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Reading Affect

Literature and Science after Klein and Tomkins

What can affect theory offer science studies?¹ This is at once a promising and a difficult question which asks us to think about where these two varied, vital, and notoriously multidisciplinary research domains meet, and how this meeting might be useful or fruitful. But posed this way, the question seems to grant priority to one over the other, as if that tobacco-chewing old-timer, *science studies*, wonders just what that sharply dressed new kid on the block, *affect theory*, can do. Of course, affect theory is no longer new, having emerged into the theoretical humanities twenty years ago by way of the promotion of the very different work of Gilles Deleuze and Silvan Tomkins, and having expanded to include a number of approaches to the study of affect and emotion.² Affect theory, in at least one of its guises and under a different name, has been around much longer than that, however, and has already played a significant role in the critical study of science and technology. The pages that follow explore an early encounter between these research domains in the work of Evelyn Fox Keller, whose field-changing contributions to feminist science studies began by making extensive use of that branch of psychoanalysis called object relations theory. Keller's work in the 1970s and '80s used psychoanalytic concepts to understand how "the cognitive claims of science are not themselves objective in origin but in fact grow out of an emotional substructure."³ Before trying to answer this chapter's leading question, then, I will address the historical one: What has affect theory already offered science studies, feminist science studies in particular?

It is notable that Keller set these psychoanalytic commitments to one side in the 1990s. As she puts it in the introduction to *Secrets of Life, Secrets of Death* (1992), whose title essay is arguably her most profound interpretation of the emotional fantasies of modern science, "I have since [writing that essay] found it strategically impossible to proceed with psychodynamic explorations of scientific postures."⁴ Keller moved away from

psychoanalytic theory and an accompanying focus on gender, and toward a more thoroughgoing commitment to studying language and metaphor especially in the life sciences. At stake in this move, as Keller points out, was not the inadequacy of psychoanalysis but the changing orientation toward subjectivity itself in the humanities and social sciences of the time.

For both good and bad reasons, most historians, philosophers, and sociologists of science have come to regard psychoanalysis, and even the very idea of the individual subject on which it depends, as something of an embarrassment. However . . . the “subject” on which at least traditional psychoanalysis depends is in no sense either independent of or an alternative to other forms of social structure (or “discourse”): Individual subjects are as much constituted by social structures as social structures are constituted by individual subjects, and the occlusion of one is as serious an error as the occlusion of the other, in science studies as elsewhere. Psychoanalysis, despite its problems and deficiencies, continues to provide some of our only tools for thinking about both individual and collective subjectivities (8–9).

By the early 1990s, psychoanalysis was (and had been for some time) losing its authoritative position across the disciplines in part because it was perceived to prioritize universalized subjects over contingent, historical structures. Its more thoughtful detractors suggested that psychoanalytic explanations, by moving too quickly between general human developmental trajectories and individual experiences, beliefs, and feelings, failed to capture cultural difference and historical change across and within groups or collectives. Nevertheless, Keller thought that an improved psychoanalysis should continue to play a significant role in any reciprocal account of the relations between subjects and collectives. At the same time she sought a way to bring nature back into science studies: “Where, and how, does the nonlinguistic realm we call *nature* enter into that process [the generation of knowledge]? How do ‘nature’ and ‘culture’ interact in the production of scientific knowledge?” (36).⁵

Just after Keller moved away from psychoanalysis (however begrudgingly) we see the emergence of affect theory with its keen interest precisely in the nonlinguistic aspects of aesthetic and epistemological experience, its attempt to conceptualize a role for biological and physiological knowledges in the humanities and social sciences, and its exploration of new tools for articulating connections and continuities between individual and collective experience. How might more recent affect theory help to develop the reciprocal explanatory accounts of scientific knowledge that Keller and other science studies practitioners seek? This chapter aims to answer this question by offering a reading of Keller’s early work *A Feeling for the Organism* (1983)

alongside several of her essays in *Reflections on Gender and Science* (1985). I make use of Silvan Tomkins's ideas as well as those of Melanie Klein and Wilfred Bion, Anglo-American writing that offers substantial, unorthodox revisions of Freud. Keller's own writings are indebted to a related but distinct branch of psychoanalytic theory, the work of D. W. Winnicott and other Independent Group object relations theorists, as well as to feminist uptakes of these thinkers. With the exception of the remarkable essay "From Secrets of Life to Secrets of Death" (to which I will return below), Keller's writing is more concerned with developmental schemas than it is with the epistemological questions that accompany an attention to Kleinian psychic dynamics. Affect theory, this chapter argues, can offer science studies a way to address the overlooked topic of subjectivity – to assess the roles of feeling, style, and motive in scientific thinking – as well as a way to take into account the performativity of our own interpretations. Perhaps a contemporary critical approach to Literature and Science can (re)introduce these ways of paying attention into science studies.

