

1 Recoloring the Dreamworld

If you took all the girls I knew when I was single
And brought 'em all together for one night
I know they'd never match my sweet imagination
Everything looks worse [1973 version] / better [1981 version] in black and white
—Paul Simon, “Kodachrome”¹

i

In 1951, Calvin S. Hall announced in *Scientific American* that 29 percent of dreams have at least some color in them. He called such dreams “technicolored,” explicitly likening them to the technicolor movies that were increasingly prevalent at the time and implicitly contrasting them with lower-tech black-and-white movies and dreams. Some of Hall’s contemporaries might have thought he was overestimating the occurrence of color in dreams. In 1958, Fernando Tapia and colleagues found that only about 9 percent of their non-psychiatric hospital patients reported dreaming in color (versus 12 percent of “neurotic” men and 21 percent of neurotic women). In 1953, a large majority of Manfred de Martino’s undergraduate respondents said either that they never saw colors in their dreams or that they saw them less than once a month. In 1942, Warren Middleton reported that only 10 percent of his students said they saw colors in their dreams frequently or very frequently, and 71 percent said they rarely or never did (19 percent said they saw colors in their dreams “occasionally”).² A widely shared opinion was that dreams were predominantly black-and-white phenomena, comparable to black-and-white movies, with an occasional splash of color here and there.

Scientific opinion changed dramatically in the 1960s, beginning with a report by Edwin Kahn and colleagues in 1962. Kahn and colleagues asserted that people awakened during rapid-eye-movement (REM) sleep attributed color to 83 percent of their dreams. In 1963, Ralph Berger, using a similar technique, found that color dreaming was reported after 71 percent of REM awakenings. In 1968, John Herman and colleagues reported 69 percent. In 1970, Frederick Snyder suggested that all dreams may contain color, even if the colors are not always remembered. Table 1.1 summarizes all the English-language studies I could find that report either the percentage of people claiming to dream in color or the percentage of dreams experimental subjects described as containing color. (The table excludes discussions

Table 1.1

Scientific studies of the incidence of color in dreams (English-speaking countries only).^a

Author	Year	Method	Percentage of people reporting color dreams ^b	Percentage of people's dreams said to contain color
Middleton	1933	Questionnaire ^c	26	—
Husband	1935	Questionnaire	41	—
Middleton	1942	Questionnaire	29	—
Doust	1951	Questionnaire	19	—
Hall	1951	Dream reports ^d	—	29 ^e
De Martino	1953	Questionnaire	17	—
Tapia, Werboff, Winokur	1958	Questionnaire	9	—
Kahn et al.	1962	REM awakenings ^f	94	83
Berger	1963	REM awakenings	100	71
Schechter et al.	1965	Dream reports	—	62
Suinn	1966	Dream reports	81	~41
Herman, Roffwarg, Tauber	1968	REM awakenings	—	69
Snyder	1970	REM awakenings	—	77
Padgham	1975	REM awakenings	100	50
Jankowski, Dee, Cartwright	1977	REM awakenings	89	62
Frayn	1991	Questionnaire	74	74
Rechtschaffen, Buchignani	1992	REM awakenings	—	80

Table 1.1 (continued)

Author	Year	Method	Percentage of people reporting color dreams ^b	Percentage of people's dreams said to contain color
Schwitzgebel, version 1	2003	Questionnaire	81	—
Schwitzgebel, version 2	2003	Questionnaire	100	—
Murzyn	2008	Questionnaire	92	—
Murzyn	2008	Dream reports	100	Older people: 72 younger: 89

- a. For estimates of color incidence in non-Anglophone countries, see note 8.
- b. These percentages exclude people saying they don't recall and include people who report a mix of color and black-and-white dreams. I am counting people who say they "occasionally" dream in color as reporting color dreaming, but not those who report color dreaming only "rarely."
- c. The "questionnaire" method involves asking during normal waking hours for generalizations about dream content.
- d. The "dream reports" method involves analyzing reports about the characteristics of individual dreams—dreams usually (but not always; see Hall 1947) recorded directly upon waking.
- e. Hall's student Robert Fortier, also in 1951, published a dissertation suggesting that a majority of respondents report experiencing at least one color in at least five percent of their dreams.
- f. The association between REM sleep and dreaming first became widely known in 1953 with a report in *Science* by Eugene Asersinsky and Nathaniel Kleitman.

