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The influence of genetics and the environment on human personalities, relationships and experiences

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The Influence of Genetics and the Environment on Human Personalities, Relationships and Experiences

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It's no mystery that our genetic make-up plays an integral part in the outcome of our lives, but to what extent exactly are our personalities, relationships and experiences pre-determined by this genetic code? There are two forces that contribute to the outcome of these aspects of our lives. Genetics and Environment. The significance of the environment, i.e., our upbringing, lifestyle and the world around us is often emphasized by psychologists as the more dominant force, however our genes are just as, if not more, influential on our lives.

My choreographic process is directly in relation to the group of artists involved. It's impossible for me to solely have one successful process unless consistently working with the same group of dancers/artists and even then each time will be different with different problems. My research has intentionally consisted of three quite different processes, working with Link Dance Company, First year WAAPA dance students and, the most challenging of all, choreographing on myself and one other dancer for a public performance.

I created three pieces throughout the year. The first entitled, 'Upshot' where I worked with the first year Bachelor of Arts (Dance) students, the second, 'Of A Kind' with Link Dance Company for the Prague Dance Festival and lastly, 'No Right Angles', where I worked with an independent dancer, Bernadette Lewis.

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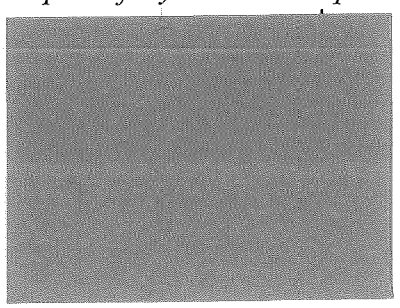

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Basic Genetics and Evolution

Genes are actually worthless by themselves. While they do provide the outline for proteins, it's these proteins that really do all the work. They are responsible for all our body's chemical reactions and structure, ie, the way we look, talk, eat, act and even breathe. We all have around thirty thousand genes contained in the 100 trillion (approx.) cells in our body. These little self-duplicating machines are spread across 46 chromosomes that are packaged in 23 pairs at the center of each cell. Our genes are composed of a substance called DNA (deoxyribonucleic acid). DNA is unique as it has a double-stranded structure that can unravel. Each strand is then replicated producing two copies of the same sequence of genetic bases to then pass on to the next generation. (Spector, 7, 2003)

We inherit 100% of genes from a combination of those of our mother and father. Each parent contributes 50% to that 100%; however the differences between us are a result of inheriting different forms of the same gene. The relationships of shared genes are quite simple. We share 50% with our parents, siblings and children. We share 25% with grandparents, aunts and uncles. It then decreases to 12.5% for first cousins or great-aunts and uncles and drops once again to only 3% with second cousins. While all of these genes are shared amongst family, the differences happen because individual genes shared differ for each relative. There is an exception to this rule and this is in the case of identical twins. Identical twins occur when the fertilized egg duplicates itself early on in the process and each twin then gets two identical sets. Within the Nature Vs. Nurture argument, twin studies are the most common and, one could say, ideal natural experiment to acknowledge the effects of either nature (genes) or nurture (environment). These studies involve evaluating the similarities of identical twins (that share all genes) against non-identical twins that share half their genes like regular brothers and sisters. Both of these groups live and learn in the same environment, in the womb as well as childhood, therefore any difference between them would then be a result of genetics. The first twin study was conducted in 1924. It involved the counting of freckles and moles to see where they matched more accurately. The study concluded that moles and freckles are in fact genetic and not

caused by birth as the numbers matched more closely in identical twins than non-identical twins, otherwise known as fraternal twins. (Spector, 8, 2003)

On average, fraternal twins have only half their genes in common. If the identical twins are more alike, it is believed that genetic inheritance is more important, because the two types of twins are supposedly brought up in identical environments. (only same sex fraternal twins are compared). But if people treat identical twins more similarly than they do fraternal twins, the assumptions of the heritability index disappear. Much research shows that physical appearance affects how parents, peers, and others react to a child. Thus, identical twins - who more closely resemble one another - will experience a more similar environment than fraternal twins. University of Virginia psychologist Sandra Scarr has shown that fraternal twins who resemble one another enough to be mistaken for identical twins have more similar personalities than other such twins. (Peele,1, 1996)

Charles Darwin's theory of evolution by natural selection along with Gregor Mendel's concept of the passing down of information about traits via genes are two of the most significant discoveries ever made about genetics. Darwin's theory, written in 1859 concluded that all animals had evolved from other animals or species since the beginning of life. He believed that every generation made small physical alterations to enhance survival or reproduction. These alterations were then passed on until the majority of the population had that same trait. It was how this information was passed on that he couldn't figure out. This is where Mendel's concept comes into play. He discovered how traits such as size and colour were passed on from the parent to the offspring in a binary system with equal portions from both parents. With these two elements of evolution and genetics, life on earth all of a sudden became a lot easier to explain. (Spector, 4,5, 2003)

Life on earth started in its simplest form as a unit that could replicate itself surviving in either sulphurous rock or water. While replicating itself a few defects occurred, however some of these actually provided benefits for the future generation within that environment. These creatures gradually became more and more complex with each cell developing more functions and in due course fishlike creatures developed.