Subjectivity Out of Style

Keller's *A Feeling for the Organism: The Life and Work of Barbara McClintock*, first published in 1983, is many things: a biography of an important geneticist; a historical examination of changing career possibilities for women scientists in the twentieth-century United States; an intellectual overview of distinct, at times competing methodological and conceptual approaches to genetics; and a case study of consensus and dissent in science.⁶ It is also, and for my purposes most importantly, a feminist analysis of the emotional dynamics at the root of scientific practice. Born in 1902, Barbara McClintock achieved remarkable success during the 1930s in the fields of cytology and genetics with her studies of the maize plant. A key figure in establishing "the chromosomal basis of genetics" (4), McClintock's importance was quickly recognized (she was elected to the National Academy of Sciences in 1944 and became president of the Genetics Society of America in 1945) but, as a woman scientist with limited career options, never secured a permanent university position. She accepted a full time research position at the Long Island Biological Laboratories at Cold Spring Harbor, a well-established if somewhat isolated research facility. Keller's book offers a rich, detailed account of McClintock's work, especially in the context of the emergence and success of molecular biology best represented by James Watson and Francis Crick's discovery of the role of DNA in the replication of genetic material in 1953. McClintock's work did not fit with the physics-inspired methods of molecular biology and its "central dogma,"

the unidirectional flow of information from DNA to RNA to protein. While she arrived at conclusions similar to the well-received work of Jacques Monod and François Jacob on the control mechanisms for protein production, her work contradicted the central dogma and was not understood. Only when the ideas she introduced concerning genetic transposition could be articulated in the language of molecular biology (in the mid-1970s) would McClintock's work be recognized and integrated into mainstream genetic research, leading to substantial acknowledgment (including a Nobel Prize in 1983).

Keller's book could be described as an investigation into distinct and competing paradigms in genetics, with the midcentury move toward molecular biology an example of the kind of paradigm shift that Thomas Kuhn made famous in *The Structure of Scientific Revolutions* (1962). In the book's preface, however, Keller distances her work from the Kuhnian focus on "the dynamics by which the [scientific] community forms and reforms itself" (xxi), focusing instead on an individual scientist in order to investigate "the nature of scientific knowledge and the tangled web of individual and group dynamics that define its growth" (xx). Here Keller evokes Charles Darwin's famous image of the tangled bank, an exemplary figure for the fundamental complexity and idiosyncrasy of relations between organism and environment. While McClintock's commitment to understanding the complexity of organisms in their contexts becomes an explicit theme in the book's final chapter, Keller's own commitment to these complex relations is everywhere expressed in the book's method and structure. Her ethnographic intellectual history (she interviewed McClintock and her family members, friends, and colleagues) weaves individual recollections together with larger histories of the institutions of scientific knowledge in a subtle and nuanced manner. What emerges is both McClintock's exemplarity as a superb scientist and, at the same time, her idiosyncrasy or status as a self-described "maverick."

Keller's focus on one woman's personal experience as indexing larger social and political structures is clearly informed by 1970s American feminism. At the same time, it is informed by the longer tradition of American Transcendentalism. Keller quotes Ralph Waldo Emerson's essay "Nature" in a discussion of McClintock's relationship with vision (118), and the portrait that emerges of this remarkably stubborn and independent-minded Yankee scientist reminded this reader of two other unusual women affiliated with that tradition and its aftermath, Emily Dickinson and Gertrude Stein. Keller's sensibility is broadly literary critical in that she explores (or reads) the work of an individual scientist (or author) to discover something about the workings of science more generally. Her important term is *style*: Keller

examines McClintock's scientific style, her way of "synthesizing the uniquely twentieth-century focus on experiment with the naturalist's emphasis on observation . . . What for others is interpretation, or speculation, for her is a matter of trained and direct perception" (xxi). This style of doing science is a consequence of an intimate relationship with the maize plant, a relationship that McClintock herself calls "a feeling for the organism." Keller's primary object of study, then, and the title of her book, is McClintock's scientific style and the nature of those emotional dynamics that, Keller suggests, should be exemplary of scientific practice: "like all good scientists, her understanding emerges from a thorough absorption in, even identification with, her material" (xxii).

