The number of embryos transferred into the uterus are based on several factors, these include the woman's age, the number of embryos available and other health factors. Although many doctors attempt to avoid carrying multiples and the risks tied to such a pregnancy, transferring several healthy embryos will improve the odds of implantation and subsequently pregnancy. The embryos that are evaluated as being healthy and the best for transfer are then placed in the patient's uterus via a catheter. The woman is then given hormones in order to assist in implantation. In vitro fertilization is a relatively new form of medicine; it is an answer to infertility. As this is a time for medicine to resolve the workings of the reproductive

system, it mirrors a time when medicine misguidedly attempted to resolve troubles of the mind.

In Jonah Lehrer's novel *Proust was a Neuroscientist*, he discusses Virginia Woolf's battle with depression, and her narrative of the workings of her own mind. In the excerpt entitled *The Emergent Self*, he explains the battle Woolf experienced through her bouts of depression, including the self-awareness that she explored. Her journey coincided with a time when medicine was exploring the body for answers, yet her problem remained unsolved. Much like Michelle Pulver, a woman struggling with infertility, she battled her own thoughts. "It's odd how being ill splits you up into several different people." (Lehrer) For Michelle, choosing to heal her condition through a natural route was both empowering and maddening. She knew she needed to slowly and methodically redirect the workings of her body, yet she yearned for the quick fix of medicine.

"My notion's to think of the human beings first and let the abstract ideas take care of themselves." (Woolf)

Through the battle of infertility, many women struggle to maintain strength amongst the skepticism that surrounds them. There are many skeptics in the world that are always prepared to discount every approach and theory. As Eastern Medicine is less understood in the western world, it is more open to criticism and skepticism, however this does not stop uneducated by standards for throwing out their opinion of western and eastern fertility treatments alike. No matter the approach, science, religion and the skeptics in the world have all attempted to discount every method of fertility assistance.

“When I first began acupuncture I had a weighing feeling that I should not be disturbing my reproductive system, and if I could not get pregnant naturally then maybe there was a reason for that.” (Pulver)

The western world has grown accustomed to western approaches, procedures, medication and doctors. This is what is known, and therefore this is what people are most comfortable enlisting to solve their ailments. People have learned to trust western medicine based on its results, and mainly their familiarity with it as the norm, therefore introducing such a drastically different method of healing opens up doors to all that hope to disprove of what is different and unfamiliar. Based on a study by the British Fertility Society, they claim that based on their findings, “there is “no evidence” that the complementary treatment can improve the success of assisted conception.”(Williams) Their research has found that, not only is there no evidence that eastern medicine assists fertility, but Chinese herbal remedies also provide no assistance.

In this study by the British Fertility Society, information was gathered from fourteen studies on infertility, involving a total of 2670 patients. The study compared controlled trials comparing “real” and “fake” treatments administered via randomized assignment. The fourteen studies encompassed the effects of acupuncture on live births, pregnancies and miscarriages. Although this equates to very few participants in each study, the findings suggest that “regardless of the stage at which In-Vitro Fertilization treatment was carried out, acupuncture made no significant difference to any outcomes.” (Williams) Therefore it was concluded that Chinese Medicine as a whole was not beneficial to assisting in pregnancy. Without the scientific proof, the British Fertility Society has deemed acupuncture and Chinese herbs to not assist in fertility. Edzard Ernst,

a professor of complimentary medicine, claims that “Infertile women have been misled for some time now to think that traditional Chinese medicine can help them get pregnant.” (Williams)

Not unlike eastern medicine, western medicine also attracts its own crop of skeptics. The Christian religion maintains strict rules and notions of fertility and God’s intentions for reproduction. They breakdown the many forms of infertility treatments to the root of its nature and explain their interpretation of God’s intentions and where this treatment would fit in with God’s plans. “Most Christians support infertility treatment that does not involve a third party, although the Roman Catholic Church is against artificial insemination, as it believes that new life should be created by natural means within marriage.” Eggs and sperm from a third party as a whole are not considered acceptable by Christian law and can even fall into the category of adultery. Christians also are against In-Vitro Fertilization, knowing that the extra, unnecessary embryos are discarded. Based on the fact that the Christian religion is strongly against abortion, they view life to begin at conception and therefore a discarded embryo is considered an abortion. Therefore any treatment classified as embryo technology is considered to be wrong in the Christian way of thinking. Overall, Christianity does not support any form of embryonic technology or third party participants, thus leaving an infertile couple with only the route of medication and hormone therapy. This is extremely limiting considering infertility has many causes. For example, a damaged fallopian tube or damaged eggs are not aided with medication. Consequently, these harsh rules leave many couples with no options.

