

so often expressed. We will return to this later in the book. As a beginning point, creation theology establishes the framework within which we find our meaning, purpose, and future. Though each of us—straight or gay—is small within this framework, each of us—straight or gay—has a place in the story of creation and its loving creator God.

Notes

1. This does not mean “creationist.” Creationists are people who believe in some kind of seven-day or seven-age creation scheme designed to construct a cosmology that they feel reflects and protects the “historical integrity” of Genesis 1.

2. *Ethos* in Greek; *goim* in Hebrew.

Game Changer: Modern Science and Same-Sex Orientation

Science is a human enterprise seeking to understand the universe in which we live. To put it more directly, science tries to figure out how things work, with the assumption that if we can figure out how something works, we can predict how it will work in the future. There is no doubt—unless one is a total Luddite¹—that, over the years, this enterprise has been exceedingly successful for good and for bad. So when science comes at the question of human sexual orientation and behavior and, specifically, same-sex orientation and behavior, it seeks to figure out why it occurs as a human phenomenon and the mechanics behind it. In its purest form science does not make value judgments about the objects of its inquiry. That is to say, it does not declare that a condition or behavior is right or wrong. It simply seeks to describe, categorize, and understand how the condition emerged or how the behaviors are practiced.

My goal in this chapter is to explore and outline the current scientific consensus on the origins of LGBT sexuality and the sexual behaviors that attend the various expressions. To set the context, I will briefly review the history of the development of the science that emerged to study the phenomenon. Because the current scientific consensus on the origins of homosexuality² departs from older beliefs about its origins, I will also explore the scientific theories and the therapies called upon to support what several conservative Christian groups believe to be traditional beliefs. This is important because many of these alternative theories and therapies are practiced by several conservative Christian groups, even though the science upon which they

are based has mostly been discredited. In the next chapter, some of these practices will be explored.

But first, we must zoom way out and ask a fundamental question.

What Kind of Universe Do We Live in?

It may seem odd, but I want to begin by asking this question from the scientific domain: What kind of universe do we live in? In other words, how does the physical universe work? How does it unfold? At a detailed level, what are the mechanical processes at work, such that we are here, on this planet, at this moment in time, asking these questions?

At a macro level, modern physics explains that the universe unfolds through a continuous process of “chance and necessity.” *Chance* is an unfortunate word because we associate chance with such things as throwing dice, but that is really not what is meant. Rather it means that physicists believe there is an element of contingency in how the deterministic rules of necessity work. This means that within every pattern, there is the possibility of newness and variation. Here is an example. Consider a red maple tree. Even though we categorize a maple as a type of tree, no one expects that any two will be exactly alike, because within each category there is a range of variation. If the variation becomes sufficient, the tree is then assigned to another category, perhaps a sugar maple. And even within the designation of red maple tree, each leaf will be slightly different from the others on that same tree. Also consider the pattern of snow as it melts down your car windshield. Watch the drops of water. They run in patterns, but there are always some drops that, for whatever reason, create a new path or stray from an existing path. The result is a remarkable diversity.

We live in an amazingly diverse universe. Nature is an unfolding process “bringing emergent novelty into being” (Polkinghorn 2000). The emphasis is on process, openness, and becoming. Cause and effect are foundational, but the scientific view of nature is shifting to see more subtlety and suppleness to its unfolding. There is now talk about “openness” in nature and that perhaps nature can be influenced. All is not the result of some uniformity of natural causes within an unbroken chain within a closed system. Rather, there is an openness in nature that allows diversity to emerge. A good example of this is identical twins. Any parent with twins will tell you that despite being genetically the same, twins are individual people. And although strangers may not be able to tell them apart at first glance, family and close friends clearly see defined differences. (We have twins, and though we never tested to discover

if they were identical or not, in their young years and through high school, many could not tell them apart. But five minutes with them, and one knows they are two very different people.)

Perhaps a simple illustration will help clarify the difference between an open and closed system. Imagine living in a world we shall call Alpha, in which every action you take or even every thought you have is simply the result of something prior, and that something prior can be simply explained by what preceded it. At first glance, is this not the kind of world we live in, at least in theory? Well, yes, but now apply that to your future. Imagine that in this same world everything you will ever do and everything you ever think is simply the next step in a massive cause-and-effect chain. How do you feel about such a notion? Most of us would say, “Stop! That is not right! I have free will.” But not in such a world as Alpha. Alpha is a closed system.

Now imagine a world that is similar to Alpha but one that we shall call Beta. In Beta, there is cause and effect, but it is not an unbroken chain. Causes and effects can be affected by alternative causes. In Beta, you can imagine three different decisions to make and freely choose one, making that one affect something else. This is an open system world.³

In Alpha, on the one hand, there is no real choice, genuine surprise, or accident. This world is more like dominoes lined up. Hit the first one, and the others all necessarily fall in a predictable pattern. In Beta, on the other hand, there can be choice, surprise, accidents, but also miracles—those things that happen against all odds. We may see patterns, but we also see the possibility for variation—individuality and novelty. In the real universe we know that things are not so simple. Real life is messy. We have freedom, but it is contingent. Existence is a matter of boundaries but with limits that can promise more.

The Vulnerability of Freedom

If our universe is an open system, similar to Beta in the illustration, then at a natural process level, there is a certain vulnerability in the freedom of nature to unfold in diverse ways. It means that sometimes the universe can be horribly destructive from the viewpoint of humans living. Tsunamis, earthquakes, volcanoes, tornados, asteroids, all the result of natural processes—while holding a certain beauty in them—can devastate human communities. At one level, this is the vulnerability of contingency.

It also means that nature may express diversity in how life emerges. I have red hair, a somewhat unusual human trait and one that caused me much suffering as child. Being different from the norm carries with it some danger.

Unfortunately sometimes nature's diverse unfolding will produce children with physical dysfunctions. And sometimes nature's diverse unfolding will produce people who are not heterosexual. Within the form and freedom of nature, there is always a range of expression with a diversity that can go in many directions. When thinking about homosexuality, this is intended not as a value judgment but as an observation. It is not intended to suggest that homosexuality is a mistake of nature but merely is part of the range of variation that emerges in nature. My point is simply that when process is open and, therefore, free, process will express itself in diverse ways. Indeed—and this is a value judgment—it is this freedom that is expressed in such diversity that creates so much beauty and wonder in our universe; it also gives us the possibility of individuality and a unique expression of humanity, which our culture values so highly.

A Theological Insertion

Although I want to avoid domain jumping, I cannot proceed without stepping out of a scientific description of how nature unfolds and stepping into my theological shoes. It seems to me that the wonder of chance and necessity, form and yet freedom in how nature unfolds is testimony to the creative love of God for creation. For the creation that God called into existence was a creation that was granted freedom to unfold as it will in all of its diversity. One could say that God took a great chance—made Godself vulnerable (speaking in human terms)—in creating such a universe. Not only could that universe manifest unbelievable creativity, but also it can manifest massive destruction. This means that life species can express an abundant diversity, and within that diversity, into existence may come some that are less likely to be able to reproduce due to their sexual orientation.⁴ If we focus on human life, that chance means that the crown of God's creation may turn against God to other gods, but this is a discussion for later. The main point here is a God of love who, because of God's great love, granted creation tremendous freedom to unfold as it would and the result has been a manifold diversity cosmically, biologically and humanly. Now back to the science.

A Brief History of the Science on Homosexuality

That there have been persons who felt same-sex attraction and practiced same-sex behavior is well documented going back at least as far as Plato (and we assume way back into the beginnings of humans, but we don't know). But the term *homosexuality* is fairly recent, coined by a Hungarian named Karl

Maria Kertbeny (1824–82). Kertbeny was a late-nineteenth-century social activist who had a close friend who was gay. His friend committed suicide because someone was blackmailing him. This was an all-too-common occurrence at the time. There were still sodomy laws in most European (and American) law books. Being “outed” could ruin one's career, cause social ostracization, and even land you in prison and lead to execution. Kertbeny became an activist for many social causes in which injustice prevailed. In 1889, during one of his campaigns against antisodomy laws, he coined the term *homosexual* as a way of classifying sexual types. He also coined the word *heterosexual* as the word describing sexual attraction between men and women (Greenberg 2007; Burroway 2008). Prior to Kertbeny, same-sex attraction that resulted in a same-sex experience was called sodomy.⁵ The first use of the term *homosexual* was in a letter to Karl Ulriches (Burroway 2008).

