# Two Theories Better Than One? Integration and Epistemic Values in Research on Sexual Orientation

By

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#### Abstract

This thesis deals with the problem of integration in the context of research on human sexual orientation after "nature vs nurture" debates – the struggle to explain human traits, particularly behavioral ones, by either biological or social factors. Contrary to what I call "integrationist optimism" in the recent philosophical literature, I argue that integrated theories of sexual orientation are not necessarily in a better position than single-factor ones to accurately capture the causal complexity of sexual orientation. This is due to several issues that theoretical integration may face, including evidential ambiguity of constituent theories as well as trade-offs between accuracy and other epistemic values. Moreover, I show that an emphasis on such epistemic values as simplicity and breadth of scope may stand in the way of representing the causal complexity of the studied phenomenon. Finally, pragmatic factors stemming from the legacy of "nature vs nurture" thinking may prevent researchers from fully acknowledging the complex character of sexual orientation. The thesis offers an in-depth analysis of two integrative proposals – "evolutionary social constructivism" of homosexuality (P. R. Adriaens, A. De Block) and "Exotic Becomes Erotic" theory of sexual orientation (D. Bem) – to illustrate these claims.

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## Introduction

The "nature vs nurture" debates about human traits have persisted both in science and in the public mind ever since Francis Galton first framed the dichotomy in the 19<sup>th</sup> century (Keller, 2010). The current state of the debates simultaneously signals moving "beyond versus" (Tabery, 2014) – the increasing realization that both biological and social factors are at work in the production of most traits of interest – and disagreement over how exactly this realization should guide and inform scientific inquiry. The research on sexuality and sexual orientation is no exception to this, representing a wide array of possible approaches but showing little consensus as to how to bridge the divide between biological (focusing on "nature") and social (focusing on "nurture") studies. While most researchers readily acknowledge that a behavioral phenomenon as complex as sexual orientation mandates some integration of biological (genetic, hormonal, evolutionary) and social (psychological, sociocultural) theories, just how exactly the integration should be carried out remains an open question.

This is especially so since integration itself as a relation between scientific theories has not been sufficiently theorized, even though philosophy of science has recently shown increased interest in it (Bechtel, 1993; Bechtel & Hamilton, 2007; Brigandt, 2010; Love & Lugar, 2013; Mitchell, 1992, 2002, 2003, 2009; Mitchell & Dietrich, 2006; O'Malley, 2013; Plutynski, 2013). Despite the lack of consensus as to what integration is or should amount to, many scholars who have written on the subject treat it as an important methodological goal and a way to achieve a more comprehensive understanding of the studied phenomenon or solve a difficult scientific problem. Since many phenomena of interest are thought to be complex, integrating previously isolated scientific theories regarding these phenomena is expected to help us better capture their complexity (Mitchell, 2003; Mitchell & Dietrich, 2006).

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Given this line of thinking – which can be described as "integrationist optimism" – it is no surprise that some authors argue for integration as the only way forward for sexual orientation research (Mbugua, 2015). This takes place against the backdrop of repeated calls to bridge the "nature vs nurture" divide which has for a long time characterized the inquiry into human behavior. In the last two decades, several integrated theories of sexual orientation have been put forward, which provides material for the following directions of investigation: 1) Do such theories connect insights from biological and social research in a manner that is conducive to capturing the complexity of human sexuality? 2) What can they tell us about integration as such and our expectations connected with it?

In this thesis, I set out to explore the problem of integration with a focus on sexual orientation research. My aim is twofold: to examine the ways in which the study of sexual orientation can inform the work on integration, since the number of integrative projects in this area of scientific inquiry is increasing; and to analyze whether some of the existing integrated theories of sexual orientation hold any promise in terms of explaining this complex phenomenon. Since many problems related to overcoming the "nature vs nurture" dichotomy in the study of sexual orientation are ultimately problems of integration, I believe it is important to establish productive links between the two ongoing discussions.

I argue that "integrationist optimism", particularly in the study of sexual orientation, may be premature because for two reasons. One reason is that integrated theories, just like single-factor ones, are subject to evidential issues and epistemic value trade-offs and thus are not always in a position to provide a higher degree of accuracy. A further, albeit related, reason is that integrated theories can be guided by specific epistemic values (such as simplicity and breadth of scope) which are not conducive to capturing complexity. Finally, several pragmatic motivations specific to integration in post- "nature vs nurture" science can also affect the production of integrated theories in a way that does not reflect our best expectations.

The structure of the thesis is as follows. In the first chapter, I review some of the recent literature on integration and provide my own arguments for why "integrationist optimism" may in certain cases turn out to be misplaced. In the second chapter, I outline three approaches to the study of sexual orientation – social constructivism, the evolutionary approach, and developmental systems theory – to set the stage for analyzing integrated theories which draw on these approaches. In the third and fourth chapters, I focus on two integrated accounts – "evolutionary social constructivism" of homosexuality (P. R. Adriaens, A. De Block) and "Exotic Becomes Erotic" theory of sexual orientation (D. Bem) – to examine the role of epistemic values in them. I conclude that these theories have epistemic features that reduce their ability to accurately capture the complexity of sexual orientation.

#### **Chapter 1: The Problem of Integration in Philosophy and Science**

## Introduction

Philosophy of science has long sought to spell out the relations that hold (or should hold) between various scientific theories aiming to explain the same range of phenomena. One such possible relation is integration, which has received considerable attention in the recent literature (Bechtel, 1993; Bechtel & Hamilton, 2007; Brigandt, 2010; Love & Lugar, 2013; Mitchell, 1992, 2002, 2003, 2009; Mitchell & Dietrich, 2006; O'Malley, 2013; Plutynski, 2013). Most work on the subject regards integration of previously isolated scientific theories as an important methodological goal, despite there being relatively little agreement regarding what exactly integration is and what form it should take. Since many phenomena of interest are thought to be complex, integrating previously isolated scientific theories regarding these phenomena is expected to help us better capture their complexity (Mitchell, 2003; Mitchell & Dietrich, 2006).

In this chapter, I briefly review some of the recent literature on integration before proceeding to interrogate several assumptions present in it. I argue that integrated theories, just like single-factor ones, are subject to evidential issues and epistemic value trade-offs and thus are not automatically in a position to offer a higher degree of accuracy. I also examine the role of epistemic values such as simplicity and breadth of scope, as well as pragmatic asymmetries originating in the "nature vs nurture" thinking, and conclude that they may likewise stand in the way of representing the complexity of studied phenomena.

# Integration and decomposition as interrelated concepts

Contemporary science is becoming increasingly specialized, with each research program characterized by a narrowly delineated focus of inquiry. Such specialization has a social dimension (division of scientific labor) and an epistemic dimension, the latter manifesting itself in the

treatment of scientific phenomena. When faced with a phenomenon that, as a whole, does not lend itself easily to scientific investigation, researchers utilize the strategy of decomposition in order to break it down into parts or reconstitute<sup>1</sup> it at a different level (Bechtel & Richardson, 1993; Kronfeldner, 2015). In doing so, they "blackbox" different sets of relevant causal factors, which aids research but also leads to the production of partial, limited knowledge. This fact has received mixed treatment from philosophers: for instance, Longino (2013) has emphasized the resulting epistemic discontinuities between research programs which, on her view, lead to a virtual impossibility of ever finding a joint explanation in the case of phenomena like aggression or sexuality. However, according to some others, decomposition in science has emerged as a way to tackle the complexity inherent in studied phenomena and should therefore be regarded as benign and useful (Bechtel & Richardson, 1993; Rheinberger, 1997).

A direct opposite of decomposition is integration – a relation that holds between previously isolated fragments of knowledge which are brought together to form a combined account of a phenomenon. Unlike theory reduction, which has been found inadequate to the goals of scientific inquiry in life science (Bechtel & Richardson, 1993; Brigandt, 2010; Mitchell, 2003), integration is meant to connect theories in a manner that puts them on an equal footing, without subsuming one under another. In line with this, Mitchell (2002, 2003, 2009) has proposed the idea of "integrative pluralism" – a view on which the plurality of theories should be fostered rather than limited via reduction, as they can ultimately find their place in an integrated explanation of a phenomenon. Thus, in her opinion, integration directly relies on the diversity found in scientific practice.

<sup>&</sup>lt;sup>1</sup> The concept of reconstituting phenomena will be discussed in more detail in Chapter 3.

Decomposition and integration, I would argue, are closely interrelated concepts which depend on each other in important ways. In most cases, both critics and proponents of decomposition view it with an eye to future integration, and it is the perceived (im)possibility of integration which, at least partly, informs a negative or positive stance on decomposition. For instance, Bechtel & Richardson (1993) regard decomposition as a stage in the production of mechanistic explanatory models. Rheinberger (1997), in defending what he calls "fragmentation" in experimental science, goes as far as to claim that it "finally creates complexity" (p. S253). This sounds counterintuitive at first (since fragmentation would seem to be aimed at reducing complexity via integration, described by the author as the way "local wisdoms <...> become connected to knowledge patchworks" (p. S253). Thus, for Rheinberger and others decomposition. On this view, decomposition is good because its products ultimately find their place in the greater fabric of science.

Similarly, integration, I would claim, receives its special role from the fact of decomposition which many see as temporarily productive, but ultimately unsatisfactory. Due to this, integration, perhaps rather paradoxically, depends on prior decomposition of phenomena and concomitant division of scientific labor, and their degree will be the measure of an account's "integrative" character. It is thus no wonder that in the aftermath of "nature vs nurture" debates, which have been accompanied by a rift between life science and social science, the term "integrative" is often used to mean "incorporating both biological and social theories". For instance, Longino (2013), when analyzing major integrative approaches in behavioral science,

notes only those among them that study the interplay of biological and environmental causes in the development of behaviors.

It is the ubiquity of decomposition strategies and division of labor in science that motivates the recent turn to integration, which is called upon to rescue science from its increasing specialization. Unlike decomposition, integration has generally received very positive treatment in philosophy. O'Malley (2013) aptly points this out: "All discussions of integration, whether philosophical or scientific, presume that integration is necessary and should be increased, and that to be successful, integration simply needs appropriate motivation and the right tools" (p. 553). Apart from a few notable exceptions (see O'Malley, 2013; Plutynski, 2013), authors view integration as an important goal for science and focus on its virtues. In the next section, I will discuss the rationale behind this overwhelming endorsement of integration in more detail.