Following Darwin's theory these creatures became more sophisticated and eventually gained mutations that could allow them to live on land. Warm-blooded mammals such as apes then developed from these creatures and humans from the apes. In different climates, environments and with different species only the useful genes survived. Developing the ability to walk on two legs as well as advanced brain function, humans separated from the apes approximately five million years ago. The archaic human began with several different species including Australopithecus and Homo, which is our own genus but also has several groups of its own. These groups include Homo ergaster, Homo sapiens, Homo heidelbergensis and Homo erectus. Both Homo erectus and Homo heidelbergensis became extinct. Homo sapiens is the group from which modern man originated and it began approximately 150,000 years ago in East Africa. Our modern human ancestors migrated from Africa to the Middle East, crossing into Asia and Europe. During this period about 100,000 years ago they were using better tools, evolving larger brains, learning to speak as well as mating with one another while selecting the genes that we have today. (Spector 5-7, 2003)

The Nature Vs Nurture Debate

It has been reported that the use of the terms Nature and Nurture as a convenient catch-phrase for the roles of heredity and environment in human development can be traced back to 13th century France. Some scientists think that people behave as they do according to genetic tendencies or even "animal instincts." This is known as the Nature theory of human behaviour. Other scientists believe that people think and behave in certain ways because they are taught to do so. This is known as the Nurture theory of human behaviour.

Fast-growing understanding of the human genome has recently made it clear that both sides are partly right. Nature provides us with innate abilities and traits; nurture takes these genetic tendencies and moulds them as we learn and grow. End of story, right? No. The Nature vs. Nurture debate still continues, as scientist's debate over how much of who we are is shaped by genes and how much by the environment.

The Nature Theory - Heredity

Scientists have known for years that traits such as eye colour and hair colour are determined by specific genes encoded in each human cell. The Nature Theory takes things a step further to say those more abstract traits such as intelligence; personality, aggression, and sexual orientation are also encoded in an individual's DNA.

- The search for "behavioural" genes is the basis of constant debate. Many fear that genetic arguments might be used to excuse criminal acts or justify divorce.
- The most debated issue linked to the nature theory is the existence of a "gay gene," which points to a genetic factor in sexual orientation.
- If genetics didn't play a part, then fraternal twins, raised under the same conditions, would be alike, regardless of differences in their genes. But, while studies show they do more closely resemble each other than do non-twin brothers and sisters, they also show these same similarities when raised apart - as in similar studies done with identical twins.

The nature side of the debate argues that a person maintains his mental ability only based on what he is born with genetically. Defending this side of the debate exclusively would be establishing that a person's environment plays no role in determining his mental capacity.

There are some reasons for an individual to be convinced that genetics play a large part in a person's intelligence. When considering the biology of heredity, it is obvious that genes provide humans with their own physical equipment, which is in essence, their basis. Genes and chromosomes are passed on from one generation to the next. Therefore, without heredity, humans would have nothing to hand down biologically to their descendants; and this idea of genetics being purposeless is clearly incorrect.

Twin studies are rendered on sets of twins; these include both identical twins and fraternal twins. They are conducted to determine the comparative weight of heritability and environment (Morris and Maisto 82, 1992)."These studies determine the heritability of a trait: to what extent the differences among individuals are due to genes, rather than to environmental factors such as upbringing, nutrition, and schooling" (Wright, 1999). Segal stated that recent twin research showed that the genetic contribution to happiness and stability are about 50% and 80%, respectively, while life events have only a transitory effect on happiness. Segal's concept is not directly concerning human intelligence; yet, if his statement is in fact true, it confirms some importance of heredity. It indicates that heredity certainly does have a significant effect on a person. In general, twin studies support the nature side of the debate (Morris and Maisto 82, 1992).

Adoption studies are somewhat similar to twin studies because they are conducted for similar reasons, such as the influence of heritability on a personality trait. These studies consist of monitoring and testing children who are adopted. Researchers study the IQs in children, their birth parents, and their adoptive parents. These studies also partially support the nurture side of the debate. Some of these studies have shown that heritability is about 48% influential in most humans (Hamer and Copeland 219, 1998).