based on personal experience or experience interpreting dream reports in psychotherapy, which are listed in note 3.) Two of the studies are my own. Schwitzgebel 2003, version 1 was as precise as possible a replication of Middleton's 1942 study, using Middleton's question "Do you see colors in your dreams?" and his response options "very frequently," "frequently," "occasionally," "rarely," and "never." Schwitzgebel 2003, version 2, given to different respondents, asked "Do you dream in color or black-and-white?" The response options were "color" (selected by 62 percent), "black-and-white" (0 percent), "both" (23 percent), "neither" (0 percent), and "don't know" (15 percent). The thesis of this chapter is that the last of those response options is, unfortunately, the best. I don't know, and you probably don't know, whether we dream in color or not. Although I

have found in conversation that most people answer confidently when asked about the coloration or non-coloration of their dreams, that confidence is misplaced.

Before the rise of scientific psychology in the late nineteenth century, scholars interested in dreaming generally stated or assumed that dreams contain color. For example, Aristotle specifically includes colors among the remnants that sense impressions may leave in the organs and which thus appear to us in sleep (4th c. BCE/1996, 459a23–462a31). Epicurus says that our impressions in dreams have color and shape (3rd c. BCE/1926, *Letter to Herodotus*, 50–51). Descartes in his famous *Meditations* (1641/1984)—the same meditation in which he finds it impossible to doubt that he thinks and exists—describes a piece of wax as seeming to change color, and wants to grant that such an appearance could come to him in sleep. Indeed, the skeptical idea that ordinary waking experience is not qualitatively different from dream experience (also familiar from Descartes) requires that dreams be pervasively colored, since our ordinary waking experience is pervasively colored—at least presumably so. (I will raise some doubts about this, however, in chapters 6 and 7.) More explicitly, in *The Passions of the Soul*, Descartes asserts that “everything the soul perceives by means of the nerves [i.e., sensations] may also be represented to it through the fortuitous course of the spirits [i.e., in dreaming]” (1649/1985, §26). In general, I have not found in my wanderings through the pre-scientific literature on dreaming any assertion that dreams lack color. Commonly, dreams were likened to paintings or tapestries—typically colored media.

Early scientific psychologists were divided. The prominent psychophysicist Gustav Fechner writes “I also never dream in color, but all my experiences in dreams appear to me as though proceeding in a kind of twilight or night.” (1860, volume 2, p. 470, my translation) Freud, in contrast, frequently reports color in his *Interpretation of Dreams* (1900/1931) without any special comment, apparently taking its presence for granted. (By my count, 50 percent of the long dream reports—those over 15 lines of text—in *Interpretation of Dreams* explicitly mention colors other than black, white, or gray.) Mary Calkins (1893), in a long and detailed description of the phenomenology of dreaming, describes dreams as consisting of reproduced and recombined images, never once mentioning any lack of color in those images, though in a 1900 paper a research assistant of Calkins reports color in fewer than half of her dreams (Andrews and Calkins 1900). In 1898, Edward Titchener describes “flashes of color” as a primary cause of dreams, but by 1912 his opinion too appears to have shifted—mentioning (evidently on the basis of a dinner conversation) that some people see

only shades of gray in their dreams (Titchener 1912a). A few years later, Titchener's former student Madison Bentley, waking people randomly at night, reports about four times as many grays as chromatic colors in his participants' dream descriptions (Bentley 1915). By the 1930s, Warren Middleton and Richard Husband were finding that the majority of people denied dreaming in color.

So there appears to be an arc of opinion: before scientific psychology, a consensus or assumption that dreams are colored; divided opinion into the early twentieth century; a consensus that dreams typically have little color from about 1930 to 1960; and then a sudden overturning of that consensus in the 1960s.⁴ Why?

ii

The early to middle years of the twentieth century were, of course, the heyday of black-and-white media. Black-and-white photography was first made public in the 1830s and became increasingly popular through the early twentieth century. Although color photography was invented in the 1860s, color photos did not become easily obtainable by the public until the 1940s. Motion pictures, invented around 1900, were from very early on occasionally hand-painted with colors, and two-color filming was sometimes used in the 1920s (for example in the 1925 version of *Ben Hur*). Nonetheless, motion pictures were overwhelmingly black-and-white until the late 1930s, when a few technicolored movies, including *Gone with the Wind* and *The Wizard of Oz*, drew huge crowds. It was not until the 1950s that color movies became commonplace, and as late as 1960 a black-and-white film, *The Apartment*, won the Academy Award for best picture. Black-and-white television became widespread after World War II; color television did not become popular until the late 1960s.

