

Appendices

A.1 What is the scientific field? An exordium

Go, my Sons, buy stout shoes, climb the mountains, search ...the deep recesses of the earth... in this way and in no others will you arrive at a knowledge of nature and the properties of things *Severinus 7th C AD* (Margenau & Bergamini, 1966, p. 82).

The field is a space that is coded, regulated, and defined as objective by science. In this sense it is no different from where data or samples are processed or analysed (in the office or the laboratory). What then is the difference between the field and the laboratory? The laboratory is a built environment constructed for science work to take place. The field comes into existence as a “site” when the performance of fieldwork takes place. Fieldwork is the science that takes place “out there”. But what does “there” mean? Depending upon the field of research, the field could be in areas where nature is little disturbed (natural sciences), in rural areas, in urban ecosystems or amongst human communities (social sciences and anthropology). Kuklick and Kohler define scientific fieldwork as “enterprises conducted at least partially out of doors, in uncontrolled settings” (1996, p. 1). There is obviously a specificity in where fieldwork takes place, but how do we characterise the enormous number of specialised disciplines that interact with the field¹? Despite the variability of field workers and field tasks, four basic kinds of activities take place in the field. These are:

- Initial explorations of a place with their emphasis on observation, description and classification;
- Monitoring and learning from changes in factors in the environment over time and through space;
- Using the field as a place of experimentation to answer questions by manipulating or introducing new variables; or
- Managing a place by altering variables to get to predetermined outcomes.

The details of these kinds of general activities are not only specified by the discipline that is being followed, but influenced by the specific nature of the local environment. Basic phenomena such as weather, the lie of the land, vegetation or animals cannot be avoided. The physical characteristics of the field are therefore always central to field, and is a significant affective influence on the nature of the researches conducted, the experience of the individual, and the beliefs that surround the field.

A further spatial aspect of the field is its distance from the metropolis. All fieldwork begins with the journey. The journey (of whatever magnitude) of going and returning from the field is an important aspect of the process. The opposite of the field is not only the laboratory but also the home. The commonsense beliefs and values of the home are unavoidably taken into the field. The field tent is a re-creation of aspects of home. The predicament of anthropology in the 1980s was how to represent the experience of fieldwork and how to situate the subject in the field. Subsequent to this, re-exploration of the home has led to the concept of multi-sited fieldwork and this has further redefined the field

¹ Agronomy, anthropology, astronomy, biogeography, botany, cartography, ecology, ethology, exploration, forestry, genetics, geography, geology, geophysics, glaciology, hydrography, limnology, natural history, oceanography, palaeontology, physiography, public health, social survey, soil science and zoology (Kuklick & Kohler, 1996, p. 1).

(e.g., Caputo, 2000; Marcus, 1998). The way that the social sciences has approached and understood fieldwork is invaluable for reconceptualizing the field beyond the limiting boundaries of science and for finding artistic ways of tackling the field (e.g. Goodall, 2000; Wolcott, 1995). And although I have concentrated on the field, you will find that connections to the home and the gallery have not been ignored.

The field is intimately connected to ideologies and beliefs about nature and landscape. Science is distinguished both by the belief in an external reality that can be described and predicted – Nature -- and in the use of the scientific model. Some ideas about nature are specific to science, whilst others overflow from more general or commonsense approaches derived from popular culture and society's culture as a whole.