The Nurture Theory - Environment

While not discounting that genetic tendencies may exist, supporters of the nurture theory believe they ultimately don't matter - that our behavioural aspects originate only from the environmental factors of our upbringing. Studies on infant and child temperament have revealed the most vital evidence for nurture theories.

- A study in New Scientist suggests that sense of humour is a learned trait, influenced by family and cultural environment, and not genetically determined.
- If environment didn't play a part in determining an individual's traits and behaviours, then identical twins should, theoretically, be exactly the same in all respects, even if reared apart. But a number of studies show that they are never exactly alike, even though they are remarkably similar in most respects.

A person's environment plays an important role on his/her development from early on. Much research shows that people do well from early stimulation. In an experiment done by H.M. Skeels using orphans, he proved this idea. Skeels studied mentally retarded orphans. Once these children were placed with families to live, were treated well, and were encouraged and nurtured, their IQs increased remarkably (Hamer and Copeland 221, 1998).

Kagan and Havermann define operant conditioning as the process by which, through learning, free operant behaviour becomes attached to a specific stimulus (Kagan and Havermann, 578, 1980). John Watson conducted a significant experiment in 1913 concerning behaviourism. He has become well- known as the psychologist who played a large role in the research of behaviourism, which is a sector of operant conditioning. Watson used an 11-month-old boy to prove that a person could be conditioned to be afraid of something by which he was not previously affected. The baby used, Albert, was put into a room with no other human and no other distractions present. Watson placed a white rat in the room. Albert seemed to like the rat; he even showed affection towards it. Some time later, Watson would produce a very loud and displeasing noise every time Albert would reach out to touch the rat. As a result, the baby became terrified of every white and furry object in which he came in contact. This experiment became known as the "Albert experiment" (Kagan and Havermann

94, 1980). This established that humans could be taught certain feelings and fears through their environment, with which they were not born (Morris and Maisto 15, 1999). Experiments such as these ones prove that a person's environment can have a crucial effect on him and on his manner of thinking. Much research followed experiments like Watson's. Psychologists have always been attracted by factors, namely environment, that affect humans.

Adoption studies have also shown that a person's environment plays an important role in their mental ability. For example, a study done with adoptive children raised in the same house had very similar IQs. Granted this does not seem like substantial evidence; however, these children were in no way related genetically. Their environment growing up provided them with similar capacities for learning and for retaining information (Kagan and Havermann 39, 1980). Fraternal twins (who share approximately half of their genes) present an informative contrast. Because they are raised in the same environment but are not genetically identical, they help us to see the influence of environmental factors. These factors are valuable to this argument. (Kagan and Havermann 39, 1980).

Current research examines influences on intelligence. Researchers examine the extent to which children's surroundings influence their intelligence. In a prior study, they found that children adopted before age 1 into high-income families displayed particularly large IQ gains by adolescence. The newer studies expanded on that conception. One study that was conducted proves that an individual's environment can have an extraordinary affect on a person. The subject of the investigation was called the "Wild Boy of Aveyron" (Herrnstein and Murray 410). He was discovered in France around 1799, which was soon after the French Revolution.

The 12- or 13-year old boy had been found running naked in the wild, and clearly out of contact with humanity for most of his life, he seemed to be unable to become fully human despite large efforts to restore him socially after the Revolution. From this rare case, we can draw a hopeful conclusion: If the ordinary human environment is so essential for creating human intelligence, we should be able to create extraordinary environments to raise it further (Herrnstein and Murray 410, 1994).

Though extraordinary, this incident shows that environment can have an extremely drastic influence on a person.

So, was the way we behave engrained in us before we were born? Or has it developed over time in response to our experiences? Researchers on all sides of the nature vs nurture debate agree that the link between a gene and behaviour is not the same as cause and effect. While a gene may increase the likelihood that you'll behave in a particular way, it does not make people do things. Which means that we still get to choose who we'll be when we grow up.

Genetics, Personalities and Human Behaviour

Although our personalities are formed from our genetic make-up, they are not solely responsible for our behaviour. No single gene determines a particular behavioural trait. Behaviours are complex traits involving multiple genes that are affected by a variety of other factors. This fact often gets overlooked in media reports that sensationalise scientific breakthroughs on gene function and this can be very misleading to the public.