# Integration, complexity, and "integrationist optimism"

In the present-day philosophical and scientific discourse, it has become a truism that many studied phenomena, particularly those which involve living beings, are inherently and unavoidably complex. Reflecting this widespread conviction, the support for integration has often taken the form of an argument from complexity: some scholars have maintained that an integration of multiple theories is better able to map onto the complex nature of phenomena compared to a single theory (Mitchell, 2003; Mitchell & Dietrich, 2006). Before I begin analyzing this seemingly straightforward argument, it needs to be unpacked as there are several claims and assumptions built into it.

First of all, the relevant meanings of "complex" should be explicated, even though the term is sometimes treated as self-evident. The notion of complexity has received multiple interpretations in philosophy of science, due to the realization that complexity can be present in different forms. One important form, which most accounts of integration refer to, is causal complexity: that which characterizes phenomena generated via multiple causal processes. This form of complexity is also most relevant to the study of behavioral phenomena like sexual orientation, since the inquiry into them has mostly been framed in causal terms. As I pointed out above, integration in this particular context usually means modeling biological and social causes in combination.

Secondly, I would like to elaborate what is meant when integrated theories are said to be in a better position to track complexity than single-factor theories. One aspect of this is that integrated theories allow us to include several causally significant factors. While single-factor theories tend to focus on a specific cause (e.g. genetic) in the production of a phenomenon, integrated theories motivated by causal complexity are multifactorial. Whether multifactoriality, understood in purely numerical terms, is sufficient for tracking causal complexity will be the subject of my analysis in the next sections, but it would seem to be an important benefit of integration.

Another, albeit related, aspect of the supposed advantage of integration is that integrated explanations are also thought to be more accurate than single ones. Mitchell (2003) has argued that single-factor theories or models are not enough and "must be integrated to yield the correct description of the actual constellation of causes and conditions that brought about the event to be explained" (p. 9). Thus, integration brings us closer to the end goal of providing such comprehensive, correct descriptions, increasing accuracy compared to single-factor theories.

All of the above – the idea that integrated theories are in a better position to represent complexity, as well as the belief that integration brings with it an increase in accuracy – is part of the line of thinking which I refer to as "integrationist optimism". It is not my intention to claim

that this optimism is completely misguided, as integration indeed serves important purposes in scientific practice. However, I believe that we need to attend critically to those possible aspects of integration which may stand in the way of our goal of capturing complexity. Since many came to be dissatisfied by the single-factor theories resulting from decomposition (which provides the rationale for integrating them), it is important to examine whether some of the reasons for this dissatisfaction hold in the case of certain integrated theories as well.

## Theoretical integration vs experimental integration

Before proceeding to the arguments why integrated accounts may sometimes fall short of accurately representing complexity, I would like to specify what exactly I mean when I discuss integration, as it can arguably take multiple forms. Several types of integration have been noted in the literature: for instance, Mitchell (2003) distinguishes between local theoretical unification joint modeling of multiple features of a complex process (p. 193) - and concrete explanatory integration, which consists in modeling of factors pertinent to a specific phenomenon (p. 194). Neither of them fully describes the kind of cases which will be analyzed in this thesis. The important difference between Mitchell's concrete explanatory integration, as well as the explanatory integration supported by Brigandt (2010), on the one hand, and integrated theories of sexual orientation, on the other, lies in the pragmatic aspect. The advocates of explanatory integration emphasize that it needs to be attuned to specific pragmatic goals dictated by phenomena of interest (Brigandt, 2010, p. 297; Mitchell, 2003, p. 194). Since the study of sexual orientation has no clear practical goal (or, rather, since its initial goal of intervention is no longer acceptable in most democratic societies), pragmatically oriented explanatory integration does not capture what is going on in this research area. Neither does local theoretical unification account for the cases that I will analyze, as unification presupposes subsuming multiple phenomena under the

same model or theory; this happens only in those integrated theories which attempt to explain multiple sexual orientations at once, but not in those which focus on a single phenomenon like homosexuality.

For the purposes of my analysis, I will use a different distinction – that between theoretical integration and experimental integration. I will view as instances of theoretical integration the attempts to bring together several theories (or parts thereof) related to the same phenomenon. In relying on the previous findings of separate research programs, theoretical integration does not directly challenge the division of labor in science. For instance, in the aftermath of "nature vs nurture" debates, it endeavors to reconcile the theoretical claims that have been made by the "rival" fields of biology and social science, without changing the social structure of science that brought the rivalry about. In contrast to this, experimental integration also involves dismantling the structural boundaries between research programs. It endeavors not simply to join past theoretical findings, but to also test them in tandem, creating qualitatively new accounts of phenomena as well as new directions of inquiry. Moreover, experimental integration has an important benefit in that it generates new data to back up proposed theories. A prominent example of such experimental integration in the context of behavioral research is the GxExN approach by A. Caspi and T. Moffitt (see Longino, 2013, pp. 93–99).

In what follows, I will mostly focus on theoretical integration and assess its possible shortcomings with regard to tracking complexity. Even though, ideally, theoretical integration should be just a first step leading to experimental integration, it often acquires a life of its own, especially in the cases when testing is difficult due to various reasons.

## Integration, accuracy, and epistemic value trade-offs

In this section, I would like to critique the implicit assumption regarding empirical accuracy of integrated theories which, I believe, informs the optimistic faith in integrative strategies. This assumption is closely linked to the idea of complexity which is part and parcel of discussions on integration: as the representation of complexity increases, accuracy is thought to increase with it. However, if we consider the evidential issues as well as the epistemic values involved in the production of integrated theories, it becomes clear that integrated theories can diverge from the value of accuracy in capturing complexity.

Evidential ambiguity of constituent theories. Most theorizations of integration treat singlefactor theories as insufficiently accurate because they ignore many relevant causal factors; this problem is thought to be remedied through integration. Other than that, problems of their accuracy are not in the focus of discussion and it seems to be assumed that theories or their parts which one would want to integrate are otherwise empirically solid. In practice, however, that may be too much to assume. Certainly, it is perfectly rational that we should refrain from the integration of theories which lack proper empirical grounding. However, we ought not overestimate our ability to discriminate between those theories which have this grounding and those which do not, at least in certain areas of science. For instance, Stegenga (2011) points to the existence of a large volume of diverse and conflicting evidence regarding many hypotheses in the medical and social fields a problem which, according to him, even meta-analyses are unable to settle. Similarly, in the study of sexual orientation many theories regarding its causal factors have been both confirmed and disconfirmed by existing studies (see Mbugua, 2015). While this should not deter us from trying to integrate these theories, we must be fully aware of potential evidential issues and set expectations accordingly. The result may turn out to be further removed from reality even if it represents more causal factors than a single theory does, simply because the constituent theories could be misidentifying those factors as significant.

Choice of constituent theories and epistemic values. Mitchell (2003) argues that pluralism at the level of theories eventually needs to be limited when we try to explain specific phenomena, since not all theories will be found to be relevant (p. 207). Thus, according to her, theories enter a situation of competition to be included in the correct integrated account. While this is certainly true, I would like to argue that the outcome of this competition may be underdetermined by available evidence, meaning that considerations other than accuracy may be at play. According to the underdetermination thesis, one and the same set of data often provides support for several scientific theories, which means that the choice between them, once they are made, is dictated by a whole range of criteria, including the so-called epistemic values. The well-known list of such values suggested by Kuhn (1977) provides possible guidance as to what these considerations may be: apart from accuracy, it includes simplicity, internal and external consistency, scope, and fruitfulness (pp. 321-322). The list is far from exhaustive, and other philosophers have proposed alternative lists (see Longino, 1995). Finally, there are also, as Kuhn already recognized, social and pragmatic considerations at play; I will outline their role in the post-"nature vs nurture" science later in the chapter.

All of these inform the choices that are routinely made as part of scientific practice. Even the best theories are reflections not only of the phenomena we investigate, but also of such epistemic and non-epistemic motivations, and in each particular case a varying trade-off between accuracy and other values can be involved (Kuhn, 1970, pp. 199–200). If single-factor theories are produced in this way, then integrated ones, I argue, are particularly prone to underdetermination due to their selective nature, as there are multiple choices to be made in the process of integration. One of these choices concerns the constituent theories of an integrated account, which will be selected not just on their own epistemic merits, but on the merits of the final integrated theory: in other words, constituents will be selected depending on whether their sum is consistent, fruitful and so on. It is likely that multiple epistemic values will be at work, and some of them, as Laudan (2004) has argued, neither pertain to accuracy directly nor are conducive to it.

Moreover, since integration of complete theories will often fail to satisfy the desired epistemic criteria (such as internal consistency) and is also superfluous for many purposes, the choice will move down to the level of parts or aspects of those theories. Brigandt (2010) has noted that it is often "smaller epistemic units" such as concepts or explanations, rather than whole theories, which are integrated (p. 308). Which aspect of a theory to include in an integrated account and which aspect to discard is, I would claim, a value-laden decision with a complex epistemic and pragmatic rationale behind it and, once again, not always guided by accuracy. Admittedly, in certain cases the application of certain epistemic values will result in a more accurate theory - for instance, when integration tracks consistency between those parts of different theories which overlap in their implications, revealing that there must be an actual aspect of the phenomenon that they all capture.<sup>2</sup> However, in some other cases this consistency may be established artificially, simply by discarding those parts of the theories that do not fit together or create tension. Thus, the choices that are made as part of producing an integrated account and the selective logic of integration are not always likely to result in a more accurate integrated theory, even if it appears to be more comprehensive.

<sup>&</sup>lt;sup>2</sup> For the role of consistency in integration, see Kronfeldner (forthcoming).

# Integration, simplicity, and breadth of scope

In the previous section, I argued that integrated theories are guided by epistemic values that trade off against accuracy in capturing the phenomena of interest; in this section, I examine what role such values may play if these phenomena are also thought to be complex. Specifically, I claim that two of them – simplicity and breadth of scope – may be at odds with capturing complexity by means of an integrated theory. Generally, the relation between epistemic values as properties of theories and complexity as a property of the world has not been sufficiently theorized. The most likely candidate for discussion from the Kuhnian list is simplicity, as it is the exact semantic opposite of complexity. Another epistemic value – breadth of scope – is not related to complexity in the same immediate way, but is also relevant to it.