Continuation in Utschügen. Ich dagegen verbrachte dies Jahr
 zumeist unfeindlich, da es nicht mein Willen gewesen hätte verschlagen,
 und durch persönliche Bedrückung gezwungen zu werden, mich auch mit
 mit jüdischen Grundstudien beschäftigen zu müssen — mit der
 Station der legislativen wie perichischen Grundprinzipie sowie
 aller bestehenden Gesetzbücher, bespreche zudem die Frage umgekehrt
 mit gewissen Leuten der Stadt wie Bestrebung, und habe über die
 die naturwissenschaftliche, anthropologische wie historische Seite der
 Frage gründlich erschöpft, und in einem eigen dicken Heft die
 — das die noch nicht können, und das in der Hauptabteilung
 zerfällt: Homosexual, Homosexual, Heterosexual, und Bestrebung
 wobei mir der allgemeine Vortheil ward, hier einen der Wissenschaft
 nicht geschätzten, der Wiener Disziplinäretheorie entgegenzusetzen, aber
 hier geboren, und hier unter die Praxis unabhängiger Art der Seite
 gehört zu haben, der lebhaftes Interesse an solcher Forschungen
 nimmt, mit dem ich alles besprechen kann, und der mir schon die
 merkwürdigsten Fälle theils sehen ließ, theils theoretisch analysierte.

Letter to Karl Ulriches, May 6, 1868

The general cultural assumption up to this time was that people chose to do sodomitic acts and thus to be a sodomist. This line of thought, of course, continues in some quarters even now. But Kertbeny and several others including Karl Heinrich Ulriches (1825–95)—to whom he wrote the letter—and Magnus Hirschfeld (1868–1935) began to speak of homosexuality as a condition to which one was born. In conjunction with this, Hirschfeld proposed that homosexuality was a third sex; male, female, and other.

This was a definite change in the fundamental assumption about homosexuality. For now the focus was not on behavior one did (i.e., sodomitic acts), it was on how one was born—an innate characteristic. The result of this shift of focus meant that homosexuality was now considered the result of

something that had not gone quite right in the formation of the person. Although the person may not have chosen to be a homosexual, there was something wrong nonetheless. Consequently many scientists of that period, who were sympathetic to the view that one was born gay, still considered it to be a condition that could be cured, and much of the science was driven by that objective.

While Herschfeld was promoting the view that homosexuality was a condition with which one was born, a second theory emerged. This view originated with Sigmund Freud. Freud proposed that homosexuality was a condition brought on by childhood trauma that interrupted the normal development process. Homosexuality was caused by an unhealthy reaction to one's thwarted development—a neurosis. These two alternative theories formed a fork in the scientific/medical road. Was the origin of homosexuality caused by *nature* (born that way by Herschfeld) or *nurture* (how one developed from birth to adulthood by Freud)? The two branches can be followed through the twentieth century and into the twenty-first. Herschfeld represented the biological or nature theory of homosexual origin, and Freud, a nonbiological or developmental nurture theory. Although there are variations and divergent opinions in each group, for a time the nurture side was dominant given the influence of Freud and his followers.

Nonbiological Scientific Theories of Sexual Orientation

Although a strict distinction between nature and nurture is more abstraction than real—Freud, for example, believed that human development was a natural process—the two do reflect two different paths down which science proceeded through the twentieth century and into the twenty-first. The primary distinction is between biological and nonbiological (or psychological) theories of sexual orientation—which are often thought of as nature versus nurture, though this is an oversimplified distinction. The nonbiological approach branches into at least two different schools; for the purpose of this book, those schools are psychoanalysis and behaviorism.

Psychoanalysis

The theory of the psychoanalytic school was that dynamics in one's family were responsible for the individual's sexual orientation. Although the developmental pattern was inherited, Freud thought that culture shaped the expression of instincts and that it gave preference to certain behaviors associated with the stages of development. Think for a moment about potty

training. According to Freud, all children of a particular age naturally have to negotiate their bodily urges and find a culturally acceptable way to handle them. But if a child is traumatized in her efforts to become “trained,” then that child's future development will not be optimal and a neurosis⁶ will necessarily result. According to Freud, somewhere between the ages of three and five, boys go through their Oedipal phase. Sexual urges are directed toward their mothers but are later repressed for fear of their fathers. Sexual feelings are normal (and this was considered shocking at the time), but the body has to find a socially acceptable way of expressing instinctual feelings in order to keep a relationship with the mother and also with the father. Eventually those urges are redirected toward girls at puberty. According to Carl Jung, one of Freud's followers, girls go through something similar (called the Electra phase) wherein their sexual urges are directed toward their fathers until they are resolved and redirected toward boys. The popular term *Oedipal complex* simply means that the child did not completely or successfully negotiate the phase. The complex, then, becomes the nucleus around which a neurosis will emerge. The thing to remember with Freud is that no civilized person ever escapes suffering the effects of the Oedipal complex.

Homosexuality is the consequence of a neurosis resulting from failure to resolve the Oedipal phase, which in Freud's theory is a ubiquitous part of human development. Resolution occurs when the child is able to finally identify with the same-sex parent instead of feeling rage and undue competition with that parent for possessing the opposite-sex parent. The failure to resolve means that in some way the boy or girl is stuck and cannot move on to adulthood. Hence for Freud, homosexuality is stunted psychological growth and immaturity. The cure comes through insight, which “unsticks” development, leaving the person free to move forward. Although research has debunked many of Freud's theories, the influence is still evident in many people's assumptions about the origin of homosexuality. I suspect that the average person on the street still thinks that boys become gay because they had an overbearing mother who smothered them in femininity and a distant or removed father who did not help them develop masculine traits. These same assumptions continue to frame how many segments of the religious community understand homosexuality. Persistent in these ideas is the notion that homosexuality is in some manner a perversion of nature.

This is not to say that childhood experiences do not influence the psychosocial development of a child, for they certainly do. Most of us can reflect on significant events that shaped us growing up. But there is little research that

supports the idea of such dynamics influencing or determining one's sexual orientation (Wilson and Rahman 2008, 30–31).

Behaviorism

Behaviorism, as articulated by B. F. Skinner, proposes that all human behavior is learned. In its more extreme versions, the child is born as a blank slate on which the world of his or her parents, teachers, playmates, and so on write. Casual observation would conclude that gendered traits are those behaviors that seem to follow gender lines. Boys like trucks and wrestling; girls like dolls and dressing up. But from a behaviorist's view of human behavior, boys like trucks and wrestling because they are *taught* that boys like such things. Girls like dolls because they are *taught* that girls like such things. Thus gendered traits, but also sexual orientation and even sexual behavior, are learned. If a child exhibits atypical behavior, such as a boy liking to play with dolls, this behavior is considered to have been learned. It is determined by nurture not nature.

Carrying this further, if, according to the behaviorist theory, sexual orientation, attraction, and gendered traits are learned behaviors, then classical and operant conditioning can be used to modify a person's orientation and sex-atypical behavior. Some extremely awful things have been done to gay and lesbian persons in an attempt to redirect their orientation and sexual behavior. (Some things still are done in quarters where this view is maintained, including some Christian counseling centers that use "conversion therapy" or "reparative therapy," which will be explored further in the next chapter.)

At the height of the behaviorist's influence, we were told that there was no difference between boys and girls (except sexually of course) and that if we just let a child play, he or she would develop whatever behavior he or she wanted. Additionally, it was argued—often by feminists of that era—that gendered traits were the result of socialization influences (Paglia 2013). It is pointed out by Simon LeVay that "the main difficulty with these ideas is that heterosexual parents don't seem to inculcate homosexuality or gender-nonconformity, in fact they often attempt to prevent these traits in children who nevertheless become gay" (2006, 1). It turns out that research has demonstrated there are gendered traits that children naturally express.