For example, a study published in 1999 claimed that over a particular gene in mice led to better learning capacity. The media referred to this gene as the "smart gene." What the media didn't mention was that the learning enhancements observed in this study were short-term, in some cases lasting only a few hours to a few days. Dubbing a gene as a "smart gene" gives the public a false impression of how much scientists really know about the genetics of a trait like intelligence. Once news of the "smart gene" reaches the public, suddenly there is talk about designer babies and the potential of genetically engineering embryos to have intelligence and other desirable traits, when in reality the path from genes to development of a particular trait is still a mystery. (Peele, 2, 1996)

With disorders, behaviours, or any physical trait, genes are just a part of the story, because a variety of genetic and environmental factors are involved in the development of any trait. Having a genetic variation doesn't necessarily mean that a particular trait will develop. The presence of certain genetic factors can enhance or suppress other genetic factors. Genes are turned on and off, and other factors may be keeping a gene from being turned "on." In addition to this, the protein that is encoded by a gene can be modified in ways that can affect its ability to carry out its normal function. Genetic factors also can influence the role of certain environmental factors in the development of a particular trait. For example, a person may have a genetic variation that is known to increase his or her risk for developing emphysema from smoking, an environmental factor. Therefore, if that person never smokes, then emphysema will not develop.(Peele,2, 1996)

Just about every week now, we read new headlines about the genetic basis for breast cancer, homosexuality, intelligence, or obesity. In previous years, these stories were

about the genes for alcoholism, schizophrenia, and manic depression. Such news stories may lead us to believe our lives are being revolutionized by genetic discoveries. We may be on the verge of reversing and eliminating mental illness, for example. In addition, many believe, we can identify the causes of criminality, personality, and other basic human traits.

The public is hard pressed to evaluate which traits are genetically developed based on the validity of scientific research. In many cases, people are motivated to accept research claims by the hope of finding solutions for frightening problems, like breast cancer, that our society has failed to solve. At a personal level, people wonder about how much actual choice they have in their lives. Accepting genetic causes for their traits can relieve guilt about behaviour they want to change.

These psychological forces influence how we view mental illnesses like schizophrenia and depression, social problems like criminality, and personal problems like obesity and bulimia. Efforts made to combat them, at growing expense, have made little or no visible progress. The public wants to hear that science can help, while scientists want to prove that they have remedies for problems that eat away at our individual and social well being.

Genetic claims are being made responsible for a number of ordinary and abnormal behaviours, from addiction to shyness and even to political views and divorce. If who we are is determined from conception, then our efforts to change or to influence our children may be useless. Thus, the revolution in thinking about genes has immense consequences for how we view ourselves as human beings. Understanding the role of our genetic inheritance requires that we know how genes express themselves. One popular concept is of genes as templates that stamp out each human trait. In fact, genes operate by instructing the developing organism to produce sequences of biochemical compounds.

In some cases, a single, dominant gene does largely determine a given trait. Eye colour and Huntington's disease are examples of such traits. But the problem for behavioural genetics is that single genes do not determine complex human attitudes and behaviour and even most diseases. Even at the cellular level, environment affects the activity of genes. Most active genetic material does not code for any kind of trait.

Instead it controls the speed and direction of the expression of other genes. DNA reacts to conditions inside and outside the womb, stimulating different rates of biochemical activity and cellular growth. Rather than forming an inflexible template for each of us, genes themselves form part of a lifelong give-and-take process with the environment. (Peele,1, 1996)

The inextricable interplay between genes and environment is evident in disorders like alcoholism, anorexia, or overeating that are characterized by abnormal behaviours. Scientists debate whether such syndromes are more or less biologically driven. If they are mainly biological - rather than psychological, social, and cultural - then there may be a genetic basis for them.

Research relating behaviour and genetics rarely involves actual examination of the genome. Instead, psychologists, psychiatrists and other non-geneticists calculate a heritability statistic by comparing the similarities in behaviours among different sets of relatives. This statistic puts across the old nature-nurture debate by presenting the percentage of a trait due to genetic inheritance versus the percentage due to environmental causes. Such research claims to show a considerable genetic component to alcoholism. For example, some studies have compared the incidence of alcoholism in adopted children with that of their adoptive parents and with their natural parents. When the similarities are greater between the offspring and absent biological parents, the trait is thought to be highly heritable. But children are often adopted by relatives or people from the same social background as the parents. The very social factors related to placement of a child - particularly ethnicity and social class - are also related to drinking problems, for example, thus confusing efforts to separate nature and nurture. A team led by University of California sociologist Kaye Fillmore incorporated social data on adoptive families in the reanalysis of two studies claiming a large genetic inheritance for alcoholism. Fillmore found that the educational and economic level of the receiving families had the greater influence, statistically erasing the genetic contribution from the biological parents. (Peele, 1996)