It can't be chance that this flourishing of black-and-white media coincided with the opinion that dreams are mostly black-and-white. In 2006, to further confirm the relationship between available media and opinion about dreams, I collected cross-cultural data with Changbing Huang and Yifeng Zhou, taking advantage of the fact that different groups in China had very different access to technology at that time. Huang, Zhou, and I examined three groups of Chinese students of different socioeconomic status and consequently different levels of exposure to black-and-white and color media: low-status rural high school students, high-status students at an elite urban university, and intermediate-status students at a non-elite urban university. We gave each group the same questionnaire that Middle-

Table 1.2

Reported color dreaming and media exposure in replications of Middleton's 1942 study. Adapted from Schwitzgebel, Huang, and Zhou 2006.

	Percentage reporting seeing colors in dreams at least occasionally	Percentage reporting access to color film media before age 11
Middleton (U.S.A.), 1942	29	0 (inferred)
Low-status rural Chinese, 2006	29	19
Intermediate-status urban Chinese, 2006	39	47
High-status urban Chinese, 2006	52	76
Schwitzgebel (U.S.A.), 2003	81	100 (inferred)

ton gave to his American students in 1942 and that I gave to mine in 2003, supplemented (at the end) with questions about the respondent's current and past media exposure. As Table 1.2 shows, the percentage of students reporting seeing colors in their dreams corresponds nicely with their subgroup's media history across the five replications of Middleton's study.^{5,6}

One possible explanation of all this is that a ubiquity of black-and-white images in film media changes people's dreams. Although Aristotle, Epicurus, Freud, and their contemporaries dreamed in color, the average American in 1950 dreamed mostly in black-and-white. And now that color media again dominate, our dreams are returning to color.

But is this plausible? It does seem plausible that black-and-white media would affect people's dreams in various ways. After seeing a black-and-white film about Frankenstein's monster, one might have a nightmare in which his black-and-white figure appears as one's tormentor. And perhaps, since most romantic movies seen by people living in English-speaking countries in 1950 were black-and-white, some of those people dreaming of themselves as romantic heroes would paint their dreamworld that way. However, most of our dreams are not so directly modeled on motion pictures. Every day a person sees her house and family in full color. It would be odd to suppose that whether she dreams about them in color depends on what she sees in the cinema or on the television screen. Despite their cultural importance, photography, film, and television seem unlikely to have so profound an effect on our cognition as to regularly transform our dreams of all the things we normally see in color to black-and-white. If so, then, although people's

opinions about their dreams changed dramatically, their dreams remained approximately the same.

One person's plausibility is another's tendentious guess, I suppose, so let me buttress this assertion with two more concrete pieces of evidence. One is the consistency of the use of color terms in dream reports since the 1940s. Calvin Hall and Robert Van de Castle (1966) collected hundreds of dream reports from 1947 to 1950. In these reports, about 0.19 percent of all words—about one word in 500—is a color term other than “black,” “white,” or “gray.” Although that may seem like low rate of color-term use, it is virtually identical to the rates of color-term use I found in four sources of dream reports from the end of the twentieth century—rates ranging from 0.19 to 0.23 percent.⁷ It is also somewhat higher than the color-term rates of approximately 0.02–0.14 percent in samples of English drawn from various other sources.⁸ Nor is there any notable difference in the use of “black,” “white,” and “gray” between the two eras. Those achromatic terms constituted 0.09 percent of words in Hall and Van de Castle's report and 0.13 percent of the words in the modern dream reports (pooled together)—if anything, a trend in the wrong direction. So if Hall and Van de Castle's respondents were dreaming in less color than people 50 years later, that fact is not reflected in their use of color terms when describing those dreams.

A second piece of evidence that seems to support the idea that it is mainly opinions about dreams that have changed rather than dreams themselves is a finding from the Chinese study mentioned above. It turns out that in those data there is only a weak relationship between *individual-level* exposure to color or black-and-white media within each Chinese subgroup and reported black-and-white or color dreaming. The effects were mostly at the group level.⁹ What this means is that respondents' opinions about color dreaming depended more on what sort of media exposure was characteristic of their group overall than on what they themselves had been exposed to, contrary to what one might expect if individual exposure to media was directly affecting dream experience. These results suggest that whatever is affecting people's reports is something shared at the group level—something, I suspect, like cultural attitude, or the availability of certain metaphors, or certain ways of thinking and talking about one's dream life.