The precise nature of McClintock's identification comes into focus in several key quotations. Consider first her orientation toward problem-solving with respect to "the whole picture": "What's compelling in these cases is that the problem is sharp and clear. The problem . . . fits into the whole picture, and you begin to look at it as a whole . . . So you get a feeling for the whole situation of which this is [only] a component part" (67). This orientation toward the whole organism and the functions of its various parts is accompanied by detailed micro-attention. McClintock responded to a colleague's wonder at her skilled use of the microscope this way: "Well, you know, when I look at a cell, I get down into that cell and look around" (69). As Keller puts it, this "dialectic between two opposing tendencies" (101) defines McClintock's style: "It was her conviction that the closer her focus, the greater her attention to individual detail . . . the more she could learn about the general principles by which the maize plant as a whole was organized, the better her 'feeling for the organism'" (101). Keller recounts several stories of successful problem-solving, one of which involves the scientist's uncanny ability to assess structural alterations in a given plant's chromosomes by simply looking at the kernels of the plants themselves. McClintock accounts for this ability by comparing her mind to a computer: "'Without being able to know what it was I was integrating, I *understood* the phenotype.' What does understanding mean here? 'It means that I was using a computer that was working very rapidly and very perfectly'" (103). McClintock's mind works like a computational agent, processing and integrating vast amounts of data without conscious help; impressive qualitative results emerge from quantitative calculations that take place automatically (or unconsciously), a consequence of McClintock's proximity to and familiarity with her object of study. Thus the basis of McClintock's peculiar style is an identification that she permits to take place between two complex systems, her mind (qua computer) and the maize plant: "Her

respect for the unfathomable workings of the mind was matched by her regard for the complex workings of the plant” (105).⁷

In the terms of affect theory, I would describe McClintock as entering a fully transference relation with her object of study. Transference, in psychoanalysis, names “the terrain on which all the basic problems of a given analysis play themselves out: the establishment, modalities, interpretation and resolution of the transference are in fact what define the cure.”⁸ Classically, in Freud’s work, the transference refers to the relationship between analyst and analysand in which the patient displaces childhood feelings of love and hate for a parent or caregiver onto the doctor. In Melanie Klein’s understanding, these transference relations draw on even earlier experiences of the infant with the mother, in particular with the breast that feeds and comforts (or fails to feed and comfort) the infant. These early experiences, Klein suggests, determine object relations that are comprised of projective and introjective identifications, psychic processes based on the infant’s fundamental somatic experiences of taking something into the body and expelling something out of the body. For Klein, adult mental life is characterized by the continuous to-and-fro movements of projective and introjective identification, psychic movements of affect and feeling among and between selves and others that are based on early infantile experience. In his work during the 1960s and ’70s, Wilfred Bion, one of Klein’s most influential followers, used Klein’s ideas to develop an innovative account of thinking based on the to-and-fro movements of identification that involves one set of ideas going to pieces before a new set of ideas can be synthesized or integrated around a “selected fact”: “The selected fact is the name of an emotional experience, the emotional experience of a sense of discovery of coherence; its significance is therefore epistemological.”⁹

McClintock’s emphasis on integrating data unconsciously and the emotional aspects of problem-solving resonate with Bion’s theory of the necessary roles that projective and introjective identification play in coming to knowledge, that is, the emotional aspects of thinking. Consider McClintock’s response to a particularly recalcitrant problem. At first, “I wasn’t seeing things, I wasn’t integrating” (115), but after a short walk that permits her to experience some grief (“she ‘let the tears roll a little’” [115]), she comes to think about the problem in a new way: “I must have done this very intense, subconscious thinking. And suddenly I knew everything was going to be just fine” (115). As Keller puts it, “She had brought about a change in herself that enabled her to see more clearly, ‘reorienting’ herself in such a way that she could immediately ‘integrate’ what she saw” (117). This reorientation leads to new

perceptions when McClintock looks again at the chromosomes under the microscope:

I found that the more I worked with them the bigger and bigger [they] got, and when I was really working with them I wasn't outside, I was down there. I was part of the system. I was right down there with them, and everything got big. I even was able to see the internal parts of the chromosomes – actually everything was there. It surprised me because I actually felt as if I were right down there and these were my friends (117).