Heritability figures depend upon a number of factors, such as the specific population studied. For example, there will be a lesser variety of weight in a food-deprived environment. Studying the inheritance of weight in this, rather than an abundant-food environment can greatly influence the heritability calculation. Heritability figures in

fact vary widely from study to study. Matthew McGue and his colleagues at the University of Minnesota calculated a 0 heritability of alcoholism in women, while at the same time a team led by Kenneth Kendler at Virginia Medical College calculated a 60 percent heritability with a different group of female twins. One problem is that the number of female alcoholic twins is small, which is true of most abnormal conditions we study. As a result, the high heritability figure Kendler found would be reduced to nothing with a shift in the diagnoses of four twins in their study. Shifting definitions also contribute to variations in the heritability measured for alcoholism. Alcoholism may be defined as any drinking problem, or only a physiological problem. These variations in methodology explain why heritability figures for alcoholism in different studies vary from 0 to almost 100 percent. (Peele ,2, 1996)

Human Influences and 'Upshot' (My first work)

How do we influence other people and why do others so easily influence us?
When we think of whom we are influenced by we automatically turn to those with fame; movie stars, singers/musicians, models, political leaders, religious leaders etc. But the people we should not overlook are our peers. Our friends, family and co-workers. The people that surround and interact with us everyday of our lives. These relationships are the most interesting as the majority of influencing that occurs is subconscious and only realized when it is brought to an individual's attention.

Do you think you are unique in your actions and decisions?
Do you think and believe that the one you are is the "real" you, or aren't you someone that in someway and somehow has been influenced to be the way you are now, today and in future? Of course the way you do things, think and act, is due to some influence and I believe we all have been and are still influenced by various factors that make us who we are. Influence is a term that refers to the ability to in some way control or affect the actions of other people. The meaning of influence therefore depends on who is being affected, and to what outcome.

Let's take for example the act of making a decision. Nowadays, we have access to numerous pools of information, we can go online, go to a library, look at TV, talk to people, and gather so much information. Sometimes more than we can handle. So, the more information you have, the more you need to understand and manage it, then make use of this information to make a decision. You might find it to difficult to do so, so in the end people tend to generalize and seek to take the decision which is politically correct or to go for a step that is more common and makes less thinking necessary, thus more comfortable.

When you own a collection of data in your mind that has been pooled in from various sources, you have not invented most of the data, so you make a decision on various existent data. To me, this is a form of influence, because you make your next decision based on gathered data. Depending what this data contains, it can or is used to manipulate your next step. We are born, raised, and taught. Grown up, we have loads of data, and can play around with that data and be creative. We even think we have

our own personality and are uniquely different from others. This feeling of being unique or the drive to be unique is a primary reason behind how we influence others and how they influence us.

My work, 'Upshot', is based on the idea of how and why we are influenced and its genetic basis. I used my research on this idea to compile the work but also the experiences within the process and the way in which one dancer could influence another.

Working with the first year Bachelor of Arts (Dance) students would have to be the most challenging process I have ever encountered. It really accentuated the advantage of maturity and body knowledge. In saying body knowledge I largely refer to body awareness as this is something that develops with experience. Working with first year students I realized just how much I take for granted in that respect. This process was not collaborative in any way. Movement was pre-choreographed then taught and practiced in progressive stages. Tasking was not an option, as skill in this area was not highly developed. Constant attention was required to maintain the integrity of the movement that I believe comes down to body awareness, knowing what each part of your body is doing and being able to transpose corrections and adjustments adequately. Other than technical ability, personal attitudes were the main impediment, which once again boils down to maturity and experience.

The first section of the work uses both the movement and music to convey my ideas. This section is almost like a trip down memory lane. The stamping represents ways in which we were influenced as children. The lyrics in the music are a humorous approach to showing the influence of rules in our lives, especially as children. The patterning and order of movement vocabulary came about through observation of the influencing that occurred between the dancers.

The second section is fairly self-explanatory with an obvious leader and follower but once again giving it a slight humorous edge. In the third section I looked at groupings. Depending on our influences, groupings of people form, change and evolve. But once again the material is comprised so it passes on from one group to another as they continue to influence one another. The fourth section is really a continuation of this

idea of passing on movement and the piece concludes with a solo figure as a reminder that we are all individual and in the end responsible for our own decisions.