The profound changes in opinion about the coloration of dreams, then, do not appear to correspond to equally profound changes in the dreams themselves. It follows that at least some people must be pretty badly mistaken about their dreams. If dreams really are mostly in color, then

most of the 91 percent of Tapia's respondents who claimed not to dream in color must have been wrong, and Tapia must have been wrong when he believed them. If dreams really are mostly black-and-white, then most of us now must be wrong. Or maybe dreams are neither color nor black-and-white (a possibility I will explore in section v) and nearly everyone is wrong.

iii

One might attempt to defend the view that dreams are mostly black-and-white as follows: The failure of Aristotle, Descartes, and others to notice this feature of dreams was due to the lack of black-and-white film media in their time. Absent those media, it may have been natural to assume that since the things dreamed about are colored in real life (family, locations, etc.), they are colored in dreams. Once black-and-white media gained prominence early in the twentieth century, people came to recognize that their dream images resembled the images in those media. Now that black-and-white media are losing importance, most people have returned to mistakenly assuming that their dreams are thoroughly colored, though an observant few maintain that their dreams are mostly black-and-white. People may even mistakenly attribute color to black-and-white dream objects in the course of a dream, just as in a dream I might judge something to have the layout of my house when in fact it does not resemble my house at all. Slightly differently, one might simply *know* that an object is red without experiencing a red dream image, just as one might know in a dream that someone is one's sister even if she looks nothing like one's real sister.

A weakness in this argument is that it isn't clear that pre-twentieth-century media were generally colored. Black-and-white ink sketches and prints were common in some periods, as were monochromatic representations of people and animals on pottery and as sculpture. If dreams were black-and-white, they could as easily have been likened to those media as to colored paintings and tapestries. To this objection, the defender of black-and-white dreaming might counter that if dreams really are in color they could in 1950 just as easily have been likened to color media. Paintings and tapestries did not cease to exist. However, I think the suggested parity fails. Black-and-white movies had other advantages over the competing media of the time that may have compelled comparison to dreams. They integrated visuality with movement and narrative as had no other medium previously—except perhaps theater, if that's a medium. (Why

wasn't it more common, I wonder, to describe dreams as like plays on the mind's stage? Not even Shakespeare, who writes so much about dreams and plays, ever seems to make that comparison.) Another problem for the friend of black-and-white dreaming is the implication that people who still report black-and-white dreaming are the ones who are most observant of their dreams. Recent evidence suggests that this isn't so. Michael Schredl and colleagues (2008) and Eva Murzyn (2008) have found that people reporting relatively high percentages of black-and-white dreams also report recalling fewer dreams and recall the dreams they do report less well. Schredl and colleagues interpret this as evidence that reports of black-and-white dreaming may simply reflect errors of memory, while Murzyn takes the reports of black-and-white dreams at face value, but neither Murzyn nor Schredl and colleagues find any special acumen among people reporting black-and-white dreams.

More appealing, perhaps, is the idea that dreams—at least, most people's dreams, most of the time, even 60 years ago—really are in color, and that the 1950s view that they were not was due to an infelicitous but natural analogy between dreams and the flourishing black-and-white media of the day. As paintings and tapestries yielded to photographs and movies, people naturally updated the media to which dreams were likened, and since these media were black-and-white, so also, it came to seem, were dreams. One of Middleton's 1942 respondents even claims that nearly all his dreams appear in sepia, a tint used in many old black-and-white photographs. (The respondent's own explanation: "Maybe it's because I'm partial to brown.") In the future, perhaps the media will integrate visual, auditory, and tactile elements, coming closer to giving us a full fictional sensory experience. People have often told me that tactile experiences are weak or rare in their dreams—they don't feel the impact of their feet on the sidewalk or the breeze against their arms, nor even in a nightmare do they feel the pain of the knife in the belly. Maybe this is why feeling a pinch is sometimes thought to indicate wakefulness. Perhaps if the media continue to improve, dreams will come to seem ever more vibrant with sensory detail—even if they really aren't, or even if they always were.