*Simplicity*. On Kuhn's definition, the epistemic value of simplicity means bringing together disparate phenomena which would otherwise be isolated (Kuhn, 1977, p. 322). However, as the author himself recognized, epistemic values allow space for different interpretations, hence simplicity can be given meanings different from the Kuhnian one. In the discussions of integration, it has been customary to describe as "simple" those theories or models which involve only one causal factor of a given phenomenon or its particular property (Longino, 1995; Mitchell, 2003; Richerson & Boyd, 1987). Richerson and Boyd (1987) have contrasted simple models with complex ones which are marked by a greater degree of detail and realism but may be difficult to understand and analyze (p. 33). Conversely, then, simplicity means leaving out a great amount of detail which also has the benefit of making models or theories more tractable, or, quite literally, "simpler" to operate in scientific practice. In a similar vein, Longino (1995) has interpreted simplicity as ignoring the ontological heterogeneity of causal entities involved in the production

of phenomena: according to her, simple theories tend to include fewer causal factors in their ontology (p. 393).

Thus, theories are understood to possess simplicity if they disregard many of the relevant features of the phenomenon; in doing so, they effectively avoid complexity. From this, it seems to follow that any integrated multifactorial account cannot be simple by definition. However, I would like to argue that the problem cannot be understood in purely quantitative terms and that we also need to attend to the kind of relation such an integrated account posits between the causal factors, or causal entities. Longino (1995) has written that in order to capture complexity, it is important that the causal entities producing the phenomenon in question are treated in parity (p. 387).

On the one hand, one may argue that parity of causal factors cannot be a condition for capturing complexity: after all, such parity assumes that we have successfully answered the question of how much contribution each causal factor makes in the production of a trait – a question which, as we know, cannot be meaningfully answered (Keller, 2010; Lewontin, 1974). On the other hand, I would argue that the principle of causal parity may nonetheless serve as a precaution against those integrated theories which posit multiple causal entities, but grant priority to one of them as being more basic, fundamental or preceding in time. For instance, in the context of research on sexuality, which has long been a battleground for vicious "nature vs nurture" controversies, attempts at integration often turn out to be skewed in the direction of either biological (most often) or social factors, reflecting the same asymmetric thinking as the one which gave rise to the controversies in the first place. If single-factor theories are simple, then such integrated theories are also characterized by simplicity, even though the number of factors modeled in them is more than one. Thus, such integrated theories are not more likely to capture complexity

than single-factor theories because they are not significantly different from them in qualitative terms.

*Breadth of scope.* The epistemic value of breadth of scope characterizes a theory whose implications "extend far beyond the particular observations, laws, or subtheories it was initially designed to explain" (Kuhn, 1977, p. 322) or a theory which explains a range of phenomena by "one or very few basic principles" (Longino, 1995, p. 394). Just like simplicity, the epistemic value of breadth of scope can be at cross-purposes with capturing complexity by means of an integrated theory. While discovering complexity requires a close focus on a phenomenon of interest, theories characterized by breadth of scope posit general principles in order to apply to the largest range of phenomena possible. The aim of subsuming multiple phenomena under a single model or theory has been known in philosophy of science as unification and has been contrasted with integration (Mitchell, 2003; Plutynski, 2013), even though in practice, a theory can be pursuing both aims at the same time. The two aims, quite obviously, will be at odds with each other (Plutynski, 2013, p. 474). This is the case with integrated theories which, in providing a more multifactorial model, also attempt to cover more explanatory ground. Since theories marked by breadth of scope are meant to capture general principles, they will be less sensitive to the local contexts of distinct phenomena and are likely to miss important causal factors which are specific to them. In the context of research on sexual orientation this can take the form of using one integrated theory to jointly account for different sexual orientations rather than a specific one. Therefore, integrated theories with broad scopes will not be in a strong position to reflect the complexity of phenomena in question.

## Integration after "nature vs nurture": pragmatic aspects

Having examined some of the epistemic values that can affect integration, I would now like to highlight several pragmatic motivations pertinent to integrated theories specifically in the aftermath of "nature vs nurture" controversies. As the dichotomy that was the driving force behind the controversies gradually lost its bite, scientists and philosophers faced a new challenge: to show how it is not "nature" or "nurture", but both. Answers to this challenge take the form of integrating theories which were previously regarded as incommensurable due to their different (biological science or social science) disciplinary affiliation. Regardless of the specific content of those theories, the new consensus mandates that both biological and social research are integrated in a plausible account of trait development. I argue, however, that this general guiding principle still leaves space for integrated theories that fall short of revealing the causal complexity of respective phenomena.

First of all, such integrated accounts have a danger of collapsing into a sort of formalism, paying lip service to the "nature AND nurture" credo without a thoroughgoing vision of how it is that nature and nurture are involved at every step in the formation of a trait. In this case, rather than showing how biological and social factors work in tandem, the result of integration can be a superficial admixture of past findings from across the disciplinary spectrum. Moreover, it can be asymmetrical in giving priority to one or the other factor (as I discussed in the previous section), while still claiming to be an integrated account. In effect, this means that integration can harbor various forms of reductionism, even though it is meant to counter it. In the context of studying sexual orientation, where biological approaches have reigned, there is a special danger of biological reductionism in disguise, and it is naive to think we have exorcised all forms of it simply by declaring an integrative approach.

Secondly, integration after "nature vs nurture" often means that one has to draw a boundary between the biological and the social in the production of a phenomenon. Admittedly, this concerns not only integrated accounts; many biological theories indicate schematically what kind of role, if any, is attributed to social factors, and vice versa. However, in the context of integration the boundary problem becomes especially obvious. Since there is a lot of work on behavioral phenomena being done both within life science and social science, focusing on specific theories and approaches will at the same time mean ignoring most others. The plurality of theories on both sides means that there will be multiple possible ways to draw the boundary. This is another aspect of the underdetermination problem discussed earlier, and it has been noted before: Fuchsman (2009) points out that "any attempt at integration of disciplinary insights can meet an equally good but incompatible integration" (p. 78).

Finally, there is the question of what motivates the choice of theories to be integrated. On the one hand, the initial consistency between theories might be a factor because it makes integration easier and may be, although not necessarily, conducive to accuracy. For example, as I will show in the next chapter, the weak form of social constructivism is more amenable to integration with biological theories than the strong form. On the other hand, since researchers are often motivated by originality, unexpected and novel combinations will be pursued. In the context of "nature vs nurture" debates, this will often mean trying to integrate theories which are generally seen as being incommensurable or conflicting.

When that is the case, researchers may try to eliminate the source of tension by discarding certain aspects of the theories to be integrated. How much of a particular theory is sacrificed for the sake of better cohesion will reveal the imbalances and reductionist leanings I described above, and this is an important thing to consider when analyzing integration. In Chapter 3, I discuss an

attempt to bring together the evolutionary and social constructivist approaches to sexual orientation, showing that the resulting theory arbitrarily limits the historical relevance of constructivist theories. At the same time, the evolutionary theory has to "concede" very little, if anything, in the ostensibly integrated account. This demonstrates once again that integration in the post-"nature vs nurture" context can mirror the same asymmetries that gave rise to the acrimonious debates in the first place.

## Conclusion

In this chapter, I have considered the question of whether integrated scientific theories better capture the complexity of phenomena studied across the disciplinary spectrum, such as the phenomenon of sexual orientation. While many of the existing accounts of integration express what I call "integrationist optimism", I have argued that integrated theories are not necessarily in a better position to represent complex realities than single-factor theories. Specifically, I have claimed that integrated theories may suffer from evidential problems and that both epistemic and pragmatic considerations play a role in the process of integration. Importantly, the epistemic values of simplicity and breadth of scope may skew integration in the direction away from complexity. Moreover, integration has its own selective logic which is not necessarily conducive to accuracy: some aspects of a theory will be discarded simply because they do not fit in the integrative frame.

In objection to the view which I presented here, one could argue that failed integrative theories exhibit all the flaws of single-factor theories, and that, if done properly, integration will indeed enable us to better grasp the complexity of phenomena we are interested in. However, even if integration is done with the best of intentions, there is no guarantee that the output will bring us closer, rather than further away, from the complex reality of the world. Integration is indeed valuable insofar as it brings together scattered fragments of knowledge, but many of its forms will

fall short of getting closer to the desired ideal of capturing complexity. Rather than focusing exclusively on the advantages of integration, we need to attend critically to the actual integrated accounts being produced; this will be my aim in the following chapters.

# Chapter 2: Research on Sexual Orientation: Social Constructivist, Evolutionary and Developmental Systems Approaches

### Introduction

The study of sexual orientation has traditionally been divided between multiple research programs and approaches, some of which fall on the life science side, some on the social science side, and some already presenting an integrative approach (such as developmental systems theory). In this chapter, I outline three major approaches in the research on sexual orientation – namely, the social constructivist, the evolutionary, and the developmental systems approach – in order to set the stage for further analysis of integrated accounts informed by them. I roughly group them into historical and ontogenetic approaches, although it will become clear that the former also make claims about sexual ontogeny, while the latter draw upon historical insights.

I examine whether these approaches allow for causal parity between biological and social factors in the formation of sexual orientation. Such causal parity, as I discussed in Chapter 1, is opposed to simplicity and plays an important role if an account is aimed at capturing the complexity of a studied phenomenon. Moreover, this chapter addresses the problem of evidence and underdetermination in the social constructivist, evolutionary and developmental systems studies of sexual orientation.

#### Historical approaches to the study of sexual orientation

# The social constructivist approach

Social constructivism (see Davidson, 2001; Foucault, 1980; Hacking, 1986, 1995; Halperin, 2002) is a historical approach to the study of sexuality with a special, albeit not exclusive, focus on the period of modernity. This period is believed by scholars to be a crucial turning point in the

appearance of our present-day understanding of sexuality, including the concept of sexual orientation. As Halperin (2002) argues, "heterosexual" and "homosexual" are distinctly modern categories which we tend to forget when we make the faulty assumption that sexual orientations as we know them now existed at all time (p. 3).