Compatibility and 'Of A Kind' (My Second Work)

What makes two people compatible? In today's society where experiments such as reality T.V, magazine quizzes and on-line dating services exist, compatibility is recognized as the sum of how much two people have in common. The fact that two people like the same things may make them compatible but on the flip-side may also cause conflict in that there is no opposing force or opinion for each individual. Contrary to this, when people 'fail' a quiz having nothing in common this proverbial difference of opinion can then result in the relationship being highly attuned.
So what defines compatibility? The Collins English Dictionary states compatible as, 'consistent, agreeing with, capable of harmonious union.' So in the end compatibility comes down to a matter of agreeance, whether that stems from similarity from the beginning or the ability to 'agree to disagree' so to speak. And if this is the case to what degree do our genes determine these outcomes? Are we all genetically pre-programmed to match with certain people or are our successful relationships only down to chance and culture?

The way in which we are subconsciously attracted to some individuals and not others is an essential part of our genetic heritage. These in-built desires combine with our attitudes which are predominantly formed and altered by modern society, thus leaving both nature and nurture with almost equal responsibility of who we are compatible with and why.

It's when this compatibility is of a romantic nature that things become very interesting. Love is an instinct that all humans have but where do we gain our ability to fall in love? There are many physical and chemical changes that occur in our brains when we fall in love, in fact the areas in which our brains activate when shown pictures of loved ones are the same areas that are activated by cocaine. In the early 1980s, scientists discovered that the two hormones vasopressin and oxytocin had interesting effects in the brains of rodents. When injected with oxytocin a female rat adopts a mating pose while a male rat gets an erection. Further experiments with the levels of these hormones, this time in certain mice, showed that they could initiate pair-bonding behaviour. So are humans like mice? It seems that in some ways they

are. Both species produce these two hormones through sex while also producing them in the same areas of the brain. So maybe it is likely that humans and mice have a similar genetic basis for falling in love. (Ridley, 10-12, 2004)

Even though modern society and the use of contraception have altered our attitudes towards sex and relationships, we cannot forget that they are responsible for how we spread our genes and therefore an essential part of life.
Females naturally invest a lot more in relationships and sex and therefore are the ones who decide who to mate with. They tend to choose males based on their 'good genes'. This is based on their appearance and signs of health, for example, symmetry. Symmetry is actually an indicator that the body while developing was free of disease. Women are subconsciously attracted to men with symmetrical faces, hands, feet etc. It has been shown that symmetrical males lose their virginity at an earlier age and on average have a higher number of sexual partners. Women may also choose men showing signs of being a good provider. Showing signs that they would be a reliable father and stay around after the birth. Examples of this would be kindness, wealth, reliability, generosity and status.(Spector, 96-97, 2003)

Link Dance Company is an honors program at the Western Australian Academy of Performing Arts in Dance Performance. This requires all dancers to be of a graduating standard. This year there are five dancers involved in the program. Working with Link involves a merging process of pre-choreographed material, on the spot choreographing and tasks completed by the dancers. The main obstacle within this process has been the highly individual styles and movement quality of the dancers. Not trying to force them into one particular style but harmonizing these very different aesthetics to create a complimentary whole. However, a plus has been utilizing dancers with a high level of maturity and technical ability that greatly comes into play when tasking. The piece works with the idea of compatibility, how, why and where it occurs.

There were many possible methods of approaching this subject matter and I chose to keep it almost mathematical. In order to calculate the assortment of compatible relationships amongst the dancers I used two very different systems. The first

involved conducting my own set of tests like that of the media which examined personal likes, dislikes and which individuals were either in agreeance or disagreeance with one another. In total there were three tests. Each test consisted of ten questions of a trivial nature with two possible answers and each individual picked the answer they preferred.

TEST A

Q1 – Sweet or Savory

Q2 – Hot or Cold

Q3 – Chocolate or Vanilla

Q4 – Hugs or Kisses

Q5 – Automatic or Manual

Q6 – Tall or Short

Q7 – Kylie or Madonna

Q8 – Beatles or The Rolling Stones

Q9 – The Sixties or The Eighties

Q10 – Straight or Curly

TEST B

Q1 – Coffee or Tea

Q2 – Blonde or Brunette

Q3 – Weekday or Weekend

Q4 – Apple or Orange

Q5 – Art or Sport

Q6 – Humanities or Science

Q7 – AM or PM

Q8 – McDonalds or Pizza Hut

Q9 – Red meat or White meat

Q10 – Summer or Winter

TEST C

Q1 – Dogs or Cats

Q2 – Blue eyes or Brown eyes

Q3 – Coca Cola or Pepsi

Q4 – Cute or Sexy

Q5 – Pool or Beach

Q6 – Fiction or Non-Fiction

Q7 – Magazine or Newspaper

Q8 – Television or Radio

Q9 – City or Country

Q10 – Comedy or Drama

Understandably the results of each test differed greatly due to the broad range of questions asked therefore the relationships between the dancers differed in each section of the piece. The second system was a great deal less superficial and used without acknowledgement from the dancers. To begin the choreographic process I predominantly taught phrase material and during this time observed the interaction between the dancers and how they responded to one another. I also looked at the various movement styles, how they combined and proceeded developing a movement based compatibility. Every section had specific spacing according to who matched up with whom or if they didn't match up at all. The lines of travel, order of movement vocabulary and dynamic displayed were all configured in direct relation to the pre-conceived results of the two methods of testing.