iv

Let me confess to a few difficulties for my thesis. First, there are some misalignments between features of the dominant media and features of people's dream reports. For example, paintings and tapestries don't represent motion well (despite some attempts). This has led me to wonder

whether, when those analogies dominated, some scholars doubted that dream images moved. I can find no evidence of such doubts. Also, radio was a lively and pervasive medium for fiction in the early twentieth century. However, as far as I know, dreams were never likened to radio broadcasts. Now, perhaps dreams have some obvious features, such as visuality and motion, about which it is difficult to go wrong. But there are temporal misalignments too. Decades after the end of silent films, which came in the 1920s, Peter Knapp (1953) and Ángel Garma (1961) describe dreams as mostly soundless, more like silent movies than like “talkies.” (The first sentence of Garma’s article “Colour in Dreams” is “Dreams are like old silent films, without sound or technicolor.”) Were Knapp and Garma old men clinging to an ossified concept of dreams from their childhood? Not Knapp, at least: His publishing career ran from the late 1940s into the 1990s. Given the limited literature on the sensory aspects of dreams, it is difficult to assess exactly how unusual the “silent movies” view was—though presumably Calvin Hall (1951) would at least have mentioned it in his *Scientific American* article had he thought it true.

Second, and relatedly, the story of the previous section can’t very well explain the *sudden* transition of opinion from the very low estimates of color dreaming in the late 1950s (e.g., Tapia’s 1958 estimate that 9 percent of people dream in color) to the very high estimates of the early 1960s (e.g., Kahn’s 1962 estimate of 94 percent). As I noted at the beginning of section ii, the transition from black-and-white to color media was much more gradual than that. If culturally salient metaphors are driving our opinions about dreaming, shouldn’t the change in opinion be as slow as the change in the objects of metaphorical comparison?

Maybe the change in research methodology—from mostly questionnaires in the 1940s and the 1950s to mostly REM awakenings in the 1960s—is partly explanatory. Maybe, for example, REM awakening is a more accurate method of assessing dream content. Then perhaps the questionnaire studies assessed only casual opinion about dreams, which was influenced by media analogies, whereas the REM-awakening studies assessed the dreams themselves—dreams which contained color and always had—and once scientists had this better method in hand, their opinions changed rapidly.

Questionnaire studies from the 1960s would help us assess this suggestion if any such studies existed. If popular opinion lagged behind scientific opinion, scientists collecting REM reports might have been tapping into something other than just popular opinion about coloration—perhaps the truth about dreams. Unfortunately, the next English-language question-

naire study wasn't published until 1991. In research based on individual dream reports after natural awakening, there does appear to be a gradual rather than a sudden shift—from Hall's 1951 estimate that 29 percent of dreams contain color to Suinn's 1966 estimate of 41 percent to Schredl and colleagues' and Murzyn's 2008 estimates of 72 percent or more. That gradual shift is consistent with the view that, at least for this methodology, the change in dream reports tracks (perhaps with some delay, especially for the older people in Murzyn's study) the gradual change in the media.

To help improve my sense of popular opinion in the 1960s, I looked up "dreams" in the *Reader's Guide to Periodical Literature* and read every article on that subject (21 in all) published between 1955 and 1975 in the *New York Times Magazine*, in *Reader's Digest*, in the *Saturday Evening Post*, and in *Time* (magazines I chose for their wide circulation and general-interest news content). Unfortunately, I found only a few passing remarks about the coloration of dreams: two early articles (1959 and 1961) describing dreams as mostly monochromatic, a 1965 article on psychic dreams that describes the colors of two dream objects but makes no general comments about the coloration of dreams, a 1967 article briefly stating that dreams can be either color or black-and-white but not saying which is more common, and a 1971 article claiming that people who dream in color have more satisfying emotional lives. A ProQuest search of the *New York Times* and the *Los Angeles Times* from 1955 to 1969 yielded only two artists' claims (1962 and 1963) that they dreamed in color and a Nicaraguan poet's assertion (1969) that blue "is the color of dreams."