There is a counter argument to every theory; unfortunately these counter arguments are often built on naivety. The findings of the British Fertility Society seemed to fulfill a confirmation bias and have very little evidence to support their theory. The argument against western approaches also seems misguided; labeling artificial insemination as “adultery” seems to be an outdated way of thinking. The path to resolving infertility is a personal journey with specific weaknesses and strengths that lead every couple to an individual set of solutions and remedies. Outsiders fail to realize that the longing for a child has no room for skepticism. “After trying for so long, I figured that it wouldn’t hurt to try acupuncture, from what I had heard it didn’t have any side effects, so if it didn’t help I wouldn’t have lost anything. I was willing to explore every avenue.” (Pulver)

While the rate of infertility grows, more criticism unfolds to debate the intricacies of infertility and its possible causes. Every woman faces a unique set of causes, however there are several clear instigators of fertility problems. Men and women alike are struggling with fertility problems and the stigma that accompanies such a diagnosis.

Although the rates of infertility in woman are much higher, men also suffer from an array of problems that contribute to decreasing abilities. Environmental factors, prioritizing, and body weight have all proven to affect the current rate of infertility in men and women of childbearing years. Although infertility has made waves in mainstream medical journals, there are both voluntary and involuntary factors that explain the current statistics. Women should not be waiting to conceive and they should not be overweight; these fertility struggles are not out of anyone’s control. While there are unforeseen strains on women today, there are many factors that can be controlled.

Although women should not rush conception, age is going to provide an additional obstacle.

One study from the San Francisco Medical Journal suggests that the increasing number of fertility treatments and medications available is providing an extra layer of support that many couples are using regardless of infertility problems. Thus the rate of couples using infertility treatments has risen based on the variety and ease of availability. Although statistics do show birth rate has decreased over the past decade, this is also due to the decision of many couples to delay childbearing. There is more evidence now that environmental factors are playing a role in the country's wave of infertility.

Infertility is also affecting many European countries as well. "40 percent of young men entering the draft in Denmark have sperm counts beneath 40 million/cc, a level associated with infertility."(Giudice) Many different environmental factors could be contributing to the decrease in fertility in adults of childbearing years. "Wildlife observations linking environmental chemicals to reproductive abnormalities; geographic and temporal trends in human health conditions affecting fertility." (Giudice) This directly affects the sperm quality and count in males and causes possible genital birth defects; therefore this problem may have arisen in past generations. Additional laboratory tests have indicated that studies done on animals, showing fertility impairment directly correlates to results seen in humans; therefore indicating those environment substances are affecting human infertility. The substance is causing fertility impairment in animals, much the same as humans, and the substance is found in comparable quantities in humans. This evidence all indicates that a contributing factor in infertility could be environmental substances.

“It is a well acknowledged fact that women are at their fertile best while young and nubile, that is, when they are in their late teens and early twenties.” (Tharu) The ideal years for women to conceive, based on physical properties, is much younger than what social norms allow. Social norms dictate that marriage should precede pregnancy and education should precede both. However the female body does not match such a timeline, therefore infertility is rising. Over the past generations, not only are women pursuing education, but careers are also taking priority. Therefore the timeline for conception is becoming further askew. With the addition of several college degrees, and the time necessary to work their way through a career, conception is being pushed further and further down the list of priorities, with the assumption that their reproductive abilities will not falter. The reliance on reproductive health remaining constant is naive. Fertility decreases as women age, with optimal fertility in the late teens and twenties, the rate decreases into a woman’s thirties, and significantly after the age of thirty-five. Unfortunately, education, career and financial stability are all important and admirable qualities for both men and women to pursue; therefore rushing a pregnancy is obviously not encouraged. As career and education continue to take priority for women fertility rates are predicted to increase. “Some Asian countries, such as India, have seen a spurt of economic growth lately. This runs parallel with improved opportunities for women’s education and career.”(Tharu) With women’s increasing strength and power fertility and conception is being overlooked and the fertile years are drifting away

"We still think of a powerful man as a born leader and a powerful woman as an anomaly."

— Margaret Atwood

Obesity and high body mass are also factors to the growing rate of infertility. The rise of obesity in first world countries indicates poor eating habits and a concern for health being over looked. The body operates as a whole, therefore overweight and poor health can greatly affect the workings of the reproductive organs. “There are currently about 1.6 billion people in the world who are overweight and there are another 400 million who suffer from obesity.” (Thura) These numbers cannot be overlooked; women and men alike must be in good health to conceive a child. Obesity and being overweight can contribute to many different reproductive illnesses that can significantly contribute to fertility problems. Poly Cystic Ovarian Syndrome is directly associated with being overweight, and acts to greatly diminish the ability to conceive. Therefore weight and overall health are significant factors. Men also can be affected by poor health. “Although not many studies are available on men, research suggests that a 20-pound increase in men’s weight may elevate their chances of infertility by about 10 percent.” (Tharu)

Making conception a priority means making many lifestyle changes. Choosing career over children will affect a woman’s ability to conceive as she waits until near menopausal ages. A healthy diet and body weight will encourage every part of the body to operate smoothly.