Today, these behaviorist ideas have been mostly dismissed as the primary reason for gendered traits, sexual orientation, and sexual behavior. Jacques Balthazart summarizes this well when he says, "though many popular books claim to explain homosexuality on the basis of educational or social factors, the currently available scientific studies show little or no

influence of education on the development of sexual orientation" (2011, 8). Having said this, I must emphasize again that humans learn behavior through exposure to the world and that this is a given that all scientists and social scientists affirm.

Early Pleasure or Trauma and Sexual Orientation

One last theory explaining sexual orientation proposes that a person's early sexual experiences are determinant. A girl who suffers rape or other sexual abuse by a man may find future relationships with men repugnant and turn to same-sex relationships for intimacy and sexual expression. Conversely, a young person may have an early sexual experience that is pleasant and as a result wants to repeat the experience with the sex of the person who provided the initial experience. If a boy is seduced by a man or molested by his brother but enjoyed it, he may seek out future same-sex experiences.

While there is little doubt that such experiences do affect the psychosocial development of a person, there is not much evidence that they determine sexual orientation. Many people who have had such experiences go on to be heterosexual adults. One study looking into consensual same-sex behaviors in a single-sex boarding school where homosexual experiences were common found that such young people arriving at adulthood were no more likely to be homosexual than are children who do not attend these kinds of schools (LeVay 2006, 1–2). "If the early life experiences theory had some support, we should expect a higher incidence of homosexuality among adults raised in single-sex schools, which is absolutely not the case" (Balthazart 2011, 14).

The history I've provided is a general overview only. But there are alternate voices in both the nature and nurture camps. Freud and Eric Erikson (into the 1950s), in their human development scheme, postulated that a person's identity (including sexual identity) had to be solidified before intimacy was truly possible in a healthy way. However, Harry Stack Sullivan (in 1954) had a different view. He believed that intimacy was a prerequisite for identity. So he introduced what he called "chumship." This is a stage of development usually occurring from ages eight to eleven, during which a child begins to develop best friends of the same sex (chums). During this time same-sex sexual experimentation is frequent, normal, and healthy. Chums are needed so that a person's identity can solidify in the late teens but often into early young adulthood. For Sullivan, same-sex experimentation did not mean that the children are gay, but only that they are trying to find out who they are. In fact, he believed that without a chum, heterosexual love later

in life would be hampered and may even develop into a homosexual way of life.⁷

Biological Theories of Sexual Orientation

Recent research into the origin of homosexuality within the scientific and mental health research community has turned away from nonbiological origins as the primary force in determining a person's sexual orientation. That means it turns to biology—to nature. More specifically the disciplines involved in the research include neuroscience, genetics, endocrinology, and evolutionary biology. The field of psychology is involved on both sides of the discussion (nonbiological and biological), though mainstream psychology recognizes the biological element as a primary factor. Wilson and Rahman's book *Born Gay: The Psychobiology of Sex Orientation* explores how all of these fit together. In their introduction, they state the following about biology: "Biology in this case means at least either hormones or genes or both. Turns out, it is both and together they influence critical developmental processes of a fetus in utero. One element of that influence is that set of processes that shape the sex and gender of a person" (2008, 10).

Some Terms

Let's begin with some terms because conversations quickly can get side-ways simply because of what people think these various terms mean. The definitions provided again come from the world of science. When discussing homosexuality, it is common to use the letters LGB or LGBT, which (again) stands for Lesbian, Gay, Bisexual, and Transgender.⁸ I shall continue to use the abbreviations as shorthand.

Term	Definition
Gay	While often used as a generic term for homosexual persons, whether male or female, gay more specifically is a term describing male homosexual people. There is tremendous diversity within male homosexual expressions of sexuality.
Lesbian	Lesbians are homosexual women. Again there is great diversity in how lesbians experience and express their sexuality.
Bisexual	Bisexual persons find themselves attracted to both men and women but may prefer one in actual life experience and expression.

Transgender persons are perhaps the most misunderstood due to the difference between biology and psychology. One's "sex" and one's "gender" can be different. A transgender person is one who is anatomically a male but whose gender identity is that of a woman. Or a person may have female genitalia but feel psychologically a male. In simpler terms, transgender people's sex is different than how they think of themselves. Anatomical boys usually think of themselves as boys, but boys who are transgender think of themselves as girls. Transgender persons will sometimes go through a sex change operation in order to align their "sex" with their "gender" and thus resolve the internal conflict in which they live. This internal conflict is different than that experienced by the LGB person.

Toward a Definition of Sexual Orientation

When is someone considered gay or lesbian? This is not a simple question, because as the old saying goes, "it depends on what you mean." There are three distinct ideas that inform our understanding; and each, while adding a dimension, is different though they often overlap in expression. The three ideas are: (1) sexual orientation, (2) same-sex sexual behavior, and (3) sexual identity.

There are four questions that will help bring each of these into better focus and hopefully lead to some clearer answers to the primary question: when is someone considered gay or lesbian?

Question	Has to Do with...
What does a person say he or she is?	Identity
What does a person do, that is, in his or her actual sexual behavior?	Behavior
What does a person feel, that is, fantasies and desires?	Orientation
What does a person's body do in response to various sexual stimuli?	Orientation

What Does a Person Say He or She Is? (Identity)

One way to answer the question is to ask a person: “Are you a heterosexual or a homosexual?” However, this is generally not considered to be a fruitful way to determine the orientation of a person. Most of us associate ourselves with a sexual identity. Someone may say, “I am a heterosexual.” Another may say, “I am a homosexual.” And others yet may say, “I am bisexual.” But these statements of sexual identity—this is what I am—may or may not reflect one’s actual orientation. For all kinds of reasons people may say they are a heterosexual when they are not. Cultural norms, religious beliefs, and economic interests all can affect what a person says his or her sexual identity is. Orientation is something else, though it may in fact align with one’s sexual identity. That is, I may say I am a heterosexual and my orientation conforms to that. But I know of several people who, as young Christian adults, insisted that they were heterosexual only to finally come to terms with being gay years later and after much painful internal struggle—and in some cases, broken relationships and marriages.

What Does a Person Do, That Is, in Their Actual Sexual Behavior? (Behavior)

A second answer to the question of who is gay might be based upon the behavior of the person. But this surely is not a reliable determinant, because all kinds of people reveal that at some point in their life they had a same-sex experience. In our current youth culture it has become customary to “experiment” especially under the influence of too much alcohol or drugs. Prisons are notorious for same-sex behaviors, but most of the inmates—male or female—are not homosexuals. Likewise, same-sex boarding schools are also notorious for same-sex behavior among students who go on to heterosexual marriages. There is even a popular expression that goes with these behaviors, “gay for the stay.” But most of these people are not gay.

What Does a Person Feel, That Is, in Their Fantasies and Desires? (Orientation)

A third answer to the question of who is gay actually gets closer to the mark. What does a person feel when he or she has sexual fantasies? What sex does the person desire? As stated in the first question above, it is possible for someone to be in a heterosexual relationship for cultural or religious or personal reasons (in the past, this was almost necessary to have children), but *inside* the person knows that he or she really prefers to be in a same-sex relationship in which he or she could express same-sex behavior. This internal feeling of attraction experienced often in fantasy life gets closer to indicating

a person’s sexual orientation. If you are a straight person reading this, and you can be honest with yourself, do you not have moments when you entertain sexual fantasies about another person? Are you a man? Do you look at women or men when they pass by you? Are you a woman? Do you look at men or women when they walk by you? What a straight person experiences in those fleeting moments of sexual fantasy, a gay or lesbian person does as well but only of the same sex. Such responses come from the center of who we are.

This is exactly the story of the Reverend Dr. Gene Robinson, bishop of the diocese of New Hampshire and the first openly gay bishop in the Episcopal Church. He was married for more than twenty years and has two children. But one day he simply could not do it anymore. What he “felt” inside was not consistent with an intimate relationship with a woman. He had tried many things to suppress feelings he had from his youth—not the least being constant prayer—but to no avail. One can read his story in two of his books, titled *In the Eye of the Storm: Swept to the Center by God* and *God Believes in Love: Straight Talk about Gay Marriage*. Bishop Robinson is an extremely controversial figure, but his personal story is the story of many LGBT people.