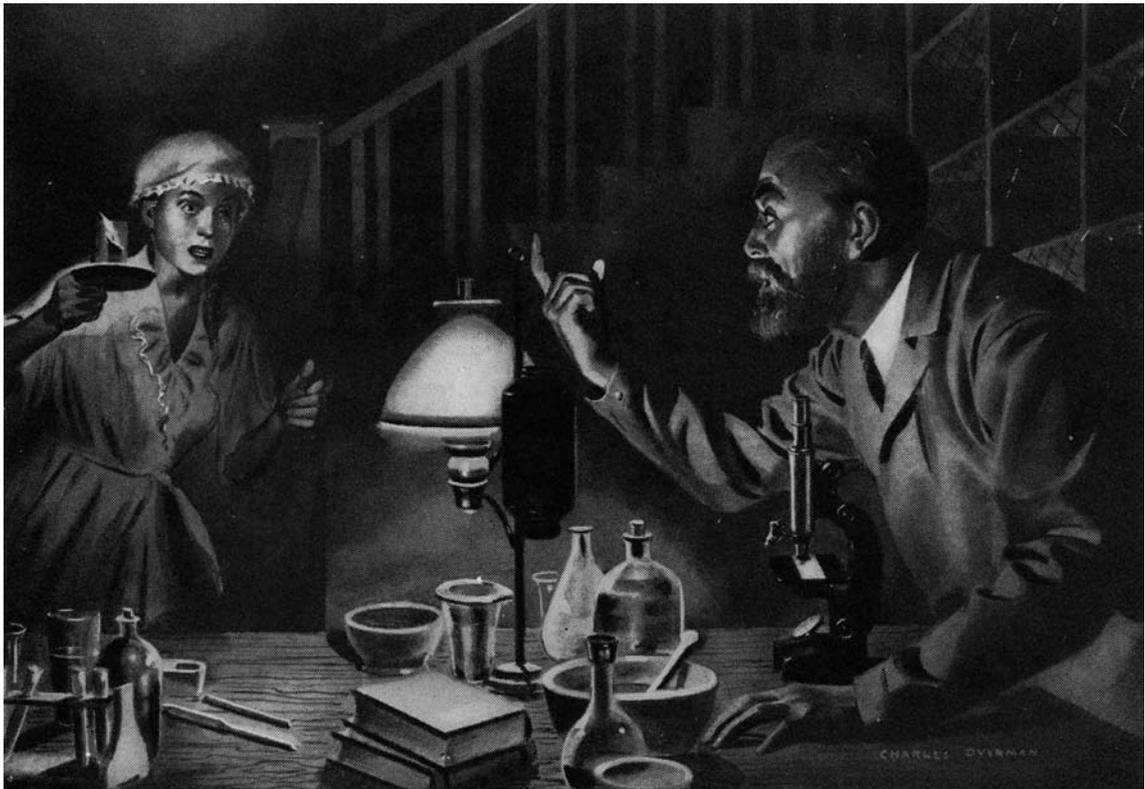


Figure A.1.1 Robert Koch bids his wife look through the microscope at the tubercle bacilli he has just isolated, (found image).

There are strongly held archetypes of the scientific process. One archetype (and cliché) is that it is a solitary process with the antisocial (male) genius/mad scientist holed up in his laboratory. Another archetype is the heroic (male) scientific explorer risking life and limb in the deepest darkest jungle. These models of heroic science have had a significant role in shaping the nature of the field. The fact that the field was seen as perilous shaped the social identity of the researcher because it required moral virtues of sacrifice, endurance and discipline. The solitude of the scientist, for example, was linked to the “virtue” of objectivity (Oreskes, 1996) so that it was not just a methodological ideal but a moral one. These virtues were (and probably still are) connected to the role of exper-

riencing nature in building a healthy body through personal discipline. In some scientific disciplines doing fieldwork was couched in terms of a rite of passage into manhood. Historically the heroic scientific model posited the white upper-class male as the most objective and reliable fieldworker. It is not surprising that restrictions on gender and class sprung from the model (see Oreskes, 1996). Women had to forgo their feminine displays to be accepted in a masculine world. And although these conditions have been modified to a large extent, even today fieldwork is associated with sacrifice, relative hardship and physical exertion.