The opportunity to work with Link Dance Company came about through a competition in Prague that would be a part of their European tour. While this did provided me with a great opportunity to show my work, the restrictions that came with it resulted in the presentation of a work that was highly edited and not fully developed. The restrictions included a ten-minute time limit and minimal rehearsal time. My biggest downfall was not thoroughly thinking this through to create an appropriate piece. I tried to fit too many ideas into such a small amount of time. I was very happy with the development of movement. This is something that I particularly worked on, however it was the construction and amalgamation of the sections that was adversely affected by rehearsal time. The music is another element I wasn't entirely happy with. Granted, it is difficult to work without a composer but once again

I feel I tried to fit in too much and as a result each track of music did not fit together harmoniously and gave the piece a 'chopped up' appearance. Further help with the editing of the music made a big difference to this appearance by creating smoother transitions between tracks. This then forced me to do the same with the movement transitions of the piece that resulted in a more complete end result.

The work is made up of four sections. The first section consists of a number of different pathways. Each dancer has her own specific pathway to follow which ends in a specific section of the space. This is a representation of how we all have our own pathway in life and how that can be inextricably linked, altered or influenced by connections with other individuals. Once at the final destination the way in which one dancer's movements correspond with another's is the result of Test A. Before every dancer is introduced to the space there is a small duo that acts as an introduction to the whole piece. Two dancers enter the space from opposite sides until joined in the center only inches apart, face-to-face. The duo is performed in silence to heighten the tension in the atmosphere. It also begins with a long pause to help portray that tension to the audience. It's almost like a snapshot into the emotion of one or many of the connections that happen throughout the piece. I did this to create a contrast to the rest of the work, which is very clinical in nature.

The second section separated from the first by a small solo is influenced by the results of Test B. This time not only the movement vocabulary is in relation to the test but the spatial positioning of each dancer also. The third section isn't really a section like the others but another small solo that seems to be a recurring theme in this piece. I think this is because no matter what relationships we form or whom we connect with in life we are all still individual people and that never changes. No matter who we are connected with in the end we stick by our own opinions. This solo, along with the beginning duo is the only part of the piece that I would never change except to lengthen it. Again it is another snapshot into one individual and her connection to the other characters or in this case lack there of.

The last section is in direct proportion to the results of Test C but also looks at another side of compatibility, a dishonest side. The way in which people try to change themselves, whether that be their opinions or appearance, to connect with another

person. As a midway development of the piece I feel I was definitely on my way but to show it as a whole and a finished product it wasn't at the stage I had hoped. To be able to pick up where I left off and continue developing it into the type of piece I would like would be fantastic but at this point in time fairly impossible due to availability of time and dancers. This piece was definitely the most fulfilling of the three works and something for me to tackle in the future.

The Failure of Relationships and 'No Right Angles'(My Third Work)

Does the breakdown of a relationship have a genetic basis? One would assume that this is not the case. The causes of disruption such as infidelity, finances, jealousy, religion, death, illness, unemployment, geographical distance or waning sexual attraction are primarily thought of as culturally stimulated pressures on relationships and therefore break-ups whether they stem from a platonic or romantic relationship are regarded entirely as an environmentally induced occurrence. This is however not necessarily the case.

One of the most recognized forms of a relationship is that of marriage. With such a high divorce rate at present I couldn't help but ask the question, is a successful marriage genetic?
There are many reasons for divorce. Anything from jealousy, infidelity, in-laws and finances to ill health, unemployment, religion or children's upbringing can be enough to cause the break-up of a marriage. While these are thought of as cultural reasons, divorce is actually a lot more genetically driven than one would think. A number of studies in Europe and the USA have shown divorce to be partly (50 percent) genetically determined. (Spector, 130, 2003)

The breakdown of any relationship involves a mix of events, personalities, gender differences and culture and surveys show that many modern marriages fall apart for two main reasons. Infidelity and infertility. Genetically it is in neither partner's interest to stay together if infertility is the case. There are approximately only one-twentieth of mammals in this circumstance that remain couples. A United Nations study conducted over forty five societies found that couples without children made up thirty nine percent of divorces as opposed to three percent for couples with four or more children. One common factor in all divorces is the timing. Couples tend to break-up three to four years after marriage that actually correspond with the time the attachment chemicals wear off and also the time a healthy child would become independent and therefore out of danger.
A twin study centered around reasons for divorce did find personality traits to play a large role. Those with the most excessive emotional personalities showed higher

divorce numbers and differences in these traits can explain one third of the genetic influence on divorce.(Spector, 130-132, 2003)

In my third work I look at the causes and effects of the collapsing of relationships. Initially I concentrated on romantic relationships i.e. marriage, but then found other relationships just as interesting. Why restrict myself to a romantic relationship? All of these issues would cause a collapse in most – if not all relationships.