Here is a childlike experience, the intense absorption that accompanies play and the to-and-fro of projective and introjective identification with a toy or miniature figure. Keller goes on: “She was talking about the deepest and most personal dimension of her experience as a scientist. A little later she spoke of the ‘real affection’ one gets for the pieces that ‘go together’: ‘As you look at these things, they become part of you. And you forget yourself. The main thing about it is that you forget yourself’” (117).

Keller suggests that McClintock's scientific style is based on a set of emotional dispositions that she had developed as a child and that were reinforced by her experiences as a woman scientist: autonomy, self-determination, and the “capacity to be alone.” This last phrase, the title of an early biographical chapter on McClintock's family background, childhood, and adolescence, is also the title of an essay by D. W. Winnicott, one of the only citations to psychoanalytic writing in Keller's book.¹⁰ Like Bion, Winnicott built on the work of Melanie Klein, especially her analysis of children using play technique and focus on early infantile relations with the mother. Unlike Bion, however, Winnicott rejected Klein's emphasis on the role of constitutional factors, especially aggression and the death instinct, in early development. Along with W. R. D. Fairbairn, Michael Balint, and John Bowlby, Winnicott belonged to the Independent Group, those analysts in the British Psychoanalytic Society who broke away from both the Kleinians and the Freudians.¹¹ Winnicott's ideas are in the background of Keller's depictions of McClintock's unusual self-sufficiency as a child, her tomboy identifications and, later, disinterest in conventional sexual trajectories, as well as her ability to become entirely absorbed in intellectual activity – even to the point where she forgets her own name. McClintock maintained a “childlike capacity for absorption throughout her adult life” (36), a capacity, Keller suggests, that served as “a wellspring of her creative imagination in science” (36).

An Improved Psychoanalysis

In *Reflections on Gender and Science*, published two years after the book on McClintock, Keller made explicit her psychoanalytic approach to the “emotional substructure” of science.¹² In several richly detailed and somewhat technical essays Keller brings together questions of objectivity in science with questions of objectification in psychic development, that is, the ways that infants and children come to perceive and acquire knowledge of objects in the world. I will briefly unfold the elements of Keller’s use of this complex theory in a selective summary; my aim is to propose what I hope is a more helpful set of concepts for science studies that emerge from the work of Klein, Bion, and Tomkins. Keller’s goal in these essays is twofold. Her first, diagnostic goal is to show how “the ideology of modern science . . . carries within it its own form of projection: the projection of disinterest, of autonomy, of alienation” (70). In “Gender and Science,” Keller uses classical Freudian theory to suggest that “our earliest experiences incline us to associate the affective and cognitive posture of objectification with the masculine, while all processes that involve a blurring of the boundary between subject and object tend to be associated with the feminine” (87). What follows from this, at least in classical Oedipal development, is a strict identification of the (boy) child with paternal authority to defend itself against being absorbed by the maternal environment, an absorption that is both desired and forbidden. But Keller turns away from Freud and toward Winnicott to show how the child’s need to separate itself from its mother need not result in such a stark, gendered opposition. Winnicott’s ideas about transitional objects and the potential space between infant and mother permit Keller to distinguish between an emotional maturity that can “allow for that vital element of ambiguity at the interface between subject and object” (84) and a more rigid or static psychic autonomy in which “objective reality is perceived and defined as radically divided from the subjective” (84).

Keller’s second goal, then, which she pursues alongside her diagnostic one, is to develop alternatives to traditionally masculinist, alienated forms of scientific subjectivity and the forms of domination over nature that accompany these. In “Dynamic Autonomy: Objects as Subjects” and “Dynamic Objectivity: Love, Power, and Knowledge,” Keller reconceptualizes autonomy and objectivity in a way that retains their value for science but tempers their emotional foundations. Again, Winnicott is important for this sketch of “a dynamic conception of autonomy [that] leaves unchallenged a ‘potential space’ between self and other . . . [and] allows the temporary suspension of boundaries between ‘me’ and ‘not-me’ required for all empathic experience – experience that allows for the creative leap between knower and known”

(99). Keller turns to other analysts of the Independent Group (such as Fairbairn) as well as feminist writers who take up this analytic tradition (Nancy Chodorow, Carol Gilligan, Jessica Benjamin) to develop a revised account of autonomy that permits the more flexible identifications between subject and object that she sees McClintock engaging in. For Keller, dynamic objectivity names “a pursuit of knowledge that makes use of subjective experience . . . in the interests of a more effective objectivity” (117); similarly, dynamic autonomy acknowledges dependency relations with the maternal/natural environment even as it acknowledges the independence of this reality.