A.1.1 The laboratory and its opposite

The diversity of activities taking place is one reason why the field (as a cultural site) has been little investigated. In contrast the laboratory as a space of science has been scrutinized both as a social setting (e.g. Gilbert & Mulkay, 1984; Latour, 1987; Latour & Woolgar, 1979) and in the physical organisation of space (e.g. Agar, 1998; Gieryn, 1998). A significant foundation text was *Laboratory life: the social construction of scientific facts* (1979) written by Steve Woolgar and Bruno Latour. Working from a background in anthropology, and in cooperation with the sociologist Woolgar, Latour set out to observe his scientists as a tribe. He looked at how science gets done over time by looking at the way scientific papers get published and how careers progress. In Latour's (1987) later book, *Science in Action* he concluded that the truth that scientists are searching for is not something hidden which must be unearthed by the application of logic, but a contingent process of negotiation between human and nonhuman actors (i.e., Actor-Network Theory). It is a negotiation of money, technological resources, prestige, status and human identities. Truth is not inherent in any scientific finding but a belief used after the fact to rhetorically defend the theory itself.

Latour's view of the workings of a laboratory has been very influential. More interesting for artists is Latour's participation in the 1999 Antwerpen Open, *Laboratorium* where he contributed to an interdisciplinary contemporary art event about the nature of the laboratory and experimentation² (Obrist & Vanderlinden, 1999) Largely following on from the methodological framework of Latour, *Laboratorium* set out to explore the questions of "what is the meaning of laboratories? What is the meaning of experiments? When do experiments reach public consensus? Is rendering public what happens inside the laboratory of the scientist and the studio of the artist a contradiction in terms?" (Obrist & Vanderlinden, 1999, p. 7). Looking at the connections explored in *Laboratorium* it is evident that a third opposite for the field is the artist's studio. Although this project did not take the studio as its subject matter, the parallels between the laboratory and the studio underlie it.

There are six notable differences between the laboratory and the field. Firstly, laboratories are exclusive spaces with restrictive access. They are highly structured communal spaces where scientists work in teams or collegiate groups. There is strong social

² Latour also co-curated *Iconoclash* (Latour & Wiebel, 2002).

Figure A.1.2 Matt Mullican, *Studio Shots*, 1989-1999 (Obrist & Vanderlinden, 1999, p. 39).

interaction and conditioning from the social group around them. In contrast, work in the field is still often solitary (reflecting the heroic model). In-group interaction can occur when communicating with colleagues away in the metropolis, but in general the fieldwork community is dispersed. The practitioner of fieldwork has to deal with the people that they meet: who live there or are also travelling there, and who are often from different cultures or subcultures in a society. The worker in the laboratory is largely insulated from these other groups.

Secondly, each site has a differing relationship to time. The laboratory is about stasis and the control of time. The environment can be regulated so that all but one variable can remain constant. The laboratory is the home of the control and the placebo. Situations can be duplicated to create replicable data. In comparison, conditions in the field are unrepeatable. Kuklick and Kohler (1996, p. 3) describe the nature of the phenomena in the field as “multivariate, historically produced, often fleeting and dauntingly complex and uncontrollable”. The experience of the field may be local but it is also transient as the time in the field is limited.

Thirdly, the laboratory is a high-tech location. This is not to say that fieldwork does not require equipment. The field is a site where portability is stressed and skills of improvisation are needed to deal with the natural and cultural surrounds. Fieldworkers

rely critically on their technology for survival *and authenticity*: a field scientist working on his or her own must maintain credibility through believable equipment and accepted methods. If an observation is deemed too far-fetched, the scientist has fewer avenues to defend their work because no one else was there.