Even though social constructivism has often been reduced to a single vague proposition of the kind "homosexuality did not exist until period X" (the presumed time of its origin being anywhere between early modernity and 19<sup>th</sup> century), it is in fact a rather heterogeneous approach which comes in at least several forms. What unites these forms is the attention to historical and cultural variability of sexuality; the differences between the forms depend on where they locate the source of such observed variability. Halwani (1998) has suggested that social constructivism can be understood "as a thesis about language, or about epistemology, or about ontology" (p. 25). I expand on this to offer a broader classification of how social constructivism of sexuality can be interpreted, namely as a theory about discourse and representation; scientific epistemology; sexual *identity*; *sexual ontogeny*; and *modern sexuality*. Furthermore, these forms of constructivism can be divided into weak and strong based on whether they support causal parity of biological and social factors in the production of sexual orientation, understood as a disposition to engage in sexual acts with a certain category or categories of people.<sup>3</sup> I will regard as weak those forms which, directly or indirectly, allow for the view that sexual orientation can be reduced to a single biological cause, with everything else being merely a "cultural addition". Due to this, weak social constructivism has often served as a handmaiden to biological reductionist accounts of sexual orientation. Conversely, the form of social constructivism which claims a causal role for sociocultural factors alongside biological ones will be referred to as strong constructivism.

<sup>&</sup>lt;sup>3</sup> Other criteria have also been used to classify social constructivism into weak and strong, see Kitzinger (1995) and Weinrich (1992).

# Weak social constructivism

Weak social constructivism attributes the observed variability in human sexual orientations across cultures primarily to the different modes of their representation. As an account of *discourse*, social constructivism notes historical differences in how different orientations are described and talked about but does not directly claim that these reflect any fundamental ontological differences (e.g. that the modern homosexuality is ontologically distinct from pre-modern "sodomy"). This form of social constructivism has often been attributed to Michel Foucault, although Halperin (2002) has argued against such an interpretation which, according to him, perpetuates an outworn distinction between discourse and reality and fails to do justice to the Foucauldian "radically holistic approach" (p. 9). Since this form of constructivism addresses historical issues at the level of discourse rather than the question of causal factors in the development of sexual orientation itself, it can easily become part of an integrated account which does not support causal parity, as there is nothing in it to directly contradict biological reductionism.

As an account of *scientific epistemology*, social constructivism addresses the homo/heterosexual distinction and claims that these categories fail to reflect actual human kinds, being just an arbitrary way modern science has classified people (Stein, 1999, p. 71). This form of social constructivism could also be characterized as eliminativism (similarly to eliminativism about race concepts, for instance). Those espousing an eliminativist stance towards the homo/heterosexual distinction need to make some sort of an ontological claim to support the argument for elimination. For instance, someone working from within this framework might argue that humans are "by nature" bisexual or "fluid", with hetero- and homosexuality being just a scientific invention on top of this fundamental biological reality. Such a claim would be potentially compatible with a belief in transhistorical, culture-independent, biological forms of sexual

orientation (although hetero- and homosexuality would not be among them). Due to this, it can be used in accounts that do not support causal parity, reducing the studied phenomenon to a biological cause.

Connected to the previous form is the variety of social constructivism that deals with *sexual identity*. Since modern science established sexual orientations as a fundamental divide between people, it effectively made "heterosexual" and "homosexual" into identity categories (Hacking, 1986). Hacking (1995) is known for introducing the concept of "looping effects" to argue that these recently coined social categories, once they were applied to real people, came to structure their self-understanding and subjectivity in important ways. However, there is little in his work that would claim a causal role for these social categories with regard to sexual orientations themselves. Indeed, one could argue for an exclusively biological cause of sexual orientation while still believing in the identity-forming role of categories such as "heterosexual" and "homosexual". Therefore, just like the previous two forms, this form of constructivism can enter integrated theories that are heavily skewed in the direction of biological factors.

#### Strong social constructivism

More radically than the weak constructivism outlined above, social constructivism in its strong forms argues that the different representation of human sexual orientations across history reflects a more fundamental ontological difference that has to do with the culture-specific factors at play in each particular case. Such culture-specific factors are believed to have a causal role with regard to sexual orientation on a par with biological factors. Social constructivism as an account of *sexual ontogeny* claims that the culture one is born into always makes a causal contribution to the formation of one's sexual orientation; moreover, such cultural causal contributions cannot be easily disentangled from biological ones (Halperin, 2002). Even though social constructivists

recognize not only discontinuities, but also overlaps between human sexualities in different cultures,<sup>4</sup> they do not believe that these overlaps point to an exclusively biological cause for a sexual orientation like homosexuality. Thus, this form of social constructivism supports causal parity of biological and social factors.

As an account of *modern sexuality*, social constructivism traces the emergence of a uniquely modern order of understanding, experiencing and controlling the human body (Foucault, 1980). This order is an integral part of what Foucault has termed "biopolitics" – the increasing scientific preoccupation of the modern state with the bodies of its citizens which has led to differential "implantation" of sexual orientations (Foucault, 1980). On this constructivist view, using the categories "heterosexual" or "homosexual" as if they refer to transhistorical human phenomena is an anachronism, as the phenomena they denote are deeply embedded in modernity and are only possible in the context of modern biopolitics. In arguing for such a great role of state institutions in the production of modern sexual orientations, this form of constructivism also supports causal parity of biological and social factors.

#### Strong or weak social constructivism? Evidential issues and underdetermination

Both strong and weak forms of constructivism can become part of integrated accounts which attempt to explain specific sexual phenomena, such as homosexuality. In the study of homosexuality specifically, the choice between strong and weak constructivism often takes the form of the question "Did homosexuality exist before modernity?" If each historical period *shapes* human sexual orientations differently, then homosexuality did not, strictly speaking, exist before modernity (or so a strong constructivist would claim). If, however, cultures only *represent* sexual orientations differently (on a weak constructivist view), then the question can be answered

<sup>&</sup>lt;sup>4</sup> For a comparison chart, see Halperin (2002, p. 135).

positively. Given both the similarities and the disparities in observed sexual phenomena throughout history, an attempt to produce a history of sexuality eventually runs into the philosophical conundrum of identity and difference (Halperin, 2002, p. 105). Since the primary method of social constructivism is analysis of various historical sources (including literary ones), it is insufficient to determine whether, for instance, the sexual orientations of the Ancient Greek *kinaidos* (see Halperin, 2002, pp. 32–33) and of the modern homosexual are both representationally and ontologically different or only representationally different.

Since historical science has no way of gaining direct empirical access to the studied phenomena, some scholars have acknowledged that the problem does not lend itself to a solution (Fausto-Sterling, 2000, pp. 15–16). Halwani (1998) has argued that there is no way to solve it by relying on historical or anthropological data alone (p. 46). In other words, the reason why the conundrum cannot be resolved via purely empirical considerations is that the choice between weak and strong constructivism remains underdetermined by the available body of evidence. This means that the selection of either form, whenever it is made, will be dictated by epistemic values other than empirical accuracy.

#### The evolutionary approach

The evolutionary study of sexual orientation is another historical approach which has focused on the explanation of homosexuality. Given the fact that homosexuals reproduce far less than heterosexuals or do not reproduce at all, the approach has set out to explain why the genetic basis for it (often conceptualized as the "gay gene") stays in the gene pool and has not been weeded out of the population (Mbugua, 2015, p. 32). This has often been referred to as the "Darwinian paradox" of homosexuality, and it led scholars to postulate hypotheses concerning evolutionary mechanisms of how the "gay gene" and the respective behavior are carried on over generations. The most notable among these include the so-called kin selection hypothesis, the balanced superior heterozygotic fitness hypothesis, and the alliance formation hypothesis. All of them treat homosexuality as having indirect adaptive value and thus capable of being reproduced from one generation to the next. They also give priority to the biological (genetic) factors in the production of the phenomenon, thus departing from causal parity of biological and sociocultural influences.

#### Kin selection hypothesis

The kin selection hypothesis of homosexuality, put forward by Wilson (1978), is meant to elucidate how homosexual individuals can ensure their reproductive success indirectly without having offspring themselves. According to the idea of kin selection (also termed "inclusive fitness"), one can achieve representation of one's DNA by helping those with similar DNA reproduce (Godfrey-Smith, 2009, p. 115). This especially concerns siblings which are known to share, on average, 50% of their DNA: by assisting in the reproduction of your siblings, you help a substantial portion of your DNA to be passed on to the next generation. Wilson (1978) has argued that the genetic basis for homosexuality could be propagated if homosexual members of ancestral societies, having no parenting responsibilities of their own, proved efficient in helping their close relatives, whose higher survival and reproduction rates would aid representation of the homosexual's own DNA, including the components directly linked to his sexuality (pp. 144-145). In this way, according to the author, there would always remain a homosexual minority in the population (p. 145). Despite the attractiveness of the hypothesis, it has been contested as later studies found no correlation between homosexual orientation in men and inclination to provide for close family members or assist them in any significant way (Bobrow & Bailey, 2001; Rahman & Hull, 2005).

# Balanced superior heterozygotic fitness hypothesis

The balanced superior heterozygotic fitness hypothesis also postulates that homosexuality could be adaptive. According to this hypothesis, originally put forward by Hutchinson in 1959, the gene could confer a selective advantage upon its carrier, but only when present in one copy (Mbugua, 2015, p. 32). An individual carrying two copies of the same gene is considered homozygous for that gene, and an individual carrying only one copy is heterozygous for it. Thus, on this account, being homozygous for the "gay gene" makes one a homosexual and is therefore not adaptive, whereas being heterozygous for it can be evolutionarily beneficial for the carrier (Mbugua, 2015, p. 32). Different suggestions have been put forward as to why possessing one copy of the "gay gene" might be advantageous, focusing on its role in men. For instance, it could strengthen the straight man's sex drive or give him a sperm fertility advantage, and thus make him a more successful heterosexual (McKnight, 1997, pp. 77–98). However, these accounts are based on several problematic assumptions, including the belief that homosexuality has its roots in a single gene with two alleles, whereas it is far more likely that the trait is polygenic (McKnight, 1997, p. 81).