As important as Keller’s use of these Independent Group theorists may be, I am not convinced by the particular account of development she gives, and I wonder especially at her choice to avoid the theory of Melanie Klein. Keller reproduces the struggle in classical Freudian theory to understand the emergence of the distinction between self and other and hence relationality as such. But for Kleinians, object relations exist from birth, as Robert Hinshelwood explains: “the ego exists at birth, has a boundary and identifies objects.”¹³ The infant may experience more integrated or more fragmented ego states, but these are infantile phantasies of integrity or fragmentation rather than any properties of the ego as described from a metapsychological perspective (that is, from the perspective of the analyst as theorist). As the infant matures, it develops through stages of increased stability or integration, established in often-difficult relation to the ego’s self-splitting due to powerful destructive tendencies. Klein took up Freud’s notion of the death instinct to explain and characterize these destructive tendencies, and proposed that at around the middle of the first year of life, the infant moves from one set of defenses against destructive impulses, what she called the paranoid-schizoid position (characterized by an intensive splitting of good objects from bad), toward another set of defenses associated with what she called the depressive position. In this position, “The good breast and the bad breast begin to be understood not as separate and incompatible experiences, but as different features of the mother as a more complex other, with a subjectivity of her own.”¹⁴

Keller’s criticism of object relations theory, that it fails “to perceive the mother as subject” (72), precisely overlooks the insight of the depressive position: Klein’s idea that the infant begins to integrate what it had previously perceived as entirely good and entirely bad part-objects into a newly perceived, damaged or contaminated, but more realistic and separate whole object. Klein’s account would have been helpful to Keller in that it avoids what she sees as a “fundamental flaw” of psychoanalysis, “the theory’s preoccupation with autonomy as a developmental goal and its corresponding

neglect of connectedness to others” (72). Indeed, the Kleinian focus on the idea of *position* rather than developmental *phase* or *stage* offers a route toward the dynamism Keller seeks in her descriptions of qualified forms of autonomy and objectivity. For Klein, psychic experience (of infant, child, and adult alike) is characterized by a fluctuating temporality: an individual may return again and again to dynamics characteristic of the paranoid-schizoid position (such as splitting), or to those associated with the depressive position (such as depressive anxiety and impulses to repair the object).¹⁵ It is this fluctuating temporality that permits Bion to articulate his theory of thinking in terms of a movement back-and-forth between the relatively unintegrated psychic elements in the paranoid-schizoid position and the relatively more integrated elements in the depressive position around a “selected fact,” and to consider thinking itself as suffused with motivation and emotional experience.

“My use of psychoanalytic theory,” asserts Keller, “is premised on the belief that, even with its deficiencies, it has the potential for self-correction” (73). Keller treats psychoanalytic theory and practice as a helpful set of tools, “with the understanding that all its terms are subject to revision as we proceed” (73), revisions which themselves depend on new empirical and theoretical work by “the many other scholars thinking about the same issues” (73). My return to, as well as criticism of, Keller’s use of object relations theory supports this attitude toward psychoanalysis. Specifically, I am suggesting that the Kleinian/Bionian branch of object relations theory, especially in its concerns with epistemology, has more to offer science studies than the Independent Group theorists. As I mentioned above, one main point of disagreement between these approaches is the value of Freud’s idea of the death instinct. The Kleinians seem to be the only analysts to have accepted and elaborated this idea in their work. In my own critical and theoretical speculations I have proposed recasting at least some of the phenomena that Klein associated with the death instinct in Silvan Tomkins’s terms of a variety of innate, negative affects that threaten any sense the infant (and sometimes the adult) may have of a more coherent and integrated self. According to Tomkins, whose theory of the affect system offers an alternative to Freud’s drive theory, the negative affects may accompany experiences of extreme bodily destabilization: the rending cries of grief, the burning explosions of rage, the shrinking or vanishing compressions of terror, the transgression of the boundary between inside and outside the body in retching or disgust, all these wreak havoc with any more integrated body image or sense of self that the infant is in process of developing. Generally, I have found Tomkins’s theorization of the affects compatible with and complementary to Kleinian/Bionian theory, especially insofar as both lines of thinking explore how affects motivate the constitution, maintenance, and dissociation of objects.¹⁶

Letting the Material Tell You Where to Go

Returning to Keller's book on McClintock with some of Tomkins's ideas in mind, consider the presence of the feeling of joy in the scientist's description of her work on transposition, work which took years to develop:

It never occurred to me that there was going to be any stumbling block. Not that I had the answer, but [I had] the joy of going at it. When you have that joy, you do the right experiments. You let the material tell you where to go, and it tells you at every step what the next has to be because you're integrating with an overall new pattern in mind. You're not following an old one; you are convinced of a new one (125).