What Does a Person’s Body Do in Response to Various Sexual Stimuli? (Orientation)

Researchers generally believe the best indicator of one’s sexual orientation is how a person responds to sexual stimuli—that is, what the body does when shown sexually erotic images. There are testing instruments that can measure when a man is developing an erection and when a woman’s vagina is engorging with blood—both telltale indicators of sexual arousal. Heterosexuals are more likely to be aroused by erotic images of the opposite anatomical sex. Homosexuals are more likely to show signs of arousal when shown images of their own anatomical sex. If honest with ourselves, most of us get this.

What Is Sexual Orientation?

Sexual orientation then is what a person sexually (erotically) desires in one’s innermost self and is best confirmed by how one’s body responds to sexual stimuli (LeVay 2010). Jacques Balthazart supports this definition when he explains that *sexual orientation* (a term that he prefers over *sexual preference*) “identifies the sex of persons to which an individual directs not only his or her behavior but also sexual fantasies” (2011, 4). Having said this, it is important to mention that the sexual orientation of men and women express

somewhat different dimensions. To be perhaps overly simple, men's orientation is usually obvious by observing how they respond to sexually erotic images. Women are more complex, with relationship issues generally playing a greater role (LeVay 2010).

We can summarize our definition of *sexual orientation*. It is "an enduring pattern of emotional, romantic, and/or sexual attractions to men, women, or both sexes" (American Psychological Association 2008). It is intrinsically human to find oneself attracted to another. These attractions may be toward persons of the opposite sex, the same sex or both sexes. Regardless of the particulars, *sexual orientation describes how a person experiences attraction*.

The question then is how is this orientation shaped? This is the question we must address next.

Sex and Gender

A few additional definitions will help clear some definitional brush so that when certain words are used, we understand what is meant. Two words that are often interchanged are *sex* and *gender*.

Term	Definition
Sex	For most of us, the word sex means, well, sex! But from a biological perspective, sex has to do with "the anatomical, physiological, and genetic characteristics associated with being male or female" (American Psychological Association 2008). In other words, when one looks in a mirror at one's genitalia, does one see male or female reproductive organs? At a chromosomal level, does one have two X chromosomes or an X and a Y chromosome?
Gender	Gender is not quite so neat and tidy. Many of us assume gender and sex are the same thing. But from a psychological standpoint, they are quite different. Whereas sex refers to reproductive organs and genes, gender is a description of one's psychological sense of self, of identity. Gender has to do with whether a person senses he or she is male or female. For a large portion of the human population, sex and gender correspond—that is, a person with female sex organs also feels like a woman, her gender. It is also possible for the opposite to occur, which is essentially the core meaning of transgender, as was

	explained previously. Psychologists now call this gender dysphoria. ⁹ The emphasis of dysphoria is an experience of discontent with one's external sex vis-à-vis one's internal sense of gender. I remember a news magazine program in which a young person said, "I feel like a girl, but in the mirror, I look like a boy." Gender plays a role in our understanding of sexual orientation as discussed above because gender and sex may or may not correspond in an individual. If a person's sexual identity is that of a woman, but the individual biologically is a male, then "same-sex" attraction is not quite accurate. The anatomy may be the same but the sexual identity different.
Gender Role versus Identity	Gender role has to do with behaviors such as mannerisms, style of clothing, and activities one is inclined to prefer. Gender identity is similar to sexual identity as defined above.
Sexual Orientation versus Sexual Identity	As raised previously, depending upon the cultural norms of a society in which one lives, a person may have conflict between one's orientation and one's assumed identity (preference). That is, in a society in which homosexual expression is considered inappropriate or even sinful, a homosexually oriented person may define oneself as a heterosexual (one's preferred identity) and sexually behave as such. Psychologists note that in such cases the person is likely to experience internal "discordance" between one's orientation and one's identity.
Either/Or?	It is commonly thought that one is male or female, heterosexual or homosexual. That is generally a view that is disputed today. Rather research into sexual orientation and attraction has demonstrated that there is somewhat of a continuum. Some persons are exceedingly homosexual and some exceedingly heterosexual, with the bisexual person finding himself or herself variously attracted to the same sex or different sex. Recent studies have demonstrated that there is a difference between gay men and lesbians. There is less of a continuum for gay men. They are much more likely to be either heterosexual or homosexual, with few in the mid-range of bisexuality. Women, however, do not show such a bipolar profile. Rather, women tend to reflect a continuum with somewhat more on average being bisexual than wholly homosexual.

The Biological Basis: Current Research

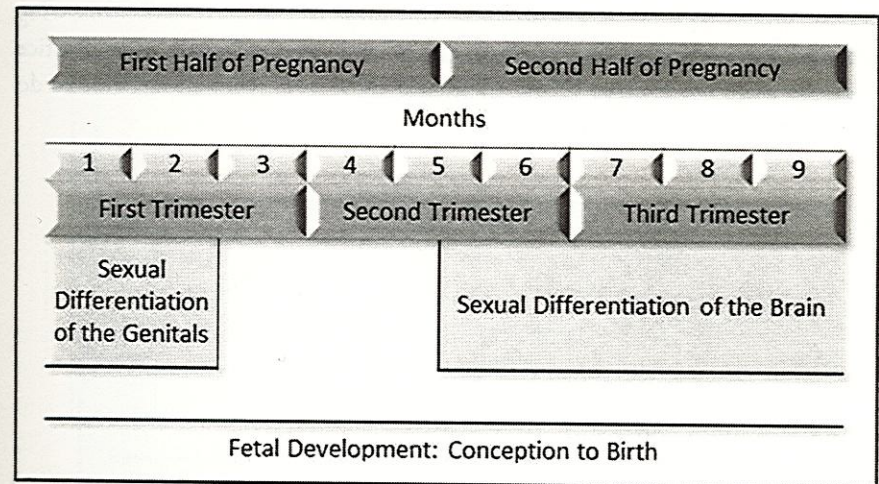
Biological research into the origins of same-sex orientation has been developing at a rapid rate since the early 1980s. Many theories have been proposed, and much experimental research has been conducted. Numerous theories, once assumed to be true, have been upended. At this point in time the research appears to have narrowed to three areas that are considered to play the primary biological role in sexual orientation as well as a host of other sex- and gender-specific developments. Those three areas are all prenatal and include: (1) hormones, (2) brain structure, and (3) genes. In the introduction to their book, Wilson and Rahman summarize the position of current modern science: “Modern scientific research indicates that sexual orientation is largely determined by the time of birth, partly by genetics, but more specifically by hormonal activity in the womb arising from various sources” (Wilson and Rahman 2008, 10).

This is a complex conversation, and getting into detail here is beyond the scope of the study. There is a great deal of research material available either on the web or in some fairly recent books that delves into the specifics of how and why these conclusions are drawn. (Please see the bibliographic information at the end of this book.) I shall only attempt to summarize the “topline” findings, providing enough information to substantiate my belief that the science should challenge some of our more traditional attitudes toward same-sex attraction and behavior. This is not to preclude the moral discussion. I will engage the moral issue subsequently. But I believe the moral conversation must be informed by what modern science can tell us. In my seminary days I would often hear professors say, “Is’ comes before ‘ought.’” That is the case here as well in my view. So what “is” the biological basis for same-sex orientation?

Exploring the Biological Causes*Hormone Exposure and Sexual Orientation and Anatomical Sex*

There are multiple biological theories offered to explain how humans develop their sexual anatomy and orientation. Perhaps the strongest or at least most influential is that sexual orientation develops primarily during fetal neural development. Within this framework are models that include prenatal hormone exposure—which can include a genetic element, maternal immunological reactions, and an unstable prenatal development environment.