If immediately upon discovering the association of REM sleep and dreaming in 1953 REM-awakening researchers had asked their subjects about coloration, what would they have found? Would they have found that most people report—presumably to their own surprise—color dreams? If not, the change in scientific opinion from the 1950s to the 1960s could not have been simply the result of improved method. Here are two reasons to suspect that people would have reported mostly black-and-white dreams if REM-awakened in the 1950s: First, the closest early method to REM awakening was random midnight awakening, and Bentley (1915), using that method, got many more reports of gray than of colors. Second, dream researchers in the 1940s and the 1950s must often have spontaneously awoken from REM sleep and reflected on their dreams, thus executing an informal home version of the REM-awakening method with themselves as subjects; and presumably when they did so they judged the just-ended dreams to be mostly black-and-white.

v

Although the view that our dreams have color may seem more plausible to us today than the view that they are black-and-white, we should also consider the possibility that our dreams are neither color *nor* black-and-white, and that applying either of these categories is misleading. Consider, as an analogy, a novel. Though novels are surely not in black-and-white (though the words on the printed page may be), it also seems a little strange to say that they are in color. Novels, of course, attribute color (“she strode into the room in a dazzling red dress”) and refer to objects that normally have particular colors (“she promptly chopped a carrot”). Perhaps it makes sense to say that such fictional claims are “in color” or partly so. However, most elements of most scenes in novels do not have determinate colors in that way. When the heroine slides into her 1966 Mustang and rumbles away, the scene could be imagined with any of a variety of colors. Her skin might be dark brown or light; the Mustang might be red, black, or green; the sky might be blue, gray, dusky, or star-spangled. And even though we know that the heroine’s dress is red, it could be any of a variety of shades, as long as they are suitably dazzling. It is a bit odd to say that the sentence describing her departure is “in color” when the color of so much of it is underdetermined. And, correspondingly, it is a bit odd to say that the novel as a whole is in color, though perhaps one could say that if one were careful enough in circumscribing the implications of the phrase “in color.”

One might more naturally say that the *images* that a novel evokes in (most of) its readers are in color (I imagine the Mustang as green and the sky as dusky), but even that may not be quite right. Can’t one just imagine the character driving away, without imagining the colors of the car, the road, and the sky? If one is reading the novel quickly, one may not have time to piece together a completely colored scene in one’s imagination. Stephen Kosslyn (1980) argues (based on the experiential reports of multiple subjects) that it takes considerable time to fill in the details of complex images. If that is so, then when one is reading quickly much must remain sketchy and underspecified, and a novel will not play before one’s mind with all the detail of a color movie.

If you find yourself disinclined to think that novels or the images they evoke are properly described as being either in black-and-white or in color, you may also find yourself hesitant to apply the terms “black-and-white” and “color” to dreams. Maybe dream objects and dream events are similar to fictional objects and events, or to the images evoked by fiction, in

having, typically, a certain indeterminacy of color—neither cerise nor taupe nor burnt umber, nor gray either. If so, the analogy between dreams and black-and-white movies might not be as inapt as I have been suggesting. Many of the objects in black-and-white movies are, after all, also indeterminate in color, though they appear on the screen as gray. Although our heroine is eating a bell pepper the screen image of which is gray, it does not follow that she is eating a gray bell pepper. The color of the bell pepper isn't specified by the medium. Black-and-white movies, then, may be like novels and dreams in leaving the colors of most of their objects indeterminate—something that color film cannot (or at least cannot easily) do. Thus, it is possible—if dreams are mostly indeterminate in color—that those folks from the 1950s were on to something that we have since forgotten, even if they went too far in saying that dreams were literally black-and-white.

vi

I am tempted by both of the contrasting views mentioned above—on the one hand the view that dreams are richly colored, perhaps as richly as ordinary vision (assuming that ordinary vision is richly colored), and on the other hand the view that most dream objects have only indeterminate color. But which view, if either, is right?

If neuroscience were more advanced, we could look to it. If we knew, for example, exactly what sort of brain activity co-occurred with the conscious experience of color, we could see whether people showed this sort of brain activity while dreaming. But as things are, neuroscientists disagree about the neurological basis of color experience (see Gegenfurtner and Kiper 2003; Solomon and Lennie 2007; Wade et al. 2008; Conway 2009), and neuropsychological research on visual brain activity during REM sleep has not yet even attempted to focus on narrow issues, such as the activity of color cells (Braun et al. 1998; Wehrle et al. 2005; Hong et al. 2009).¹⁰