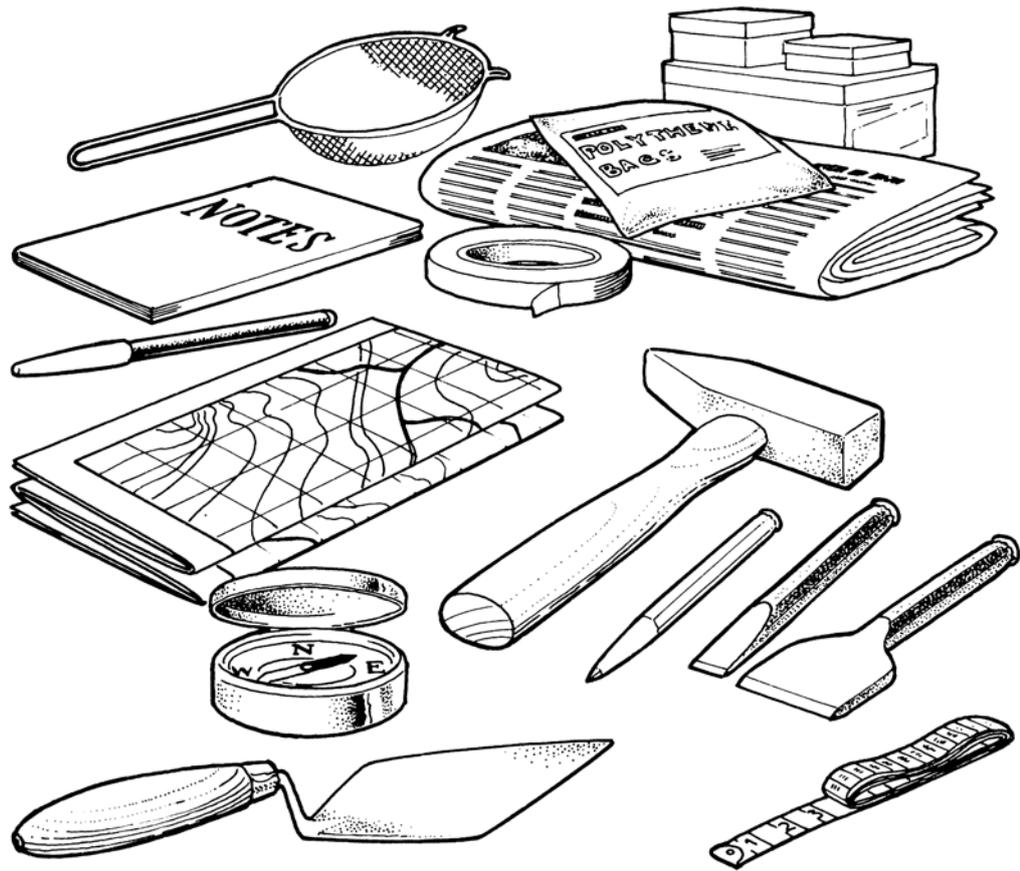
Again, on the one hand, the laboratory is a key site where power is played out. On the other hand, the field is where power is diffuse and dispersed. A consequence of the power of the laboratory is that a significant proportion of field customs have been translated from the lab. Laboratories have a global social and physical organisation, which is replicated worldwide: laboratories are much more universal. This is another reason why the laboratory has been attractive for academics and artists to investigate, whilst the field remains less so. But the very localised nature of the field also creates a new flavour that is more applicable to a world of local, diverse and competing sites: “such diversity evokes a vision in which the notion of ‘space’ is breaking down before our eyes” (C. Smith & Agar, 1998, p. 2).

The type of science that takes place is the fifth difference between the laboratory and field. There is perhaps more qualitative leeway in the field because of the difficulty in establishing experimental set-ups. It has been the home of the observational scientist, whilst those more theoretical stay at home. Different types of people get attracted to fieldwork because of the heroic science model. In the past the uncertainty of solitary observation has led to examples of fraud (McCook, 1996). Historically,

the transformation of an object collected in the field into an object that appeared in a scientific paper was a long and often tenuous process of intellectual legitimisation. Ideally, the collector collected the “natural” object in the field, making careful observations of the circumstances. Then the object and the description of its manner of collection were passed back to the metropolis through as few hands as possible, since each transfer of the object and observations implied a possible degradation of the information (McCook, 1996, p. 183).

A significant research theme in the history of fieldwork has been “chronic issues of status and credibility that derive from the social and methodological tensions between laboratory and field standards of evidence and reasoning” (Kuklick & Kohler, 1996, p. 3). In the orthodox model of the scientific process there is a neat separation between data/sample gathering in the field and analysis and synthesis in the lab, as part of the “straightjacket” of objectivism. In reality these latter “mind” processes are never clearly separated. The process of writing up one’s fieldnotes every evening, or spinning out hypotheses about geological structures in the process of being mapped around the kitchen tent table (Schwarz, 2003), are already instances of organising one’s thoughts. Already an everyday modification to the scientific process has taken place.