The prenatal hormone exposure theory proposes that sexual anatomy and orientation are determined by hormone exposure at two critical moments in fetal development. The first is the differentiation of the sexual organs, and the second occurs at a later date in the prenatal process wherein hormones affect brain structure. It is this latter process that is believed to be the origin of many differences, including sexual orientation (Garcia-Falgueras and Swaab 2010, 24; LeVay 2010). Sexual differentiation of the genitals takes place in the first couple of months of pregnancy. Sexual differentiation of the brain occurs in the second half of a pregnancy during a period of major and rapid brain development. This is significant because the gap means that the two processes can be influenced separately and influence development differently. In most of the human (and animal) population, the two processes are in synch. Male genitals align with typical male sexual behavior that prefers females due to the masculinization of the sexual behavior control areas of the brain. Conversely, the same is true for females. But it also means that sometimes they get out of synch. The result is “discrepancies between physical sex and aspects of sexual behavior that are sexually differentiated (orientation, gender identity)” (Balthazart 2011, 155). A fetus that develops male genitalia may not develop a masculinized brain. In some cases the result is a transgender person; in others, a gay, lesbian, or bisexual person.

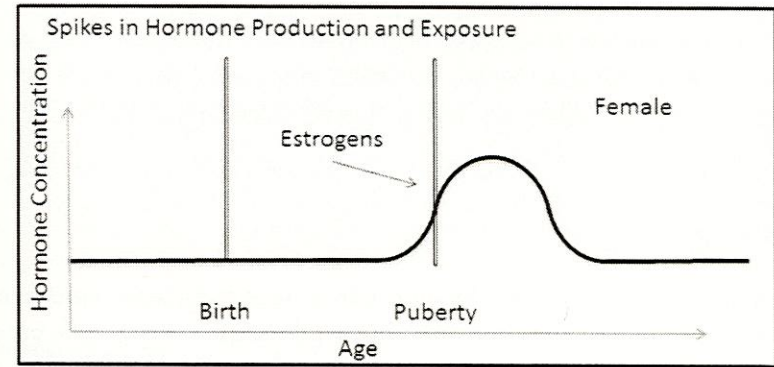
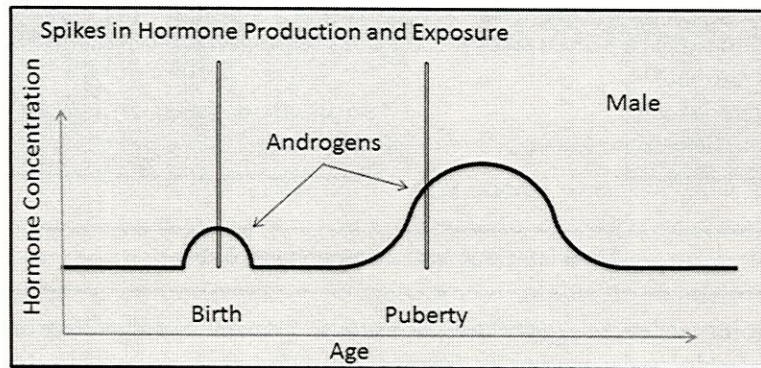


Recent evidence suggests that exposure to prenatal androgen (testosterone for males and estrogen for females) can influence later sexual orientation and behavior. It is proposed that hormone exposure works as a cofactor

interacting with genes and environmental and social conditions (Wilson and Rahman 2008). Research also demonstrates that within the prenatal timeline, sexual differentiation and the development of the sexual centers of the brain (where orientation develops) occurring at different moments explains, in part, why some persons develop orientations that are different than their anatomical sex. A genetic male who develops male genitalia due to testosterone exposure may for some reason not experience the same testosterone exposure in the later brain development that would normally masculinize the brain. In other words depending upon the moment and extent of hormone exposure at two different points in the sexual development process, a fetus may emerge as straight, gay, bisexual, or transgender.

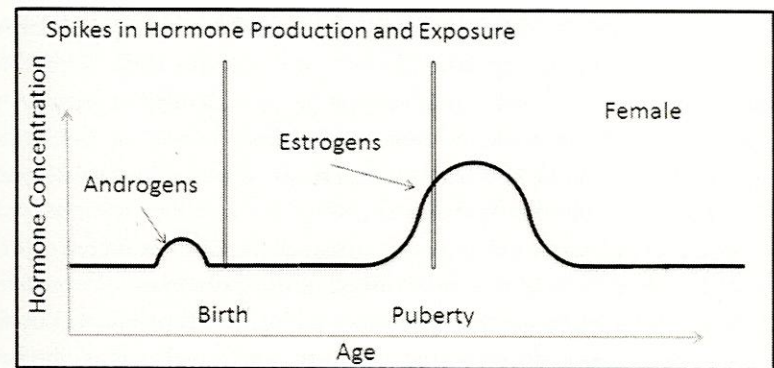
More about the Brain

Sex is in your head, it is often said. More accurately, a person's sexual orientation and behavior originate in the brain. Research into prenatal development proposes that the brains of males develop differently than those of females due to hormone exposure or lack thereof, as stated above. In the second half of prenatal development, the fetal brain develops in a male direction (masculinization) through a surge in testosterone on the forming nerve cells. A brain develops in the female direction (feminization) through the absence of the hormone surge. The default pattern of fetal development is female unless exposed to testosterone. This surge can be seen in the following graphic that compares the development of male versus female mice. Notice that the male has a spike before birth and for a little time after. Females do not have a hormonal spike until puberty.



Males typically experience two spikes in fetal hormone exposure whereas females experience only one (Vandenbergh 2003, 220).¹⁰

The research into hormone exposure also found that some mice exhibit same-sex preferences. In these cases, at some point the brains of female mice were exposed to androgen hormones, which masculinized the brain. This can be seen in the following graph in which a female (XX chromosomes) is exposed to androgens just prior to birth and as a result exhibits same-sex behaviors. Though females anatomically, the mice were sexually attracted to other female mice (Vandenbergh 2003, 220).



A similar pattern occurs in humans. A 2010 study by Garcia-Falgueras and Swaab of the Netherlands Institute for Neuroscience, at the Royal Netherlands Academy of Arts and Sciences, concluded:

The fetal brain develops during the intrauterine period in the male direction through a direct action of testosterone on the developing nerve cells, or in the female direction through the absence of this hormone surge. In this way, our gender identity (the conviction of belonging to the male or female gender) and sexual orientation are programmed or organized into our brain structures when we are still in the womb. There is no indication that social environment after birth has an effect on gender identity or sexual orientation. (2010, 22–35)

Garcia-Falgueras and Swaab believe the effects of hormones are permanent.

Balthazart reports the same, namely, that during ontogeny—the process of development of an organism to maturity—the effects of the hormone exposure is permanent: “We now know that these sexually differentiated behavioral responses to steroids (i.e., testosterone or estrogen) are the result of early actions of these steroids and that during ontogeny the brain differentiates into a male or female brain. These differentiating effects occur during the embryonic period or just after birth and are completely irreversible” (2011, 40).

Garcia-Falgueras and Swaab explain that the main mechanism determining sexual identity and orientation is the effect of exposure to testosterone on an intrauterine developing brain. Sexual organs develop first, and following that, the brain is differentiated “under the influence, mainly, of sex hormones such as testosterone, estrogen, and progesterone on the developing brain cells and under the presence of different genes as well” (2010, 23–24). During fetal development, gay, lesbian, and bisexual people experience a different hormone exposure affecting how certain areas of the brain that determine one’s sexual orientation and gender identity develop. A gay man may develop male genitalia, which form first, but when the brain is ready to develop, a change in hormone exposure—little or no testosterone—results in the sexual part of the brain forming in a way that is more typical of a straight female brain resulting in an orientation that is attracted to other males. This is referred to as the “masculinization” of the brain. The converse is true for a lesbian wherein she experiences a surge in testosterone. Put simply, because of a change in hormone exposure, the sexual part of the brain that is the source of sexual attraction and behavior can develop such that a woman is attracted to a woman and a man is attracted to a man. The shape and development of the brain sets the gender identity and sexual orientation; that is their pattern of attraction. That is their natural state just as is the case for a straight person.

Other research shows that there are parts of the straight male brain that are differently shaped than the straight female brain. Those areas having to do with sex and gender are called sexually dimorphic areas, meaning “different forms.” (In other words, they have different shapes.) Some studies have demonstrated, however, that these same areas of the brain in gay men are more likely to be the same shape as heterosexual females. Conversely, these specific areas in a lesbian brain are similar in shape to a heterosexual male (Balthazart 2011).

A Homosexual Gene?