We might take seriously the low rates at which people, in some recent questionnaires and dream reports, describe their dreams as “neither” color nor black-and-white when explicitly given that option (0 percent in Schwitzgebel 2003; 0–17 percent in Schwitzgebel, Huang, and Zhou 2006; 0–4 percent in Murzyn 2008). But if we are willing to suppose that in 1950 the majority of people could have been radically mistaken about the coloration of their dreams because they over-analogized to film media, it seems we should also take seriously the possibility that the majority of people today could be mistaken in saying their dreams are in color, being still under the

sway of that analogy. Indeed, the idea that dreams must be *either* color or black-and-white—that there is no other possibility—may be even more deeply ingrained in the media metaphors we use in thinking about dreams than was black-and-whiteness in 1950. In 1950 the film media were not all black-and-white, but they were all, or virtually all, either black-and-white *or* color. And so of course were paintings and tapestries. If we allow ourselves to be guided by such analogies, the idea that dream experience could be neither color nor black-and-white might seem incoherent or impossible to understand. Now, perhaps the idea of imagery or dream experience that leaves its colors unspecified without thereby being grayscale or monochromatic *is* somehow incoherent, but it isn't obvious why this should be so, or that people's general avoidance of the "neither" option in surveys like mine and Murzyn's should be particularly telling on the matter.

Maybe if we could establish that dream experience was qualitatively identical to waking perceptual experience—what Descartes seems to have assumed and what Jonathan Ichikawa (2009) calls the "percepts" view—then, from the assumption that waking visual experience is mostly in color, it would follow that dream experience too is mostly in color. However, this argument seems to invert the order of explanation. Until we determine whether dreams are rich in color or whether they leave the colors of most objects unspecified, it seems premature to commit to the view that dream experience and waking perception are experientially identical. Perhaps some piece of evidence for the qualitative identity of perceptual experience and dream experience is so compelling, independent of any assumptions about coloration, that we can draw out the richness of dream color as a separate conclusion? I don't see that compelling argument. (I don't accept, for example, that qualitative identity follows from the fact that we sometimes mistakenly think we are awake.)

It might seem odd to appeal to such indirect forms of evidence. If dreams are richly colored, the subjective experience (or "phenomenology") of dreaming is radically different than if dreams leave the color of most of their objects unspecified. Shouldn't we then simply be able to reflect directly on the phenomenology of dreaming to decide the question? The experiential difference between the two cases is so vast that it seems—doesn't it?—that a moment's thought should make it obvious which view is correct. Can't we guard against cavalier assumptions about similarity to media and against loose ways of talking, and just go sleep on it? When we wake, shouldn't the answer be plain?

Here I find myself quite thick. Although many mornings I remember a dream or two—and sometimes they seem to have been quite vivid—I can't

tell you whether those dreams are in color. The historical swings in opinion about black-and-white vs. color dreaming suggest that I am not singularly inept, and that incompetence in assessing the coloration, or lack of it, of our dream life is fairly widespread, despite the considerable confidence people often exhibit when questioned on the matter. We don't know the phenomenology of dreaming nearly as well as we think we do.

You might think that the mistakes I say people make, or have historically made, aren't so terribly large. After all, it is sometimes difficult to remember which classic movies are in color and which are black-and-white, and such amnesia doesn't constitute a serious epistemic failure. However, confusion about the coloration of dreams is substantially deeper than an innocuous mistake about a particular Jimmy Stewart film. It is more like being confused about—or, worse, confidently persisting in the wrong opinion about—whether *all* the movies one sees are in color or *all* are in black-and-white, or whether there is some mix, despite seeing movies every night.

vii

This fundamental fact about the experience of dreaming, then, eludes me—eludes many of us, and I suspect it eludes you. To determine the coloration or non-coloration of the dreamworld proves surprisingly difficult—pending, at least, substantially more sophisticated psychological or neuroscientific research. I conclude this chapter with a question that will bring us to the heart of this book: Is dreaming, in this respect, *particularly* elusive, or are we equally in the dark about other aspects of the stream of experience—our emotions, our waking imagery, our ongoing visual phenomenology?

It could well be that dreaming is particularly or uniquely elusive. We have a powerful tendency to forget dreams. Unless we fix upon them with special attention, they evaporate almost instantly when we wake. We don't forget outward events—especially emotionally powerful ones—as easily. Dream reports would thus appear to be good candidates for distorted reconstruction. Yet if I am right—and this is what I will argue for in the rest of this book—our profound ignorance of our dreams is accompanied by nearly equally profound ignorance of most of the rest of our subjective experience.