Lastly, the fieldworker comes back from the field accompanied by his or her samples. Things in the lab have fixed meaning derived within the social group. It is rare that a laboratory object is “taken in” and given meaning by other social systems such as the general public. In contrast, samples from the field often have contested and ambiguous meaning. For example a bowerbird is both a participant in the Dreaming as well as being



The equipment you will need for serious collecting

Figure A.1.3 The serious collector (found image).

a bird to be “ticked off” by birdwatchers. Types of samples can include specimens of rocks, plants or animals (dead or alive), numerical data from instruments, photographs, statistics from surveys, or maps. The types of things brought back are usually easy to carry and reasonably stable. They are brought back to be used in the laboratory or deposited in a museum collection. They act as evidence to persuade and argue theories.

There is still a place too for curiosities whose values, as objects, remain unsettled. Objects from the field are more likely to re-enter the wider cultural discourse. Famous samples like archaeological finds can be transformed into cultural items (e.g. the controversy surrounding the Elgin Marbles). Art collectors and connoisseurs value ethnographic material. Private collectors seek mineral samples and fossils. Even visual materials from the field such as maps and botanical illustrations can become highly valued art commodities (Johns, 1996).

A.1.2 Patrolling the boundaries

One of the ways in which the field is exciting is in its ambiguous boundaries. Fieldwork takes place in public space. This makes the field a place of potential cultural translation (e.g. appropriation). As noted there may be both permanent residents and transients “engaged in hunting and fishing, foraging, camping, prospecting, touring, composing poems and novels, painting pictures, and taking photographs” (Kuklick & Kohler, 1996, p. 4). Kuklick & Kohler go on to note that, although this population may not agree with each other and will often have conflicting needs, the interactions between them affect fieldwork in many ways. Unlike the laboratory with its symbolic or physical boundaries, the scientist in the field will always interact with the non-scientists. One of the most important types of interaction is with a local guide or informant. In a foreign environment, the fieldworker is dependent on the local assistant who may only partially understand or share the goals of fieldwork. But in the best of cases the informant is so useful that they can be considered major collaborators (Camerini, 1996). The scientists also share the same public communication systems and this makes their activities impossible to conceal.

Figure A.1.4 Ali Wallace, Alfred Wallace’s assistant (Camerini, 1996, p. 55).

Historical fieldwork was complicit with the imperialist project (Driver, 2001). Field scientists used the transport, communication and social networks of colonialism. Fieldworkers were often dependent on the largesse of the local colonial potentate. The objects brought back were material booty for the various imperial museums. The desire to be able to name all things in a universal inventory was the expression of ultimate power over space. Inventorying the world was also the precursor of exploitation.

Fieldwork is one of the last areas of science where amateur participants (such as bird watchers and fungi collectors) can make significant contributions through observations and by taking samples. Amateurs and non-scientists also had an important historical role as collectors. The growth of ecotourism in the 1990s has seen an increasing number of people paying to directly participate in the field. “Today as in the Victorian era, middle-class people believe that experience of places they understand as unspoiled nature will bring them personal growth and renewal” (Kuklick & Kohler, 1996, p. 5).

Science in the field is in some ways closer to the everyday because of the overlapping relationship that it has to other ways of knowing the outside, such as the various forms of recreation, travel, exploration or resource harvesting. A form of cultural translation takes place where scientists in the field take advantage of materials and models from outside. The identity of the fieldworker is mobile or unstable because their behaviours are often translated from other outdoor pursuits to the point where it is difficult to tell them apart. Also, the phenomena of time off in the field (or time not directly engaged in fieldwork), forces the scientist to cross the boundary into other roles: “the field is a site conducive to innovation, in which even those acts that seem to translate the unfamiliar into the familiar may constitute creative synthesis born of improvisation with available resources” (Kuklick & Kohler, 1996, p. 13).