With the advent of gene science, there has been an effort to find a gene or genes that are the “cause” of homosexuality. As noted earlier, from an evolutionary perspective, the frequency of homosexuality should decrease unless there is some evolutionary advantage. A decrease in the incidence of homosexuality among many species is clearly not the case. (Nor has it increased as a percentage of the population.) Theorists propose that there is some genetic predisposition that creates a positive adaptation and thus the maintenance of a certain percentage of populations that are LGBT. For example, a study conducted by Dean Hammer found that gay men had more gay uncles and cousins on their mother’s side than on their father’s side. The theory is that there is some genetic phenomenon at work that results in the persistence of a nonstraight percentage of the population. More specifically, the theory is that at least some portion of male homosexuality is an inherited trait through the mother’s side. Research has identified a location on the X chromosome (that comes from the mother) that is associated with sexual orientation, though no specific gene or genes have been identified. Studies attempting to discover if there is a genetic origin of male homosexuality found certain “markers” transmitted on the X chromosome (from the mother) in the Xq28 region (Balthazart 2011, 156).

The sexual orientation of women is more complex. Nonetheless Balthazart notes that several studies “have identified an increased rate of nonheterosexuality (the term used to group homosexual and bisexual women) in girls, nieces, and cousins of the paternal lineage of lesbians” (2011, 145). Balthazart explains that this transmission could be linked to the X chromosome or it could come from either the father or the mother. More research is needed on female sexual orientation in general because the actual genetic mechanisms are not clearly understood at this time. (New work in the field of epigenetics

may shed light on the heritability of sexual orientation. See the discussion on epigenetics later in this chapter.)

Another suspected genetically influenced source of male homosexuality (only) is referred to as the “Older Brothers Effect.” It has been statistically demonstrated that with each brother born to a mother, there is an increasing likelihood that next brother will be gay. “An analysis of 14 independent studies representing more than 10,000 subjects found that for each additional older brother an experimental subject has, his probability of being gay increases by 33%” (Balthazart 2011, 148–50). The current hypothesis—having disproved others—is that there is an immune response in the mother. With each boy born, the mother develops an immune system response to the foreign body (the male embryo) by forming antibodies, and these antibodies affect parts of the brain involved in the determination of sexual orientation. It is possible that the origin of this phenomenon is genetic, though how is yet to be determined. It is also possible it is just an immune system response (LeVay 2010).

Just how genes affect sexual orientation—either heterosexual or homosexual (or anywhere along a spectrum in between)—is still being explored. As Wilson and Rahman somewhat humorously write, “Clearly, the proteins that make up genes do not literally spell out ‘gay’ and ‘lesbian’ or ‘straight’” (2008, 54). Rather, as they continue to explain, genes affect the development of the brain and, specifically relative to sexual orientation, the sexual areas of the brain that determine gender. How the mechanics of gene control mechanisms work is beyond this study, so I will leave it here. But I would highly recommend reading the chapter in Wilson and Rahman’s *Born Gay* in which these processes are explained, if for no other reason than to appreciate the wonder of how it all happens with the result that little people are born and grow up and become adults. It is an amazing process!

It is expected that future research into how genetics influence human development will also shed more light on the mechanics of that influence.

Gender- and Sex-Related Traits

As noted previously, hormones activated based upon some cluster of genes shape the sexual parts of the brain in terms of size and organization, with the result being an immutable trait of sexual orientation (Balthazart 2011; LeVay 2010). But these same processes are also involved in a larger cluster of traits that are referred to in the literature as *gender-typical* or *gender-*

atypical. Sometimes these terms appear to be used interchangeably with the phrases *sex-typical* and *sex-atypical traits*. At other times they do not seem to be interchangeable. For the purposes of this study, *gender-typical/atypical* focuses on sexual or gender identity whereas *sex-typical/atypical* focuses on physical traits.

The phrases *gender-typical* and *gender-atypical* refer to behavior preferences that on average align with “boys” or “girls,” men or women. Boys like trucks and cars, are more aggressive in play, and tend to be more competitive. Girls are more likely to prefer to play with dolls and exhibit nurturing behaviors. Adult males mostly still like trucks and cars and competitive sports. Adult females are more likely to prefer nurturing, fashion, and shopping. Even though the feminist movement of the 1960s through the 1980s worked hard to dispute such behavior as intrinsic, the research supports it on average (LeVay 2010).

Research has also found that gay and lesbian children often exhibit *gender-atypical* preferences and behaviors. Boys, who later grow up gay, may prefer to play with girls and dolls, and as adults, gay men are more likely to enjoy fashion and clothes. Girls, who later grow up to be lesbians, may show *gender-atypical* aggressiveness as children and as adults are more inclined to participate in activities often preferred by men. This is not absolute, however, and the trouble with averages is that a particular person may be quite distinct from the average. Some gay men actually show super-masculinized behaviors as children that continue into adulthood, such as bodybuilding. Conversely some girls may show completely *gender-typical* behaviors and grow up to be lesbians whose super-feminine preferences continue. This difference in lesbians is often referred to as “butch” versus “femme,” though these should not be understood as either/or but as two poles on a continuum. The same continuum is described for gay men as “top” for the more masculine and “bottom” for the more feminine (LeVay 2010, 288).

There are also anatomical differences between men and women beyond the obvious differences of sexual genitalia, especially those related to brain structure and function. These differences can be physical, functional, or cognitive—none of which are part of sexual orientation but are affected by the same sex hormonal exposure processes that occur at the point the sexual parts of the brain are being influenced. LeVay as well as Wilson and Rahman describe these differences along with the research behind them. LeVay speaks of these as a “package of traits”: “The association between sexual orientation and a ‘package’ of gendered traits arises, according to this idea,

because several brain systems that mediate such traits develop in the same developmental time period and are all sensitive to circulating testosterone level” (2010, 127).

Causation does not have to be definitively established. It is likely the case that genetic factors come into play influencing typical or atypical sex hormone exposure. But it is also possible that such a factor is simply part of the randomness of the universe in which we live or can be attributed to other factors yet to be discovered. Studies of identical twins, who most assume to have the same genetic code, have shown that in some cases, one twin is gay and one is straight. Research designed to ascertain the concordance of sexual orientation of identical twins (i.e., both have the same sexual orientation) has not given a clear finding, with percentages ranging from a dubious 100 percent to a questionable less than 10 percent with the mean around 60 percent (Balthazart 2011, 143–44). This is compared to between 10 and 20 percent in fraternal twins. But why would identical twins not have the same sexual orientation always? It is actually not the case that identical twins have exactly the same DNA. Recent studies have shown that identical twins acquire many genetic differences in early fetal development. Mutations or code copy errors occur after the initial splitting of the single fertilized egg. These small changes can result in small differences over time (Ghose 2012). Additionally, “Other studies have shown that chemical modifications, or epigenetic effects, can change which genes are expressed over the years, one factor that renders twins not completely identical” (Ghose 2012). Epigenetics, in very simple terms, describes the processes whereby a gene is turned on or off, resulting in a gene being expressed at one moment or another or not at all.¹¹ (We will return to epigenetic effects below.) These data point to a consistent conclusion; for whatever reason, from a random event (LeVay 2010) to a small change in genetic code replication, exposure to higher levels of testosterone while in the womb is differentially experienced by identical twins with the result that they may not have the same sexual orientation.

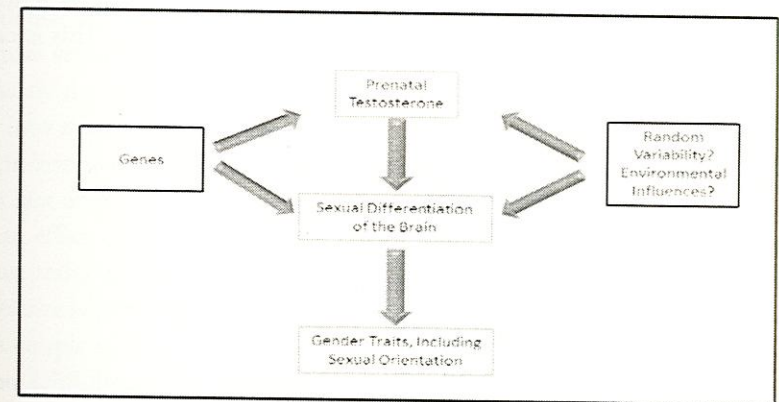
Research on these issues continues apace with genetics leading the way. Our understanding of humans via our genome continually opens new doors and closes many old doors as well. Craig Venter and Daniel Cohen, two of the world’s leading genetic scientists, made the following prediction in 2004: “If the 20th century was the century of physics, the 21st century will be the century of biology. While combustion, electricity, and nuclear power defined scientific advance in the last century, the new biology of genome research—

which will provide the complete genetic blueprint of a species, including the human species—will define the next” (73).