For Tomkins, positive affect plays a significant role in infant perception: he proposes that the affect of interest-excitement sustains infant attention and motivates "perceptual sampling," while enjoyment-joy lets the perception of an object remain in awareness longer, motivating a return to what is emerging, in perception, as a bounded object.¹⁷ Joy, in this account, accompanies and indexes a recognition (of pattern, shape, volume, and so on) intimately tied to cognition and the act of composing new objects in perception. This recognition takes place in the midst of the infant's confusion and distractibility when faced with the enormous variety and complexity of environmental stimuli. Keller describes the tendency in McClintock's work for "complexity and confusion . . . to grow rather than diminish. But there was always a direction in which she was headed" (126), a direction determined in part by her confidence and joy in "let[ting] the material tell you where to go" (125).

By contrast with the midcentury molecular biologists whose brash and irreverent confidence came from their powerfully simple models and their excitement at "turning biology into what they regarded as a bona fide science" (181), McClintock's remarkable confidence is based on her commitment to the fundamental complexity and strangeness of nature. "There's no such thing as a central dogma into which everything will fit," she insists. "It turns out that any mechanism you can think of, you will find – even if it's the most bizarre kind of thinking . . . So if the material tells you, 'It may be this,' allow that. Don't turn it aside and call it an exception, an aberration, a contaminant" (179). For Keller, McClintock's embrace of the complexity of her object of study, her rejection of reductive, purifying models of explanation, and her naturalist methods of observation are all part of her scientific style. In the final chapter Keller describes this style in terms of "a special kind of sympathetic understanding" for which "the objects of her study have become subjects in their own right: they claim for her a kind of attention

that most of us experience only in relation to other persons. ‘Organism’ is for her a code word . . . the name of a living form, of object-as-subject” (200). Keller concludes her study with a call for a “deep reverence for nature, a capacity for union with that which is to be known” (201) as alternatives to science’s traditional obsessions with domination, and considers McClintock’s different images for control: Tibetan monks who have learned to regulate body temperature, hypnotic practices that experiment with control of autonomic bodily processes. These are versions of control that begin from subjective bodily experiences and, what accompanies this, an empathic identification between subject and object.

Currently several strands of science studies echo such an insistence on empathy, on holistic ways of knowing, and on cultivating a “love affair with the world” (205) (Keller cites the psychoanalyst Phyllis Greenacre here). While I find it impossible not to support such ideas in principle, I am skeptical about the performative value of such exhortations. At the same time, I am not convinced by any account of scientific knowledge that leaves out an understanding of those destructive impulses that, from a Kleinian perspective, play a crucial role in the urge to know or (what Klein called, after Freud) epistemophilia. Keller addresses precisely such questions of the role of destructive impulses in science in her essay “From Secrets of Life to Secrets of Death.”¹⁸ Here she describes a fundamental fantasy of modern science: to take over female procreative function, often through male anal power. Keller reads this fantasy by exploring the discourse of secrets (whether of life, death, or nature) across several images, stories, and cultural locations, including the Manhattan Project and the Watson-Crick discovery, as they express what she calls “womb envy,” a concept that she interprets by turning to Klein’s conceptualization of envy as the desire to spoil the good object precisely in its capacities to create and sustain life: “Whether supplanted by fantasies of anal production or by a light/life-generating activity of the mind, the real life-giving power of the woman – often indeed women themselves – is effectively absented . . . [or] actively spoiled” (51). Sweeping, compelling, and incisive though Keller’s account is, she nonetheless concludes the essay by questioning the value of its analysis: “Surely, the fantasies I describe can neither be seen as causal (in any primary sense) nor as inconsequential. Where then . . . are we to place the role of such fantasies – fantasies that are in one sense private, but at the same time collectively enforced, even exploited, by collateral interests?” (55).