There were many hurdles in creating this work but only two posed the greatest challenges. The first was fulfilling the role of both choreographer and dancer. The second was a challenge previously set by myself to step outside of my comfort zone. My previous works, be that of this year or prior to, have always been what you would possibly label as pure movement pieces. For this last piece I aimed to cross over into a slightly more 'dance theatre' area without discarding my love and passion for pure movement. Conveying emotion through dance sounds like an all too easy task as, whether the intention is present or not, there is always some sort of emotion displayed when dancing. It's conveying an almost forced emotion like that of an actor that is difficult.
'No Right Angles' focuses on one relationship in particular which is also representative of many. It follows a narrative showing the wearing down of the two characters and their connection. The work inserts the audience right in the midst of the relationship, where everything is comfortable and you can feel the genuine affection and comfort the two characters, 'B' and 'P' have. As the piece progresses they experience the effects of genetic factors previously mentioned such as jealousy and personality traits and the dominant/submissive roles are more defined and accentuated. B's overriding nature escalates until she becomes so caught up in trying to have P, she loses her. Her personal realization and reflection is shown at the very end where the two characters almost swap in their roles as B's emotions once contained and in control become unrestrained and open for all to see. P is now in control and the piece finishes with a question mark as B asks the question and the audience is left not knowing what the answer will be.

Without restricting myself to predominantly using theatre in a true sense, for example using speech to tell the story and communicate the emotions to the audience, I wanted

to portray the very real and universal trials and tribulations of a breakdown of a relationship through movement with the help of symbolic props.
The props used include two chairs and masking tape. The chairs are a symbol of the relationship as a whole and show a timeline of the separation physically in the space. They are quite different in appearance to represent the individuality of the two characters and how these differences can hold two people together to begin with and then tear them apart. The masking tape represents the nature of the two characters and highlights the dominant/submissive roles they each play. It demonstrates the control of the dominant character, 'B', starting out as genuine affection and the need to help in a maternal way and over time developing into a subconscious need for control. She knows exactly what she is doing and believes she is in total control by leading the submissive character, 'P' into an emotional and physical web.

The audience enters the piece at a midpoint in the relationship where it is evident that these two people are completely comfortable within this relationship and there is a playful atmosphere surrounding their actions. The next section looks at role of jealousy and how it can creep in and expose insecurities within a relationship. It's here that the first separation of the characters is shown. There is a large depth of field created in the space, which is intentionally done to represent the commencement of the breakdown process. This was one part of the piece that I had a distinct picture of before the whole process even began. Creating it was almost like following a map or filling out a skeleton that was quite specifically created in my head.
The next segment is where the masking tape comes into play. Firstly, 'B' uses it in a band-aid type approach that progresses into the use of the body in the same manner as the tape. She then uses it to lead 'P' to her chair in a cruel game like way, constantly challenging and teasing. It is at the chair that the emotional web becomes physical and 'P' is tightly bound to her chair.

The next part of the work is what I refer to as the climax of the breakdown. It's the moment of truth and confrontation. I used a conversational approach to the movement to show this and as the audience sees the argument build they also see the relationship really unravel. The movement is continuous and of high intensity but finishes very abruptly. The music cuts out as 'P' is continuing the high intensity material when 'B' takes her in a tight embrace. A long pause conveys the emotional aspect of the scene

but also gives the audience a chance to become engrossed in that emotion and reflect on how it has happened. The realization of the journey of the piece from where they joined the relationship to what it has become.

The work finishes with a solo of 'B'. The solo not only shows the heartbreak of reflection but also the way in which the roles in a relationship can so easily be exchanged. In the end it is 'B' who is vulnerable and 'P' who holds the power. It is here that I ended the work. I felt that I had said enough and finishing on a question mark of 'will they, or won't they?' seemed to say a lot more. Rather then resolving my story and giving the audience an ending, I wanted to let them make up their own mind, as it is these different endings and responses, thanks to our genes, that make every relationship unique.

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