One area of emerging research is the impact of epigenetics on sexual orientation. As stated above, epigenetics focuses on how genes are switched on or off, a process that can be influenced by environment—in this case the fetal environment (Rice, Friberg, and Gavrilets 2012). As of this writing, this research is quite new and is yet to be tested but if confirmed would blur the nature/nurture distinction, but only within a biological theory of sexual orientation. (For example, it may shed light on what otherwise looks in some cases to be random.)

Summary

This simplified explanation of the biological origins of sexual orientation is intended to make the point that the science leans heavily in the direction of a prenatal biological determination of a whole cluster of gender- and sex-related traits. If this is true, and the evidence certainly would appear to support this theory over other theories, then one’s sexual orientation is the result of genetic and hormonal processes that shape one’s orientation as well as a host of other gender and sex traits such as gender-conforming preferences and behaviors, some physical characteristics, and size and structure of sex-related areas of the brain. LeVay provides the following illustration that attempts to demonstrate how all of these factors interact.

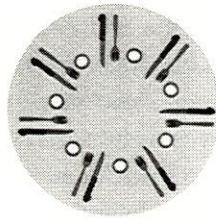


Development of Sexual Orientation: Basic Elements of a Prenatal Hormone Theory (LeVay 2010, 64)

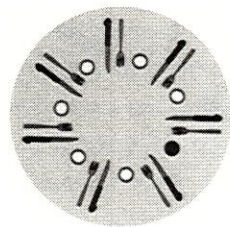
What our adult sexual orientation will be is largely determined in our mother's womb.¹² We are born the way we are.

Symmetry Breaking and Sexual Orientation

I want to tie the current science on the origins of sexual orientation to the prior discussion about the kind of universe we live in. It was pointed out under the discussion about chance and necessity that chance, as we normally think of it, does not mean "anything" can happen. In reality, in our universe there is a range of options available, and chance means any one of them may in fact occur. But the laws of nature persist, so there is not much "chance" that if you step off the edge of a building that you will go up instead of down! Chance then means historical contingency—many possible happenings, one single selection. But not everything is possible. Perhaps a simple illustration will make this somewhat clearer. Consider the first image below. It is a table fully dressed for a banquet. The question is: With which place setting do the glasses go?



There are many *potential* options but no certainty. But there are not an infinite number of options. There are a finite number of options that can become *actual*. At the point a glass is chosen by a guest, potentiality becomes actuality. Each glass becomes uniquely tied to a particular place setting. This is called "symmetry breaking."



Choice made...



Chance is a way of suggesting there is contingency in nature—there are potential options that, in time, are made actual. Not all is reduced to a linear

cause-effect chain. If this is true, then the universe is not quite so deterministic after all—there is an openness to it.

Now what does this have to do with a discussion on the origins of nonheterosexual orientation? In the beginning a fetus is given a specific genetic inheritance. As the prenatal development process unfolds, potential becomes actual through the interaction of genes and hormones and the uterine environment. However those mechanical dynamics work, the science points to a symmetry breaking, a point when organizational hormones have their effect on the sexual parts of the brain that determine gender and on the development of sexual anatomy. First, hormones direct the formation of the sexual organs and they take shape, and sometimes that taking shape becomes mixed or ambiguous. Somewhat later, parts of the brain that manage human sexuality take shape, and gender is established. Regardless of what occurs, the process establishes a set of traits that make up the sexuality of a person at birth. Once the symmetry is broken, the path for the human person is set. As the person grows and develops, environmental factors will of course give further shape to who he or she becomes as an adult and the kinds of choices the person makes. But at this point, science would say that, for most people, their orientation has been set and what will unfold in their adult life will follow within those bounds.

Impact of Psychosocial Dynamics

Although most current science supports a biological origin of sexual orientation and other gendered traits, there is agreement that there are in fact psychosocial dynamics that affect the development of the person who is born with a particular set of gender traits. What do I mean? We go back to the concept of nature versus nurture. We have seen that gendered or cross-gendered traits are mostly the result of the processes of nature. However, once we are born, we enter into a social environment in which we are (hopefully) nurtured; and in that environment, our psyches develop through to adulthood and beyond. We are in fact affected by our environment, and that environment can and does have an effect on how we are able to take advantage of or not take advantage of those traits. In fact the environment can affect how our genes are expressed, and science is still working to understand how and to what extent this happens.

A couple of illustrations will make this more concrete. Many in my generation (childhood and adolescence in the 1950s to the mid-1970s) were raised in a culture shaped in large part by religious moral values vis-à-vis one's sexuality and proper sexual behavior. As I suggested in the introduction, when I was a singles pastor, I encountered several young men whose struggle

revolved around the conflict between their sexual desires and their upbringing. In two tragic cases that I personally know of, this ended in suicide.

But it was not just the gay men in my group who seemed to have sexual conflicts between desire and moral upbringing. I found in counseling both men and women who were afraid of their sexual desires. The hormones were raging, but so also were the voices of Sunday school teachers who taught them that sex was bad and, worse, in some cases, dirty. This form of teaching, I fear, still occurs in some religious traditions. The objective of such teaching of course is to control the raging “tiger” before it can pounce. But the effect on many was to think of sex as unseemly and for some women, in particular, to even think of their female genitalia as dirty. Although I have not actually seen the full play, I did watch a couple of scenes from *The Vagina Monologues* on HBO. From what I could tell, much of the message of that otherwise, in my estimation, vulgar play was to give women the freedom to feel good about their anatomy. (This is not to say that men do not have issues with their body image.) Where I encountered the problem as a pastor was not before marriage but after, when women found (surprisingly) that it was tough to think, “Yesterday I wasn’t married and sex was dirty, but today I’m married and sex is suddenly OK!” Indeed, how often in some traditional societies are young brides-to-be pulled aside by their mothers and told what their husbands will need and their responsibility to provide it (Burke 2012)?

We find our problem with sex going back (at least) to the period in Christian history when Saint Augustine lived. For Augustine, human desires were what kept him from God. He was especially active sexually (he kept a concubine) before he became a Christian, and in his *Confessions* he states that it was sexual desire above all other sin that was the obstacle. But it was not just Augustine. Asceticism was an exceptionally popular conceptualization of faithful Christian life in the early fifth century CE. (We will find that the origin of this sexual asceticism was emerging even in the Corinth of Paul’s time when we look at the text from 1 Corinthians.) Many were giving up all sex, even married people, to seek a higher level of spirituality. Sex was considered inimical to one’s relationship with God. But Augustine actually created a context in which “sex was good.” How did he do that? Sex was good because through sex came procreation: “The union, then, of male and female for the purpose of procreation is the natural good of marriage. But he makes a bad use of this good who uses it bestially, so that his intention is on the gratification of lust, instead of the desire of offspring” (Augustine 1887, 265).

This fixed association between sex and procreation continues even today. We have of course made great strides, and even during my own young adult years, there were voices affirming the God-given gift of our sexual desires and

sexual experiences. (I still love the idea I first encountered in C. S. Lewis that we humans don’t desire too much; we desire too little. I will pursue this idea more when discussing idolatry under the interpretation of Romans 1 below.) But for some young women of that time (most likely this is still true in some contexts), this “nurturing” simply created more confusion because now the message was “dirty” until “not dirty, then fun!”

The dynamic at work here is the interplay between nature and nurture in the domain of one’s sexuality. So returning to our primary topic, how children and adolescents are nurtured will play a large role in how they feel about themselves and their identity and the sexual behaviors they will (or will not) express as they enter young adulthood. For a boy whose father observes less gender-typical behaviors (less aggressive, more feminine) in his son and who then withdraws or who expresses other forms of rejection, the boy will find it harder to arrive at adulthood with a healthy identity and sense of self-worth. (Note here it is not the distant father who is responsible for the emergence of a homosexual son; it is the reality of gender-atypical behaviors in the son that results in the withdrawal of the father.)