Recall, only after writing this essay did Keller move away from psychoanalytic discourse, as if her discovery of the central role for anality in the fantasies of science and technology proved too “embarrassing” to historians, philosophers, and sociologists of science.¹⁹ Interestingly, in a curious

analogy to McClintock, whose naturalist methods were displaced by the theoretical successes of molecular biology, Keller's own critical feminist blend of Marxism and psychoanalysis was displaced by a powerful sociological constructivism that obscured the role of subjectivity in any understanding of science. This obscuring of subjectivity in science studies continues today: some of the several recent turns to ontology across the theoretical humanities (especially those committed to "objects") are distinctly shy of, or embarrassed by, the possibility that affect and fantasy play important roles in creating or composing objects in, of, and for science. Indeed, it is surprising how little substantive, positive attention has been given in science studies to questions of subjectivity, by contrast with the considerable attention given either to questions of *the subject*, or to subjectivity as what must be controlled, managed, or bracketed in the development of varieties of *objectivity*.²⁰ Relatedly, it is not common to find science studies scholars discussing affect, aesthetics, or style as integral to practices and theories of knowledge-making in the sciences. Steven Shapin has made a similar point in the context of an argument for taking taste seriously as an object of study.²¹ My own motivation in returning to Keller has been to reactivate a concern with subjectivity, to propose a helpful set of tools and terms to assist with this concern, and to remind science studies scholars of the necessary imbrication of epistemology with ontology in any critical approach to science.²²

Finally, to answer the question that begins this chapter: Affect theory offers several things to science studies, and, in particular, a contemporary science studies that has not often made use of the enriched notions of subjectivity that have been available to scholars of literature and media. First, it foregrounds the basic (Marxist-materialist) premise that science is done by individuals as well as collectives, in historical and institutional circumstances over which they have limited control, and in which circumstances they nonetheless make consequential choices. These choices, which may or may not be experienced as choices, result in specific scientific styles; and these styles can be described and analyzed using the vocabulary of affect theory. Second, in addition to offering tools and techniques for describing scientific styles, affect theory can help us to investigate the role of negative and positive affects in the composition of objects of scientific knowledge, as well as the role of destructive and creative fantasies in motivating scientific knowledge. Third, affect theory emphasizes, not historical or developmental schemas but the variable temporalities and fluctuations of motivation, and the role these temporalities play in thinking and coming to knowledge. Finally, affect theory can and should accompany a critical attention to the performativity of analysis itself. Consider,

in this context, the basic goal of interpretation in Kleinian therapy: to open up a space in which the most destructive impulses can be voiced and entertained so that the analysand can be free to engage in more varied creative and reparative activities. The main way of assessing whether an interpretation is correct is if it has beneficial effect for the analysand. To bring this fundamentally performative criterion into science studies would be to ask: When can the communication of an interpretation or analysis of science be beneficial, and when not? Not all interpretations need to be conveyed; sometimes, holding back interpretation may lead to its fuller development or to the discovery of circumstances that permit its communication to be more effective. Affect theory fosters ways of paying a refined and technical attention to the subjective and intersubjective aspects of knowledge-making in the sciences as well as in science studies.

NOTES

1. Thanks to Lisa Cartwright for asking me this question several years ago at the Science Studies Colloquium Series at the University of California, San Diego. This essay is a belated answer.
2. The emergence of affect theory in the humanities is often conveniently dated to the publication of two essays in 1995, Brian Massumi's "The Autonomy of Affect," *Cultural Critique* 31 (Autumn 1995), 83–109; and Eve Kosofsky Sedgwick and Adam Frank, "Shame in the Cybernetic Fold: Reading Silvan Tomkins," *Critical Inquiry* 21.2 (Winter 1995), 496–522. The large number of publications since, including *The Affect Theory Reader*, ed. Melissa Gregg and Gregory J. Seigworth (Durham: Duke University Press, 2010) and a handful of critiques of the affective turn, signals a consolidation of the field. At the same time, the lack of consensus concerning a theory of affect and the sheer variety of approaches undermine any sense of consolidation. My writing here focuses on the work of Silvan Tomkins, Melanie Klein, and Wilfred Bion. Other orientations toward affect theory would approach science studies differently.
3. Evelyn Fox Keller, *Reflections on Gender and Science* (New Haven: Yale University Press, 1985), 96.
4. Evelyn Fox Keller, *Secrets of Life, Secrets of Death: Essays on Language, Gender and Science* (New York: Routledge, 1992), 8.
5. In this she was not alone: Bruno Latour's concept of "circulating reference" (and his actor-network theory, more generally) and Andrew Pickering's notion of "the mangle" were both attempts to understand the complex reciprocal relations between and among what earlier sociologists of science tended to describe in terms of subjects and structures, not to mention nature(s). See Latour, "Circulating Reference: Sampling the Soil in the Amazon Forest," in *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge: Harvard University Press, 1999), 24–79, and Pickering, *The Mangle of Practice: Time, Agency, and Science* (Chicago: University of Chicago Press, 1995).
6. Evelyn Fox Keller, *A Feeling for the Organism: The Life and Work of Barbara McClintock* (New York: W. H. Freeman, 1983).