#### Alliance formation hypothesis

The most recent hypothesis that has been put forward in this area is known as the alliance formation hypothesis, meant to explain homosexuality in both men and women (Kirkpatrick, 2000; Muscarella, 1999, 2000). An important feature of this hypothesis is that its authors have changed the explanandum from homosexuality, thought of as an orientation, to same-sex (homosexual, homoerotic) behavior regardless of self-identified orientation.<sup>5</sup> The rationale for this conceptual shift is provided by 1) the often observed discrepancy between sexual acts and self-identification,

<sup>&</sup>lt;sup>5</sup> Chapter 3 provides a closer analysis of this change which can be conceptualized as reconstituting phenomena.

creating problems when analyzing data; 2) the confusion in the literature created by a differentiation between "true" and "facultative" homosexuality; 3) the supposed ease of cross-cultural and cross-species comparisons in the case of acts, but not in the case of orientations (Kirkpatrick, 2000, p. 389). The shift is also prompted by the assumption that sexual behavior is more easily explained by an evolutionary cause than sexual orientation. The authors include in the evidence instances of same-sex sexual behavior regardless of whether they are reported by self-identified heterosexuals, bisexuals or homosexuals; cross-cultural data from anthropological research as well as studies of non-human primates are used to back up the hypothesis.

The alliance formation hypothesis sees the evolutionary benefit of same-sex sexual behavior in promoting alliances between members in a group, especially those who are marginalized by it (e.g. adolescents). Such alliances are capable to raise, at least temporarily, an individual's status within a group and in thus increase her/his survival and reproduction rate (Kirkpatrick, 2000; Muscarella, 2000). Kirkpatrick acknowledges that such alliances do not necessarily require a sexual component, but points to anthropological evidence to demonstrate that lasting social bonds between members of the same sex, especially in the situation of competition, often do involve sexual interaction (p. 396). Muscarella discusses the same-sex sexual behavior in non-human primates as providing support for the hypothesis, arguing that such animal behavior is similarly linked to the elevation of social status within the group (e.g. in female rhesus monkeys, p. 57). Both authors see the observed similarity between human and primate sexual behavior as a strong point of their hypothesis; however, Kirkpatrick is more cautious, allowing that "the interplay of biological propensities toward particular sexual desires with societal influences toward particular sexual practices <...> may well lead to areas that are distinctly human" (p. 398).

Compared to other adaptationist hypotheses, the alliance formation hypothesis is in the best position to posit parity between the biological and social factors: for instance, Mbugua (2015, p. 38) sees this hypothesis as an important step towards a balanced integrated account. Still, insofar as the scholars defending this hypothesis see much of same-sex sexual behavior in humans as analogous to that of animals, they believe in an underlying biological (genetic) cause for homosexual behavior that is more fundamental than the sociocultural causes. While they recognize the importance of the latter, their role is seen as altering the "manifestation" or "expression" of an evolved sexual behavior (Muscarella, 2000, p. 67), which is not the same as positing parity between biological and social factors in the production of the behavior itself.

## Adaptationist hypotheses, evidential support and underdetermination

Just like various forms of social constructivism, evolutionary adaptationist hypotheses regarding sexual phenomena compete against each other for inclusion in integrated accounts. Since we have little epistemic access to the ancestral environments involved in the formation of adaptations, the limited data that are available can be used to support multiple adaptationist hypotheses, as well as non-adaptationist ones. As evolutionary hypotheses are difficult to test, researchers will be hard pressed to prove that the one they have chosen deserves most credence. Thus, major hypotheses regarding the evolutionary origins of sexual orientation are subject to the problem of underdetermination, with the consequence that none of them can be conclusively ruled out (Kirkpatrick, 2000, p. 398).<sup>6</sup> Admittedly, this problem is not unique to evolutionary research, as some have argued it is strongly present in historical science as a whole, more so than in experimental science (Turner, 2005). As both social constructivist and evolutionary approaches

<sup>&</sup>lt;sup>6</sup> The author refers to three evolutionary hypotheses: kin selection, parental manipulation (not discussed in this thesis), and alliance formation hypotheses; however, this also applies to the balanced superior heterozygotic fitness hypothesis which he does not address.

are historical, they are likely to run into the underdetermination problems specific to this area of inquiry.

#### Ontogenetic approaches to the study of sexual orientation

## **Developmental systems theory**

Finally, I will provide a brief outline of one ontogenetic approach to the study of sexual orientation, namely developmental systems theory (DST). Unlike many other approaches, DST already is an integrative framework, arising as a reaction to the divisions produced by the "nature vs nurture" type of thinking. Even though DST articulates several guidelines that can be useful in the process of integration, including causal parity (Griffiths & Knight, 1998), it does not offer a blueprint for carrying it out. This means that very different integrated accounts can be produced under its heading and that, consequently, DST can face many of the same problems as integration in general.

DST in life sciences has arisen as an attempt to understand complex processes of development in living organisms. It rejects the traditional dichotomous thinking in terms of either "nature" or "nurture" (Oyama, Griffiths, & Gray, 2003, p. 1) in favor of accounts that integrate both biological and social factors. DST treats individuals as continuously forming systems which draw on multiple resources in the process of formation – including, but not limited to, genes, cellular machinery, uterine environment, and social environment. It is important that phenomena arising during this process are regarded as contingent on the factor interaction (Oyama et al., 2003, p. 2) and not prefigured by any underlying factor alone (which counters biological or any other kind of reductionism). Griffiths & Tabery (2013) see the objective of DST as providing dynamic mechanistic explanations in which "phenomena to be explained are not the immediate consequence of the arrangements of components but emerge from the dynamic operation of the mechanism" (p. 90). Thus, one of the most important declared principles of DST is attention to

causal complexity of the studied phenomena and dynamic feedbacks involved in their formation. This means that DST is in a good position to produce theories characterized by causal parity of biological and social factors, if the principle is consistently observed.

There has been some intriguing research on sexual orientation done more recently under the banner of DST. Such is the "Exotic Becomes Erotic" theory (Bem, 1996) of sexual orientation (examined in Chapter 4 of this thesis) as well as the developmental work on gender and sexuality by Fausto-Sterling (2000, 2012). While research in most other traditions has focused on explaining homosexuality as a trait, both Bem and Fausto-Sterling aim to account for trait differences, namely – how is it that individuals come to diverge on characteristics as salient as sexual orientation and gender behavior? What is crucial here is the departure from the long-standing tradition of treating heterosexuality as self-explanatory: both scholars focus on the complex developmental paths leading toward a homosexual OR heterosexual orientation. At the same time, extending the scope of a theory to apply to different orientations rather than a specific one (such as homosexuality) can result in failing to capture important aspects of specific sexual orientations.

Another important feature of DST work in the area of sexual orientation research is that, despite pursuing an ontogenetic approach, the DST scholars mentioned above also take seriously the historical insights of social constructivism. They display awareness that the phenomena they study are historically contingent and specific to modern culture with its emphasis on gender and gender-based sexual orientations. Fausto-Sterling (2000, 2012) examines the way contemporary society instills gender norms in individuals from the early stages of their development, and makes an emphasis on the plasticity making individuals highly susceptible to learning and "embodying" social constructions of gender and sexuality. Bem (1996) pays less attention to causal complexity

involved in gender behavior but also attributes an important role to gender norms in the formation of sexual orientation.

The DST approach is of particular interest in the context of integration: given the aims it pursues, it can act as a laboratory for testing out various integrated models of complex human behavioral phenomena. However, this depends on whether DST researchers opt for the theoretical integration or experimental integration (I offered this distinction in Chapter 1). So far, as Longino (2013) has pointed out, "there are no human studies conducted explicitly using the developmental systems approach" (p. 89). This means that scholars in the DST research program choose the path of theoretical integration instead, relying on findings obtained by other research programs, both biological and social. In doing so, they expose their work to the problems of evidential support and underdetermination in the single-factor theories they integrate. These problems will have a various degree depending on whether they have been produced within historical or experimental science.

#### Conclusion

In this chapter, I have provided an overview of three major approaches to the study of sexual orientation, such as the social constructivist, the evolutionary, and the developmental systems approach. I have shown the first two approaches to be internally heterogeneous in various ways – while social constructivism comes in at least two forms (weak and strong), evolutionary biology has offered several competing hypotheses of homosexuality. I argued that in both cases, the choice of the form/hypothesis is underdetermined by evidence, which I will return to when discussing integrated accounts containing elements of these two theories. I also showed that the different forms/hypotheses show different support for causal parity of biological and social factors – some of them can be used to insist on a single cause (deemed most fundamental), which has implications

for capturing complexity. Finally, I have examined the developmental systems approach, which is different from the rest due to its integrative nature. I argued that this approach may offer interesting insights on integration, but in practice is likely to be subject to the same problems as integration more generally. I suggested that DST may fare better if it opts for experimental integration rather than theoretical integration.

#### Chapter 3: Is "Evolutionary Social Constructivism" of Homosexuality Tenable?

### Introduction

In Chapter 2 of the thesis, I have outlined several approaches and theories aimed at explaining homosexuality. In this chapter, I examine the possibility of integrating two of them – evolutionary and social constructivist theories. Even though the respective approaches have been seen as working at cross-purposes (DeLamater & Hyde, 1998), more recently it has been suggested that evolutionary and social constructivist explanations of homosexuality can be integrated into a single account (Adriaens & De Block, 2006; McManus, 2012). This is one of the recent attempts to establish integrative links between evolutionary theory and social constructivist theory (see also Wilson, 2005).

In what follows, I focus on the "evolutionary social constructivism" of homosexuality, proposed by Adriaens and De Block (2006), which brings together the alliance formation hypothesis of homosexuality and a weak form of social constructivism. The authors argue that differentiation between evolved non-exclusive same-sex sexual behavior and socially constructed exclusive homosexuality can help us reconcile the two approaches. I show that the proposal, which goes some way towards this goal, relies on what has been known as reconstituting phenomena – modifying the explanandum so as to make it more tractable for research (Bechtel & Richardson, 1993; Kronfeldner, 2015). I examine whether such "integration via reconstituting" fares well with regard to issues discussed in Chapter 1 – evidential support and accuracy, as well as parity of causal factors.