“The management of fertility is one of the most important functions of adulthood.” –Germaine Greer

While the Pill is not a cause of infertility, the many years women spend taking birth control are exactly the years that women are prime for pregnancy and childbirth. “It’s magic, a trick of science that managed in one fell swoop to wipe away centuries of

female oppression, overly exhausting baby-making, and just marrying the wrong guy way too early.” (Grigoriadis) The birth-control pill was FDA approved in 1960, and revolutionized the path for females in America and many western cultures. “The Pill” afforded women the freedoms similar to men, to pursue career and forgo the pressures of childbearing. The early twenties were no longer a pressure cooker for babies and marriage, but a period of time to go to college, enter the workforce and succeed as only men had succeeded. “The pill changed the world. These days, women’s twenties are free and fabulous as they can be, a time of boundless freedom and experimentation, of easy trying on and discarding of identities, careers, partners.” (Grigoriadis) The pill not only allowed women to treat sex differently, it allowed women to shut down their reproductive systems and use their, traditional child bearing years to succeed in careers and enjoy a freedom that past generations had not known.

While this freedom may have revolutionized women’s roles in relationships, the workplace, and society as a whole, it has also awakened women to the harsh reality that such freedom comes at a cost. The biological reality of such freedom is that women were shutting down their bodies during the ideal reproductive times. “It’s not at all out of the ordinary for a woman to be on the Pill from ages 18 to 35, her prime child bearing years.” (Grigoriadis) The Pill allowed women to enjoy life, experience the excitement of independence, and achieve the successes typically only seen for men. However, suddenly this success and freedom has evolved into an entire new wave of struggles. Women are completely forgoing their childbearing years, and infertility has become the manifestation of such freedom. Apparently, women could not live their lives as carefree as men; biology would not allow such independence. After years of women struggling to maintain

the equality in schools and industry, they are realizing that the new “modern” role of women can not be maintained, attempting childbearing once a career has been established is not panning out. There is no surprise that when women finally realize that they want both, a career and a family, by the time this is realized the prime reproductive years are winding down and infertility is on the rise. “The Pill didn’t create the field of infertility medicine, but it turned it into and enormous industry. Inadvertently, indirectly, infertility has become the Pill’s primary side effect.” (Grigoriadis)

Although procreation is not the priority it once was, women are finding it increasingly difficult to spend their earlier years working and then suddenly swap the Pill for ovulation charts and pregnancy tests. The pressure to procreate has been replaced with a pressure to work and gain equality, the feminist viewpoint has swapped priorities and therefore many women are not realizing they want a family until it is too late. The Pill originally began as an attempt at population control. America was using more than their share of the world’s resources and therefore “Cold War-era birth control proponents used the terms family planning, birth-control, and population control interchangeably.” (Grigoriadis) There have been many past attempts at birth control. Egyptians created a suppository made of crocodile dung and gum; West Africans made a plug of crushed root and the Greeks used olive oil to coat the cervixes. Many women attempted to monitor their cycle through observing their own rhythm however the medical community believe ovulation to occur during menstruation, this notion was not corrected until the early 1920’s. (Grigoriadis)

At the onset of the Pill, women viewed the “modern way” as revolutionary, however women are becoming increasingly aware of the artificiality of a pill that can

alter the natural rhythm of the body. Being removed from one's true biological process is no longer as appealing as the time when the Pill was first introduced, "...when machines were going to save the world and pills could fix everything. But for the wheatgrass-and-yoga generation, there's something about taking a pill everyday that is insulting to one's sense of self, as an accomplished, adult woman." (Gorgiadiis) As generations have evolved, our mindset has dramatically evolved, and women want to not only be in control of their lives and careers, but also their bodies.

As a result of the revolutionary Pill, there has evolved a new market appealing to the women grasping onto their last remaining years of fertility. Women are using every type of solution and gimmick alike to aid in conception. However with women's need to be more in control, women are clinging to the FAM Method, Fertility Awareness Method. This method was popularized by Tony Weschler and is an exhaustingly specific account of a woman's body and the reproductive system. "There is no mystery here. If you take your temperature, you will know when you're ovulating and when you get your period." (Weschler) Weschler's approach appeals to the new generation of women, women are not at the mercy of doctor's but entirely in control.

"On the Pill it is easy to forget the truths about biology. Specifically, that as much as athleticism and taut cheekbones are, fertility is a gift of youth" (Grigoriadis) As the Pill has afforded women many freedoms, infertility has risen tremendously, making it abundantly clear that biology can only be tampered with so much.