Some young women who are somewhat gender-atypical in behavior (who love sports more than average young girls, are more aggressive, are more tomboyish, and so on) may find mothers trying to “feminize” them, making them dress more “girlish” and behave more feminine. Such nurturing activities, though presumably well intentioned, may have the effect of creating tremendous identity confusion as the child progresses toward full sexual self-awareness. Science suggests that orientation is biologically fixed, but science also suggests that there may be a range of expression from strongly heterosexual on one end to strongly homosexual on the other and with bisexual falling in between. How children develop and understand who they are is greatly influenced by the kind of environment they experience growing up.

This brings us then to the thoughts in the next chapter. What we believe about the origins and reality of homosexuality will determine how we respond to gay people. In the next chapter using a Q&A format, I look at some of the different ways Christians have approached this. Their assumptions about origins determine their environmental and therapeutic strategies for dealing with LGBT people.

Some Summary Thoughts on the Biology

At this point in my study of the biology of human sexual orientation and how it develops, I conclude three things.

First, it is clear that current scientific research has found that one is born with a particular sexual orientation, and therefore it is not a choice. This being the case, people's sexual orientations are "natural" to them for that is the way they developed in their mothers' wombs.

Second, while the research into the causes and sources of sexual orientation has provided significant understanding, there is much still to research for a full understanding of human sexual behavior, if that is even possible.

Third, I do not know how people can continue to subscribe to the traditional and scientifically unsupported views of sexual orientation and same-sex attraction if they give the findings of modern science any credence.

In my mind these data are a game changer in the discussion about homosexuality. The clear direction of the research points mostly to factors beyond the control of the person and, further, mostly to events that happen while in utero. But the same research also indicates that there is no single factor that can be traced as the originating source and that influences range from prenatal hormones to genetics and to environmental factors within the womb. These data then, I believe, ought to inform our reflections theologically. Much of the later chapters will be my attempt to do just that.

Notes

1. A Luddite is a person who does not like new technology and opposes using technological advances.

2. Within the review of the historical development of the science of LGBT sexuality, I use the term *homosexuality* as a banner. This is because this was the word coined as the science began to develop. I fully recognize that the term is inadequate as a single banner for the LGBT phenomenon.

3. This illustration of open and closed systems is agreeably simplistic. But it works for my purpose, which is to introduce the idea of a universe in which contingency can happen and therefore diversity will emerge.

4. I am not saying LGBT persons should not be parents and raise children. In fact, I believe the opposite. But that is a moral question not under consideration at this point. Rather, I am simply saying that from a biological standpoint, same-sex expressions within a species are less likely to reproduce.

5. *Sodomy* was the term used to describe sexual acts of any kind that were not male-female. It is a term based upon behavior, not an innate condition. The term will be explored in more detail when looking into the biblical texts.

6. *Neurosis* is a term no longer used to describe a psychological state. *Mosby's Medical Dictionary* gives this definition: "former name for a category of mental disorders in which the symptoms are distressing to the person, reality testing is intact, behavior does not violate gross social norms, and there is no apparent organic cause. Classified in DSM-IV under anxiety disorders, dissociative disorders, mood disorders, sexual disorders, and somatoform disorders."

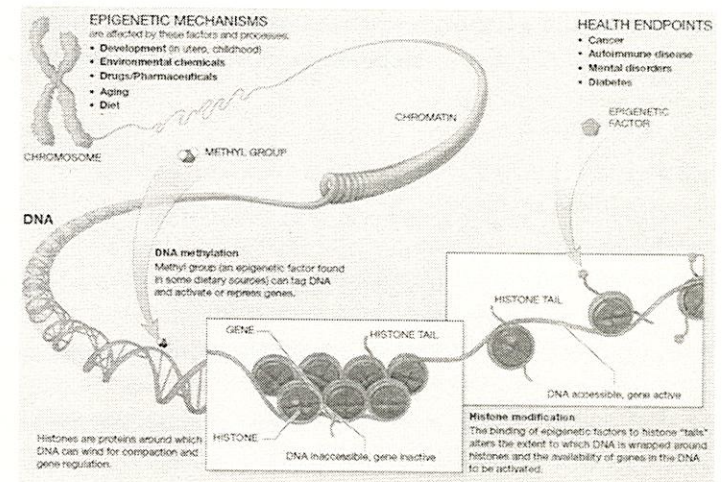
7. Sullivan considered homosexuality to be a social dilemma in need of a solution. He was rumored to have been a homosexual himself. "Whatever may be the truth regarding his sexuality, Sullivan was, by all accounts, an unmarried and lonely individual, who saw 'homosexuality as a developmental mistake, dictated by the culture as substitutive behavior in those instances in which the person cannot do what is the simplest thing to do'" (Evans 1996, 17).

8. More recently the gay, lesbian, bisexual, and transgender community has added the word *queer*, and thus the short-hand becomes *LGBTQ*. This additional word reflects the somewhat fluid understanding of this whole range of sexual orientation, preference, and behavior descriptions. *Q* can stand for *Queer* or *Questioning*.

9. There is some controversy in the medical and psychological community over how to classify the transgender phenomenon. In 1973, homosexuality was removed from the DMS III and replaced by the category "Sexual Orientation Disorder." After homosexuality was removed from the DSM, this diagnosis was added to describe transgender persons. It was called gender identity disorder (GID). That has now been changed to gender dysphoria, which is defined as "cognitive discontent with the assigned gender" or the roles associated with that gender (American Psychiatric Association 2013). The change has been promoted because it is felt that GID stigmatizes a person. Dysphoria attempts to focus on the individual's own sense of contentment.

10. These three graphics were recreated from the original article by Vandenberg (2003).

11. The epigenome wraps around the genome and therefore makes genes accessible or inaccessible; or perhaps put another way, the epigenome makes the genome readable or unreadable. If made inaccessible, the genome cannot be expressed. Environmental factors can be the triggers on the epigenome that makes the genome accessible. The following graphic illustrates a portion of the DNA sequence that is bound tightly and therefore unreadable and another portion that is loosely bound and therefore readable (Bonetta 2008).



Epigenetic mechanisms are affected by several factors and processes including development in utero and in childhood, environmental chemicals, drugs and pharmaceuticals, aging, and diet. DNA methylation is what occurs when methyl groups, an epigenetic factor found in some dietary sources, can tag DNA and activate or repress genes. Histone modification occurs when the binding of epigenetic factors to histone "tails" alters the extent to which DNA is wrapped around histones and the availability of genes in the DNA to be activated. All of these factors and processes may result in cancer, autoimmune disease, mental disorders, or diabetes, among other illnesses." Courtesy of National Institutes of Health.

12. The research data available on female homosexuality is significantly less than on male homosexuality. There is enough information to know that female homosexuality (like, I suppose, female heterosexuality) is different than male homosexuality, though the basic prenatal mechanisms are assumed to be similar. It does leave one a tad frustrated when trying to understand how this is expressed and what the potential mechanisms are in half the human population.

Questions

It is probably self-evident, but I will state my reason for exploring in some detail the biological research into the origins of homosexuality. Quite simply, my hope is that if it can be demonstrated by science that one does not choose one's sexual orientation, then to treat LGBT people as inherently deviant or perverted or sinful is no longer tolerable. In addition, efforts to try to change the orientation of a LGBT person are questionable endeavors and may even cause harm. Being gay is not a moral issue any more than my having red hair is a moral issue. It is a human trait or perhaps more accurately, as Simon LeVay, Qazi Rahman, and others would say, "a package of traits" that is determined in the womb.

With the biology of homosexuality increasingly established, I shall pose a series of questions and provide answers derived from the science reviewed in the previous chapter. First the list of questions:

- Is sexual orientation a choice?
- Is homosexuality the result of childhood experiences?
- Is homosexuality a disease that can be cured?
- Can sexual orientation be changed?
- Are same-sex desires unnatural?
- Are same-sex behaviors unnatural?