## "Evolutionary social constructivism" of homosexuality and its possible advantages

Recently, Adriaens and De Block (2006) have articulated an intriguing proposal meant to settle the evolutionary-social constructivist debate on homosexuality. The authors integrate the alliance formation hypothesis of male homosexuality (discussed in Chapter 2) with a weak form of social constructivism and suggest that the two can complement each other if we differentiate between evolved same-sex sexual behavior and the modern phenomenon of homosexuality. The criterion they use for this differentiation is one of exclusivity: the evolved same-sex sexual behavior is, according to them, non-exclusive and can co-occur with other-sex sexual behavior (which ensures reproduction and makes it possible for the "gay gene" to stay in the gene pool). In contrast to this, homosexuality involves exclusive sexual contact with people of the same gender and is a recent cultural invention, an identity. The authors claim that the adaptation of non-exclusive sexual behavior is activated by adverse sociohistorical circumstances, leading one to seek means to strengthen one's status within social hierarchy. In this vein, they explain the origin of homosexuality in the 18<sup>th</sup> century by "collapse of the traditional family", "increasing population density" and "lack of social coherence" (p. 581) which triggered the adaptation, albeit in a more exclusive form.<sup>7</sup> This was, according to the authors, reflected in the newly formed type of homosexual identity which a number of people came to espouse (p. 575).

The authors claim that the integration simultaneously addresses two important problems in the field of homosexuality research. The first problem concerns the "Darwinian paradox" of homosexuality which I described in Chapter 2. The core claim of the proposal – that same-sex sexual behavior throughout history was largely non-exclusive – helps avoid this problem, as people with an inclination for such behavior could also enter heterosexual marriage and reproduce (Adriaens & De Block, 2006, p. 584). This claim is externally consistent with other hypotheses in recent evolutionary research which regard same-sex sexual behavior as adaptive. It could be

<sup>&</sup>lt;sup>7</sup> In a different article (De Block & Adriaens, 2004), the authors rely on the Freudian framework to hypothesize that the "psychic mechanisms of identification and repression" (p. 60) may be responsible for the turn to exclusive homosexuality.

regarded as a benefit of the proposal, although admittedly, it stems not from its integrative character, but from the choice of alliance formation hypothesis as a constituent. That is, the alliance formation hypothesis alone resolves the Darwinian paradox even without integration as it already emphasizes non-exclusivity of same-sex sexual behavior (Kirkpatrick, 2000; Muscarella, 2000).

The second issue that the "evolutionary social constructivism" helps to settle, according to Adriaens and De Block (2006), is the conflict between evolutionary research and social constructivism regarding the phenomenon of homosexuality which the former interprets as a "biological given", while the latter – as a "contingent product of social and psychological interaction" (p. 571). Their integrated theory offers what seems like an elegant way of avoiding this tension, suggesting that homosexuality proper is a contingent cultural phenomenon, but the biological basis for it – the propensity for same-sex sexual behavior – has evolved and is part of our biology. In this way, the proposal steers clear of a major point of contention as it avoids treating homosexuality as a transhistorical phenomenon (which is something social constructivists, especially those in the strong camp, have made the target of their critique), but leaves evolutionists with another transhistorical phenomenon that they can study (same-sex sexual behavior). This, indeed, could be considered an added benefit of the integrated theory insofar as it locates and attempts to eliminate the source of conflict between the two approaches.

# Reconstituting the phenomenon "homosexuality"

Traditionally, research programs in the field of sexual orientation research have focused on a single explanandum, namely the phenomenon of homosexuality. The integrative proposal by Adriaens and De Block (2006) suggests that this explanandum should be split into two: non-exclusive same-sex sexual behavior and exclusive homosexual orientation, each corresponding to its own research program (evolutionary biology and social constructivism, respectively). This, as we have already

seen, is suggested by the recent evolutionary research: for instance, Muscarella (2000, p. 67) has argued that same-sex sexual behavior can be studied irrespective of sexual orientations.

The conceptual split – distinguishing between sexual behavior and sexual orientation – results, I would argue, from application of the strategy which philosophers of science have termed "reconstituting phenomena" (Bechtel & Richardson, 1993; Kronfeldner, 2015). Such reconstituting, according to Kronfeldner (2015), can involve moving down to more proximate effects of specific factors, so that a one-to-one causal relation can be established (p. 171). Reconstituting is related to decomposition discussed in Chapter 1, with the difference that it amounts to a reconceptualization of the studied phenomenon (Bechtel & Richardson, 1993, p. 194). The transition from sexual orientation to sexual behavior is an example of reconstituting, since the resulting explananda are thought to be effects of different causal factors – while same-sex sexual behavior is biological in its origin, homosexuality is sociocultural (or so the theory goes).

It is important to see where the motivation for reconstituting comes from. Undoubtedly, it is influenced by social constructivist intuitions about behavioral phenomena as we know them (sexual orientations, in this case) and whether or not our ideas correspond to any underlying biological reality. When dealing with controversial cases, an epistemological social constructivist will be inclined to say that our concepts do not "carve the nature at its joints" and should therefore modified/reconstituted be (in this case. that sexual orientation categories like homosexuality/heterosexuality fail to reflect any fundamental "nature"). This seems like a perfectly legitimate move if we consider the context of medical and psychiatric history: some presumed disorders (such as hysteria in women) were subsequently shown to be a product of ideological and cultural forces, rather than genuine bodily conditions. As homosexuality was

initially thought to be a disorder, a deviation from the medical norm (indeed, its history is that of heavy medicalization), it is no wonder that the category likewise came under suspicion. A constructivist may argue that the category of homosexuality was invented when modern states sought to tighten the grip of control on the bodies of their subjects and enlisted the help of science in order to achieve this. Some people then, for whatever reason, applied the category to their own experience, embracing a homosexual identity. Indeed, Adriaens and De Block (2006) seem to share this constructivist set of ideas (p. 575).

However, quite paradoxically, by relying on this form of weak epistemological/identity constructivism, the authors end up with an ontological commitment of sorts, as the burden of proof is now on them to spell out what the underlying biological reality is and why categories other than homosexuality capture that reality more adequately. More specifically in terms of the proposal by Adriaens and De Block (2006), there will be a need to show that all people indeed have biologically evolved to have the ability for both same-sex and other-sex sexual behavior. Kirkpatrick (2000) has referred to this ability as "bisexual potential" (p. 398) and the authors themselves, in an earlier article, – as "sexual ambivalence" (De Block & Adriaens, 2004). In what follows, I will examine whether there is sufficient evidence of this ability, as well as other issues pertaining to the proposal's accuracy.

#### Accuracy of the integrated account: underdetermination and evidential issues

As I discussed in Chapter 1, the most basic problem that may affect accuracy of an integrated theory is evidential ambiguity of its constituents. Let us examine whether this is indeed the case with the two theories Adriaens and De Block (2006) attempt to integrate. The first constituent – alliance formation hypothesis – is one of the existing evolutionary adaptationist hypotheses regarding same-sex sexuality. As such, it relies on multiple claims, some shared with other

hypotheses of this kind and some of its own. The most important shared claim is that having a "gene" for same-sex sexual behavior is directly adaptive and not, for instance, a "spandrel"- type byproduct of evolution. This assertion has not been put to any rigorous testing and is more like a clever way to circumvent the Darwinian paradox than an empirically solid claim. Indeed, in their earlier paper (De Block & Adriaens, 2004, p. 69) the authors recognize the limitations inherent in adaptationist explanations with regard to evidential support.

The most important claim specific to alliance formation hypothesis is that people have the evolved ability for both same-sex and other-sex sexual behavior. The evidence that is used to back up this claim is that exclusive sexual contact with members of the same gender has been rare throughout most of human history (Muscarella, 2000, p. 59). However, this is not sufficient to establish that those who exhibited such non-exclusive sexual behavior did so due to an evolved "bisexual potential": indeed, they could have a propensity toward same-sex sexual behavior only but exhibit non-exclusivity under societal pressure to form heterosexual bonds. In other words, the historical evidence does not rule out the existence of exclusive same-sex sexual behavior as a transhistorical biological phenomenon. If we are to claim that such transhistorical sexual behavior and exclusive other-sex sexual behavior is underdetermined by the available evidence. This is why we cannot make a final choice between, say, the alliance formation hypothesis and the kin selection hypothesis, the latter allowing for the existence of transhistorical biological exclusive homosexuality.

The choice of the second constituent theory – a form of weak social constructivism – does not solve the problem either. Indeed, opting for weak social constructivism is motivated by the fact that the authors would like to attribute human sexual behavior solely, or mostly, to evolutionary factors. The environment, in their integrated account, is only a "trigger" for the evolutionary adaptation of same-sex sexual behavior. This is hardly consistent with a strong form of constructivism which would argue for a greater role of culture and culture-specific sexual practices in the formation of sexual behaviors. Therefore, the choice of weak constructivism, even though it is underdetermined by evidence (as I showed in Chapter 2), is the only one possible in this case if the integrated theory is to respect the epistemic value of internal consistency. However, this choice perpetuates, rather than solves, the underdetermination problem, as weak constructivism also does not have the resources to conclusively establish that all humans are by their evolutionary nature characterized by "bisexual potential" rather than exclusivity.

Another problem is that the integrated theory seems to suggest that being bisexual is the most direct and "natural" form of human sexuality. In other words, whenever we observe people engaging both in same-sex and other-sex sexual behavior, this needs little explanation other than invoking the biological adaptiveness of both types of behavior. When we do not observe it (such as in the case of exclusive homosexuality), additional social factors are called upon, such as the rise of identity categories which make people "deviate" from their evolved nature. On this model, social factors can only alter the expression of "bisexual potential" but do not directly contribute to it. This idea, apart from lacking unequivocal evidential support, can also be seen as significantly downplaying the causal complexity involved. In the next section, I will examine whether this is indeed the case.

# Epistemic value of simplicity vs causal complexity

Since the "evolutionary social constructivism" offered by Adriaens and De Block (2006), as I have shown, relies on reconstituting of the phenomenon to be explained, this needs to be taken into account in analyzing whether it can accommodate causal complexity or whether it leans towards the simplicity of single-factor models. As reconstituting breaks a phenomenon down into parts/subphenomena which are to be explained by their own causes, by joining these parts together we have a chance to map out a multifactor model of the initial phenomenon, with different causal factors responsible for its different parts/aspects.

In the analyzed case, the initial phenomenon is homosexuality, and it is broken down into its biological aspect (evolved non-exclusive propensity for same-sex sexual behavior) and sociocultural aspect (exclusivity), so in the end the phenomenon of homosexuality can be said to be represented in a multifactorial fashion as both biological and sociocultural. However, if we attend more closely to the logic of this integrated account, the multifactoriality turns out to be superficial as the authors explain even the turn to exclusivity by the same evolutionary cause. For them, the conditions that gave rise to exclusive homosexuality "were not substantively different from the conditions that once led to the evolution of same-sex sexual behavior" (Adriaens & De Block, 2006, p. 580). One could object that this is nonetheless a multifactorial theory as it invokes the modern social conditions which triggered the adaptation. In this case, every adaptationist explanation is to an extent multifactorial, as it posits a certain type of environment with regard to which a trait is adaptive. However, the purpose of the integration was to go beyond what is already contained in evolutionary explanations and to offer a more comprehensive theory with additional social constructivist input.