7. McClintock's mind-computer analogy, which took place in conversation with Keller in the 1970s, would have been unlikely in the 1930s when she was doing her earlier work on maize chromosomes. At that moment a "computer" most often meant a woman doing calculations by longhand. Thanks to Elizabeth Wilson for pointing out this anachronism to me.
8. Laplanche and Pontalis, *The Language of Psycho-Analysis*, trans. Donald Nicholson-Smith (New York: Norton, 1973), 455.
9. Wilfred Bion, *Learning from Experience* (London: Karnac Books, 1984), 73.
10. D.W. Winnicott, "The Capacity To Be Alone," *International Journal of Psychoanalysis* 39.5 (1958): 416–20. Winnicott is best known for his concept of the transitional object and the emergence of a holding environment between the "good-enough" mother and the infant that permits optimal development. See the essays collected in *Playing and Reality* (London: Tavistock, 1971).
11. This three-way split was a result of a series of debates that culminated in the Controversial Discussions of the early 1940s. See Pearl King and Rocardo Steiner, eds., *The Freud-Klein Controversies 1941–45* (London: Routledge, 1992). For a useful survey of the differences and relations between these and other branches of psychoanalytic thought, see Stephen Mitchell and Margaret Black, *Freud and Beyond* (New York: Basic Books, 1995).
12. Evelyn Fox Keller, *Reflections on Gender and Science* (New Haven: Yale University Press, 1985), 96. See the introduction and three essays in "Part Two: The Inner World of Subjects and Objects."
13. Robert Hinshelwood, *A Dictionary of Kleinian Thought* (London: Free Association Books, 1991), 284. See the entries for "Ego" and "Self."
14. Mitchell and Black, *Freud and Beyond*, 94.
15. For an essay that argues for the relevance of these Kleinian positions for criticism, see Eve Kosofsky Sedgwick, "Paranoid Reading and Reparative Reading, or, You're so Paranoid, You Probably Think This Essay Is About You," in *Touching Feeling: Affect, Pedagogy, Performativity* (Durham: Duke University Press, 2003), 123–51.
16. For more on the compatibility between the work of Tomkins and Klein, as well as what I call "the compositional aspect of affect in perception," see the chapter on "Thinking Confusion" in my *Transferral Poetics, from Poe to Warhol* (New York: Fordham University Press, 2015).
17. On the roles of the positive affects in infant perception, see Silvan S. Tomkins, *Affect Imagery Consciousness*, vol. 1, *The Positive Affects* (Oxford: Springer, 1962), 347–9, 487–9.
18. In *Secrets of Life, Secrets of Death*. Also published in Mary Jacobus, Evelyn Fox Keller, and Sally Shuttleworth, eds., *Body/Politics: Women and the Discourses of Science* (New York: Routledge, 1990), 177–91.
19. Recall, too, that this is the same moment (circa 1990) as the emergence of queer theory, that form of interdisciplinary scholarship that, in its focus on sexuality and fantasy in developing anti-homophobic critical, philosophical, and pedagogical projects, similarly provoked embarrassment in the academy and beyond.
20. For examples of these approaches, see Ian Hacking, *Rewriting the Soul* (Princeton: Princeton University Press, 1995); and Lorraine Daston and Peter Galison, *Objectivity* (Cambridge: MIT Press, 2007).

21. Steven Shapin, "The Sciences of Subjectivity," in *Social Studies of Science* (2012) 42.2: 170–84.
22. To expand briefly on this last point: while remaining largely agnostic about the recent proliferation of ontological approaches, I am drawn to those that bear some genealogical relation to the traditions of US pragmatism (especially the work of William James) and the alternative forms of empiricism that accompany studies of affect and emotion in the nineteenth and twentieth centuries. My thinking along these lines has been informed by Steven Meyer's account of "poetic science" in *Irresistible Dictation: Gertrude Stein and the Correlations of Writing and Science* (Stanford: Stanford University Press, 2001).