"Never pretend that the things you haven't got are not worth having."- Virginia Woolf

With a growing number of women facing infertility, it is only natural that a circle of support would form to encourage women and protect them from despair. Support has taken on many forms, such as online networks, support groups - both online and in person, and now many medical professionals are offering websites with a plethora of information about infertility and dealing with its ramifications. These resources provide the support that many women desire, and find comforting as they deal with uncertainty. For some women a sense of community reminds them that they are not alone in their struggle, while some women derive strength from educating themselves on all of their options, treatments and the reproductive system. There is support in many forms, and this alone can give women the confidence and strength to seek help and try new alternatives.

Infertility forums provide an anonymous place for women to seek comfort and support, without having to be open about their personal struggle. There are numerous forums online for women to consult other women, or medical professionals, on their experiences and their fears; both in coping and treatment options that are available, and one's that have been tried. Online forums are a safe and anonymous place where women can confide in other anonymous women, therefore avoiding any insecurity. The shame, desperation, and confusion associated with infertility can be an intimidating experience to share, however an anonymous forum can provide a safe place for women to seek women experiencing similar feelings and create a community of support. Although not all forums contain medical information, women are able to share their experiences consulting various types of doctors and other medical professionals. In their confusion and sadness,

women are seeking camaraderie, as infertility can be a lonely battle and the strength derived from support groups can be significant.

"I thought how unpleasant it is to be locked out; and I thought how it is worse, perhaps, to be locked in."- Virginia Woolf

If anonymity is not important, there are numerous in person support group options. As with any medical and personal struggles there are community support groups to provide a network of women to lean on. In New York city, many Jewish community centers offer support groups for women dealing with infertility, these support groups involve "Discussing issues such as: dealing with stress, challenges within your relationship, answering questions from family and friends, dealing with complicated feelings of hope and disappointment, and more." (AFA.com) Many support groups provide medical advice or have medical professionals speak and offer sound medical encouragement. The medical advice can encourage women to seek the help they need. "There are many underlying causes for infertility issues. Some are easily treated while others require more in depth treatment. By identifying knowledge gaps and understanding patients' decision-making processes, we're better able to provide education and support services that better fit their needs." (Higgins)

Many doctors and medical professionals are beginning to offer information in online references and databases. Doctors and natural medicine practitioners also have online blogs that can provide additional medical information to help direct women to the help they need. A women dealing with infertility must educate herself as to her options in treatment and reproductive health. Websites such as <http://www.ivfauthority.com/>, or

<http://www.peterahleringmd.com/> offer up to date research and medical information on reproduction and various reproductive treatments. These doctors offer their knowledge to women dealing with infertility as a form of support. By educating women on infertility, they are providing them with one more tool to help them conquer their battle.

Support and education are the best weapons a woman can arm herself with, from this she will derive the confidence and strength to overcome her infertility and seek the medicine needed. "At one point, I think I was reading about infertility every single day, I was checking the forums and reading every website I could find." (Clark) "I began the process with so much hope of conceiving but there were many times when I only felt defeated and frustrated." (Clark)

"...the battered woman--for she wore a skirt--with her right hand exposed, her left clutching at her side, stood singing of love--love which has lasted a million years, she sang, love which prevails, and millions of years ago, her lover, who had been dead these centuries, had walked, she crooned, with her in May; but in the course of ages, long as summer days, and flaming, she remembered, with nothing but red asters, he had gone; death's enormous sickle had swept those tremendous hills, and when at last she laid her hoary and immensely aged head on the earth, now become a mere cinder of ice, she implored the Gods to lay by her side a bunch of purple heather, there on her high burial place which the last rays of the last sun caressed; for then the pageant of the universe would be over."

— Virginia Woolf

Doctors have struggled to find an answer to the painful struggle of infertility. They have removed themselves from the art of conception and they have examined the moment the egg is fertilized by the sperm as the truth that needs unraveling. This is much like the path Ikeda sought when attempting to understand the exact flavor he was experiencing, and how to label and recreate such an experience. In essence, Ikeda removed the art and passion of cooking to produce a formula that would solve and simplify cooking. In contrast, Lehrer masterfully glorified Escoffier for his excitement in perfecting food and the environment surrounding the food he created. As Lehrer supported the artistic approach, in this instance, I also supported the artistic balance of resolving infertility. Much like Lehrer's, *The Essence of Taste*, there is either the path of art or the path of science to every solution.

A battle such as infertility involves the workings of both the mind and the body. Medicine has made many heroic efforts to rescue women from their hopeless struggles, yet in doing so, women are deprived of the natural process of strengthening themselves. Medicine, such as an infertility treatment, should be relied on as a last result. Women should first explore their strengths and weakness to achieve the balance that a pregnancy demands. Although this process requires self-discipline, this is a lesson women should experience before becoming a parent. "In her art, Woolf let life break in. She showed us our fleeting parts, but she also shows us how our parts come together. The secret, Woolf realized, was that the self emerges from its source."(Lehrer)

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