As I argued in Chapter 1, in order to say how an integrated account fares with regard to causal complexity, one needs to attend to the relation it posits between the different factors and see whether it is a relation of parity. What is the relation between the evolutionary biological factors and the sociocultural factors in this account? With regard to homosexuality per se, it is far from parity because sociocultural factors are given very limited causal agency in its formation; their role is primarily that of creating sexual identities, which is not the same. Due to this, I would claim that the theory approximates the standard evolutionary adaptationist approach and does not deviate much from it. If single-factor theories are simple, as philosophy of science has characterized them, then this account is also to a significant extent characterized by simplicity. Moreover, the choice of weak constructivism over strong constructivism helps promote this simplicity (while a strong form would introduce more complexity).

Such simplicity is especially evident if we consider the other one of the two phenomena resulting from reconstituting, namely same-sex sexual behavior in the epochs preceding modernity. From the account, it follows that social factors had very little influence on the development of this behavior, apart from triggering the adaptation. If modernity at least made a slight difference in terms of producing identities, before it nothing was happening in the sociocultural sense that could make such a difference (or so the reasoning goes). The account posits the turn of the 18<sup>th</sup> century as a temporal dividing line, resulting in two unequal stretches of history: from the beginning of humankind until 1700, during which sexual behavior was supposedly non-exclusive and "natural" (it is this type of behavior that evolved), and from 1700 until now, when it became exclusive and subject to identity formation factors.

One may ask why the 18<sup>th</sup> century has been chosen as the turning point, and the reason, once again, is not that we have conclusive evidence for drawing the line in this particular way. One of the more plausible reasons, I would argue, is that social constructivism has been most vocal about modern history of sexuality, which is why the integrated account introduces constructivism into the explanatory picture in the case of modern sexuality, but not in the case of other historical periods. However, as I noted in Chapter 2, social constructivist research has never been limited to modernity only. Moreover, if Adriaens and De Block turned to social constructivist work regarding

other epochs, they would encounter some findings that are inconsistent with the alliance formation hypothesis. For instance, Halperin (2002) has described homosexual contact in pre-modern Europe in the following way: "This is sex as hierarchy, not mutuality, sex as done to someone by someone else ..." (p. 115). This would pose a challenge for the idea of alliance formation based on relations of equality and mutual aid. However, the authors choose to focus on a single aspect of social constructivist theory (the work on modernity), discarding all the rest for the sake of internal consistency and simplicity of the account. Such a strategy can undoubtedly weaken a theory of a complex historical phenomenon like sexual orientation.

## Conclusion

In this chapter, I have examined an integrative proposal by Adriaens and De Block (2006) which brings together the alliance formation hypothesis of same-sex sexual behavior and social constructivism. This proposal, as I have shown, utilizes the strategy of reconstituting phenomena in order to settle the controversy between the approaches, as well as to facilitate further evolutionary research. While the account has its advantages, it may fall short of accurately representing the phenomenon due to the evidential issues and underdetermination involved in the constituent theories chosen for integration (such as opting for a weak form of constructivism instead of a strong one). Admittedly, testing and broadening the range of evidence would be required to claim that this account is false; so far, we can only say that its status is ambiguous. With regard to causal complexity, I have argued that the account does not allow for any significant contribution of sociocultural factors apart from those already postulated by adaptationist proposals. Due to this, it leans in the direction of a simple adaptationist hypothesis, trading parity of causal factors for simplicity. It also posits an unequal relation between the two theories it integrates, reducing the import of social constructivist work to the period of modernity.

# Chapter 4: "Exotic Becomes Erotic" Theory of Sexual Orientation as an Integrated Developmental Account

### Introduction

This chapter provides an analysis of another integrated account in the field of sexual orientation research – Daryl Bem's "Exotic Becomes Erotic" (EBE) developmental theory (Bem, 1996). This account accommodates biological findings as well as insights into sociocultural and psychological factors pertinent to sexual orientation. The scale of its integrative effort is impressive, as it brings together multiple scientific approaches, including social constructivism which figured in the theory analyzed in Chapter 3. The offered theory features a plurality of causal factors, which can be conducive to capturing causal complexity.

After discussing these strengths of the account, I turn to its possible limitations with regard to the issues discussed in Chapters 1-2. As I argued, developmental systems theory serves as a broad integrative framework, hence research produced under its heading is potentially subject to the same problems as integration in general. I show that Bem's account fares well with regard to causal complexity/parity of causal factors, but may involve evidential issues. Furthermore, its breadth of scope may prevent it from capturing the specific factors involved in different sexual orientations as well as in sexuality of different genders.

#### Features of EBE theory and its possible advantages

In attempting to explain differences in sexual orientation, Bem (1996) provides an account that encompasses multiple stages in human development. According to him, biological variables such as genes and prenatal hormone exposure code not for sexual orientation directly, but for childhood temperaments and predispositions towards particular activities. Just like the authors of the proposal discussed in Chapter 3, Bem reconstitutes the phenomenon of sexual orientation, delineating its biological component from the social component. The major difference is that the biological component directly caused by genes is not even the evolved "bisexual potential" of the theory I analyzed above but temperament, a phenomenon that has not been directly linked to sexuality before.

On the EBE theory, temperaments and respective activities, such as boy-typical rough play or girl-typical quiet games, are responsible for a child's socialization in a society heavily structured by binary gender. While most children, according to Bem (1996), will prefer activities that are standard for their gender, some children will not "fit" into the norm and will be socialized accordingly: e.g. a boy who enjoys quiet play will most likely spend most of his time in the company of girls, and vice versa. The different "masculine" or "feminine" socialization of children with different psychological characteristics will lead to perceiving the "opposite" gender as "exotic", fundamentally different from one's own. For example, the quiet boy will see other boys as dissimilar from himself, while a girl with the behavior of a tomboy will feel different from more gender-typical girls. This feeling of stark dissimilarity causes heightened autonomic arousal in the presence of the "opposite" gender. Such arousal will, according to the theory, translate into romantic and erotic attraction in puberty (pp. 321-322).

The EBE theory offers several advantages compared to previous research on sexual orientation. First of all, in developing the account, Bem (1996) integrates both biological findings on the role of genotype in childhood temperament and findings from psychology/social constructivism about the role of gender norms in socialization. The way he carries out the integration addresses the shortcomings of both biological and experiential single-factors models. For instance, he acknowledges the role of genetic setup and hormonal influences in the formation of sexual orientation, but does not attribute it solely to these factors. By arguing that genes do not

code for sexual orientation directly, Bem attempts to avoid the pitfalls of genetic reductionism which informed many previous efforts to study the phenomenon (in the following sections, I will discuss whether he succeeds in completely avoiding them). He emphasizes that genetic theories have failed to specify the developmental pathway whereby genotypes translate into sexual orientations, and argues that such influences are necessarily mediated by social environment (p. 329).

Neither does the EBE theory reduce the phenomenon of sexual orientation to a single environmental factor; instead, it shows the role of at least several environmental factors. In doing so, it integrates a wide array of research from within social science that is rarely brought together due to divisions in the field. This includes not only various studies on aspects of homo- or heterosexual experience, but also work on psychology of partner choice. Moreover, the theory accommodates social constructivist work with its important insight that modern European culture structures sexuality primarily around the variable of gender. Indeed, this idea is at the core of his argument, making EBE one of the few integrated theories which attribute a causal role to the sociocultural factors of the kind studied by constructivism. This means that Bem opts for the strong form of social constructivism; I will discuss the implications of this choice later in the chapter.

Finally, the account is characterized by a consistent effort to rely on empirical evidence: most stages of trait development that the theory maps out are backed up by results of previous studies, including those focusing directly on aspects of homosexual experience (such as the childhood feeling of dissimilarity from same-gender peers). I will now examine whether this allows the EBE theory to succeed in providing a higher degree of accuracy than its single-factor predecessors.

#### Accuracy and epistemic value trade-offs in EBE

Since a systematic review of the broad range of evidence used by Bem (1996) is not possible here due to constraints of space, I will focus on its core evidential components. The most important piece of evidence for the EBE theory is provided by a meta-analysis by Bailey and Zucker (1995) of studies linking gender nonconformity in childhood to adult sexual orientation. Their meta-analysis established a significant correlation between being gender nonconforming as a child and being homosexual as an adult. However, the authors acknowledge the limitations of both prospective and retrospective studies which were used in the review. According to them, while most prospective studies involved a non-representative sample of clinic-referred children with extreme forms of gender nonconformity (p. 44), retrospective ones have been criticized on the grounds of recall bias which makes homosexual individuals more likely to have memories of gender-nonconforming behavior in childhood (p. 45).

Nonetheless, Bailey and Zucker (1995) conclude that the connection between such behavior and sexual orientation "is likely to be genuine" (p. 49). The authors then go on to hypothesize about the nature of this link, pointing to several biological or psychosocial theories which might explain it. This makes clear that even if the link between the two phenomena is solidly established, filling in the causal pathways can be done in multiple ways which will have both advantages and disadvantages, and a trade-off between epistemic values will be involved in each particular case. In the context of EBE, since Bem (1996) uses several theories and studies (rather than a single one) to provide the missing links between gender nonconformity and sexual orientation, an important value is internal consistency, and adhering to it may cause the account to sacrifice accuracy and evidential support.

In contrast to single-factor theories described by Bailey and Zucker (1995), the account offered by Bem (1996) posits several intermediary stages between the two phenomena: gender nonconformity leads to feeling different from peers engaging in different activities, which is accompanied by nonspecific autonomic arousal in their presence, which in its turn transforms into erotic/romantic attraction in adolescence. Evidence for such a feeling of difference in children is crucial for his theory to hold, and yet the so-called San Francisco study which tracked it (Bell, Weinberg, & Hammersmith, 1981) also found that gender-typical children also often feel different from their peers, although often for reasons unrelated to gender. As this part of the study is inconsistent with his broader theory, Bem mentions it but chooses to downplay it, focusing on gender-related dissimilarity reported by gender-nonconforming individuals. This has provoked the criticism that the theory fails to account for the role of variables other than gender (such as race or class, for instance) in producing the feelings of difference and potentially contributing to later sexual attraction (Peplau, Garnets, Spalding, Conley, & Veniegas, 1998, p. 388; Stein, 1999, p. 247). Indeed, race and class are also powerful markers of difference, but they are discounted as causal factors in the development of sexual orientation for the sake of internal consistency of the theory.

Moreover, the theory trades accuracy for internal consistency when providing the missing link between feelings of difference and autonomic arousal. As Bem (1996) himself admits, there is no evidence that children experience such arousal in the presence of a class of peers different from them, although there is evidence that novelty in general causes it (p. 325). For the theory to work, however, there needs to be evidence for this effect, along with a clear mechanism of how it transforms into erotic attraction. While Bem does offer several hypotheses for such a mechanism, the autonomic arousal stage of his account looks more like a leap of faith as it is not, at least for

now, substantiated by evidence. Therefore, it finds its place in the theory not due to its evidential merits, but due to its role in establishing consistency between different stages of the account. Such ambiguous components of the theory, as well as the theory as a whole, need to be tested in order to resolve the evidential issues; however, Bem opts for theoretical integration rather than experimental integration. This has led to the rebuke that he "does not present new data testing his theory, but rather culls supportive illustrations from the published literature" (Peplau et al., 1998, p. 388)

# Epistemic values of simplicity and breadth of scope vs causal complexity

Having examined how the EBE theory fares with regard to accuracy, I now turn to the question of whether it is able to capture the complexity of sexual orientation. This ability, as I have argued above, is reduced if the theory is heavily informed by epistemic values of simplicity and breadth of scope. I will examine whether these play any significant role in the EBE account, which will lead me to highlight both its strong points and potential flaws.

Simplicity in the EBE theory. As I noted before, simplicity characterizes those integrated models which posit several causal factors but treat one of them as being most important, explaining most of the phenomenon in question. In contrast to this, Bem's EBE theory, I would argue, attributes causal parity to different factors (biological and social) as each of them explains a separate stage in the development of sexual orientation. In doing so, it fulfils the goals of integration in post-"nature vs nurture" behavioral science, as both genes (which code for childhood temperaments and favored activities) and gender norms (which influence socialization) are recognized by the author to affect the formation of an individual's sexual orientation.

Just like the "evolutionary social constructivism" analyzed in the previous chapter, the stage-by-stage developmental model which is the core of EBE involves a reconstituting of the

phenomenon of sexual orientation. However, in this case reconstituting does not serve as a disguise for a single-factor model of sexual orientation/behavior – on the contrary, it provides a way to introduce a plurality of causal factors. In this sense, the EBE theory has a definite advantage over both single-factor theories as well as integrated theories marked by simplicity; indeed, it rejects the value of simplicity for the sake of complexity and parity of causal factors.

It also needs to be noted that the departure from simplicity is evident in the choice of a strong form of constructivism over a weak one. As I argued before, the choice between the two cannot be decided purely on the basis of available evidence, so the choice becomes motivated by other factors. In this case, opting for strong constructivism is motivated by the greater degree of complexity and causal parity which the strong form is able to accommodate compared to the weak one. Moreover, the way Bem (1996) integrates constructivist findings signals awareness of the broader body of constructivist work and consistency with it – for instance, he indicates that cultures which are not as gender-polarizing as our culture may cause sexuality to "crystallize" around variables other than gender (p. 332).

One possible problem, however, is that although Bem (1996) acknowledges causal parity in the case of sexual orientation as a phenomenon, he is not careful enough to establish that parity at every stage and for every phenomenon that results from reconstituting. One such phenomenon is temperament and the concomitant propensity for different activity level in early childhood, which are thought by Bem to be defined exclusively by genes, although temperament is a behavioral phenomenon just like sexual orientation and there may be a more complex combination of factors at play (see, for instance, Brustad, 1993). Hence, complexity and parity of causal factors regarding temperament, which is thought to be a major contributor to sexual orientation, gives way to simplicity. Moreover, the way Bem approaches the issue of temperaments amounts to a naturalization of gender differences, since it follows from his theory that most boys are naturally more active and "rough" than most girls. Thus, the EBE theory arguably harbors biological reductionism with regard to gender; the theory could benefit from a more sophisticated picture in which gender-typical behavior does not simply emerge in most of us as a result of our innate biological characteristics.

One may object that it matters relatively little for the purposes of the account whether temperaments and activity preferences are defined by genes only or by a combination of genetic and environmental factors – what matters is that there is variation in such preferences which will later interact with the system of social gender norms. Moreover, doing justice to all the factors involved in the formation of childhood temperament would make the account unnecessarily detailed. While this is a sound objection, I would still argue that is important to trace how biological and social variables interact early on in the production of child's gender-typical or non-typical behavior, as that may have further implications for the theory of sexual orientation.

*Breadth of scope in the EBE theory.* As I elaborated in Chapter 1, theories marked by breadth of scope posit general principles to account for a broad range of phenomena, which may sacrifice detail in describing causal factors pertinent to a specific phenomenon. In the context of EBE theory, one may indeed note an increase in scope: while most scientific theories so far have focused on homosexuality (either male or female), Bem (1996) offers an account that purports to explain all sexual orientations, regardless of gender. On the one hand, breadth scope in this particular context could have positive implications as there is a long history in sexuality research of treating heterosexuality as self-explanatory and homosexuality as a deviation, so a theory simultaneously explaining both is, according to the author himself, "politically, scientifically, and

aesthetically satisfying" (p. 320). Moreover, there has not been enough research on female homosexuality, and Bem's theory offers a welcome change in that regard.

On the other hand, one may wonder if Bem is indeed able to account for all sexual orientations in all genders by such a broad theory. In many societies, children will be strongly encouraged and even pressured to conform to gender norms and later develop attractions to the opposite sex, which will create very different life experiences for those with early homosexual tendencies from those with heterosexual ones. For this reason at least, it would seem that heterosexuality and homosexuality follow somewhat different developmental pathways, and each will need to be tracked separately.

A further criticism EBE theory has raised, which also has to do with its breadth of scope, concerns its ability to properly account for the complexity of female sexual orientation. Peplau et al. (1998) have pointed out that EBE is based on a male model of sexual desire: while male sexual attraction is indeed based on strong feelings of dissimilarity described by Bem (1996), female sexual attraction has been shown to arise from feeling of familiarity and emotional attachment, and to be more oriented at individual people than a certain class of people (p. 391). In a reply to these criticisms, Bem (1998) has argued that his theory was only meant to address sexual desire (and not emotional attachment), and that he believes women and men "are more similar on the sexual desire component of sexual orientation than they are on other components" (p. 398). However, in a later, revised version of the original article (Bem, 2000), the author acknowledges one distinctive feature of female sexual orientation, namely fluidity (p. 545). This is a step in the right direction, and EBE could benefit from a closer attention to such distinctive features of sexual orientation in different genders.

# Conclusion

In this section, I have examined the integrated developmental account of sexual orientation by D. Bem known as "Exotic Becomes Erotic". I have argued that the account offers a number of important advantages compared to single-factor theories as well as integrated theories of the kind analyzed in Chapter 3. As EBE acknowledges the role of multiple causal factors in the development of sexual orientation, departing from the epistemic value of simplicity strongly present in such theories, it is in a better position to bring us closer to the complexity of the studied phenomenon. However, certain of its aspects may trade accuracy for internal consistency and lack evidential support. Finally, the breadth of scope characterizing EBE theory leads it to pay insufficient attention to important causal factors in the development of homosexuality as opposed to heterosexuality, and in the formation of female sexuality as opposed to male.

## Conclusion

The main purpose of this thesis was to caution against excessive faith in integrative scientific strategies and the epistemic benefits they may bring, particularly in the context of studying behavioral phenomena like sexual orientation. While integration is a useful tool for developing novel theories, I have argued that several factors may reduce these theories' ability to reveal the complexity inherent in such phenomena. One aspect of this is that integrated theories may offer varying degrees of accuracy due to evidential ambiguity of their constituents as well as trade-offs between accuracy and other epistemic values involved in the process of integration. Another aspect is that an emphasis on epistemic values such as simplicity and breadth of scope may prevent integrated theories from capturing the complexity of phenomena of interest.

In order to provide substance and illustration for these claims, I have examined several single-factor approaches to the study of sexual orientation, as well as two integrated theories drawing on these approaches. While both of these integrated theories – "evolutionary social constructivism" and "Exotic Becomes Erotic" – could potentially offer us important insights into complexity of human sexuality, they have epistemic weaknesses that reduce their ability to do so. Some of these weaknesses are inherited from the constituent single-factor theories, whereas others arise due to the selective logic of integration itself and the need to fit multiple theoretical constituents together. While one would hope that integrated theories bring with them an increase in accuracy and represented complexity, they may also magnify the degree of error present in single-factor theories and perpetuate the complexity avoidance that has characterized much of the behavioral science.

Despite my seemingly pessimistic stance, I would like to emphasize that it was not my aim to argue that integration is by necessity doomed to fail, or that we are better off if we abandon attempts at integration and stay at the level of individual theories. My aim, rather, was to point out the fact that integrated theories may fare better or worse with regard to the expectations that we have for them, and that achieving their aims is by no means guaranteed. An in-depth discussion of the factors that may cause integration to fail is likely to benefit future integrative pursuits in various areas of science, including sexual orientation research. This area is likely to suffer from the problems addressed above, both due to practical difficulties of studying human sexuality and to the long history of thinking about behavioral phenomena in terms of either biology or environment ("nature" or "nurture"), but rarely both.

There are also some further factors than may hinder the study of sexual orientation. One such factor, which I briefly discussed in the thesis, is that this type of research is characterized by pragmatic ambiguity and lack of purpose. Since there are no pressing issues that need to be solved with regard to sexual orientation, it is unlikely that scientists will display a consistent, unified effort in studying it. Moreover, it has been pointed out that the area of study as a whole is still immature, not even entering its "normal science" stage (Stein, 1999, p. 228). This can mean that the resources necessary for success of integrated theories of sexual orientation are still lacking, thus "integrationist optimism" in this research area will only become tenable at some point in the future.

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