Historically fieldworkers have been mistaken for madmen, bandits, spies, sportsmen, tourists, poachers, fish and game wardens, customs officers, and any sort of colonial official (Kuklick & Kohler, 1996). The ambiguity of a less stable social identity also persists because the roles of fieldworkers have sometimes required mimicry and subterfuge to fit in. This is particularly so with field anthropology in the participant observer mode. The field also provides the opportunity to transgress without being seen: to “go native” -- ordinary behaviour can be put aside -- with the additional prospect of reinventing an identity as wild as one likes. Historically the field enabled the fieldworker to escape prior restrictions of class, status or convention. The flip side of course was adopting a hyper virtuous persona, holding on to upright standards of behaviour and drawing a clear separation between the self and the Other (or wild). Fieldworkers have the choice of centring power in the subject and expressing it as rigorously or extravagantly as they like, or inhabiting the space of uncertain power in a more flexible way.

A.1.3 Flexible sites

There have been changes to the field over time. The golden age of classical fieldwork was the eighteenth and nineteenth centuries (Livingstone, 2003). A similarity of each of the disciplines of natural science has been a clear path of development from the beginnings of science by armchair travellers, to the truly heroic mode of fieldwork out into the “empty world”, to the growth of a mature field experience. The armchair scientists mused upon traveller’s tales rather than experienced the field for themselves. They had to judge what was truth or fancy based upon its variation from established fact and upon the reputation of the traveller. With the increasing ease of travel the armchair theoreticians gave way to individual gentlemen of means travelling to satisfy their curiosity and collections. The pioneers of fieldwork could devise their own methods of mapping knowledge but “by the early nineteenth century, however, ‘field work’ had become much more systematic as surveyors charted the states of nature. At the same time, individual practitioners became increasingly marginalised by the establishment of privileged sites for scientific practice and pedagogy” (C. Smith & Agar, 1998, p. 3). The latter sites were not only the laboratories but also the natural history museums, universities and learned societies.

It would seem that the *quality* of power, and flexibility of the field, has changed over time. The late eighteenth and early nineteenth centuries were a time of increasing militarisation of fieldwork as it was transformed into expeditions (or expedition-like behaviour), at the same time as natural history was being subdivided into disciplines “each with their own methods, agendas and subject matters” (Outram, 1996, p. 249). Structures of conformity have resulted from the standardisation of methodological technique and the normative regulation of behaviour through powerful forcing beliefs such as in the objectivity of science. As noted earlier, field experience is also a legitimating tool, a rite of initiation and passage. This is particularly strong in some disciplines (e.g. geology); under reassessment in geography, for example; and redefined in anthropology and ethnology. We have seen how much more concentrated power is in the laboratory. My questions have been, just how far have these coercive and conforming practices continued in the field to the present day, and is it still a flexible site?

A.1.4 Disappearance of the field

In the past twenty years or so the nature of the field experience has changed in response to changing technologies. Speed has increased and virtual distance has decreased: it is now common to see laptops in the field, which speed up the input and analysis of data, as well as digital cameras to instantly retrieve imagery and satellite communications to allow interaction with the non-field. The equipment used has in many cases become more expensive and more specialised and work places and work practices have become more organised and structured. It is much more likely for people to form teams or work for large organisations. All these factors reflect a repositioning of fieldwork closer to the laboratory. More significantly, fieldwork may perhaps have become less common (or less attractive), partly due to funding restrictions, and notably due to advances in computer simulation. In ways that would not have been dreamed about prior to the invention of the personal computer, complex networks of variables can be modelled and scenarios played out to simulate natural systems.

Important questions during the project were, if the field is less visited and less visible, will references to the field be tinged with nostalgia, and will it be a retreat from *FutureNatural*? Rightly or wrongly there is a feeling that the heroic search for pure knowledge is no longer important. Among mammals and birds, the discovery of new species has slowed to a trickle. Although this is not the case for many other organisms it may be that the thrill of “virgin” fieldwork, of the *terra incognita*, has disappeared. One can take scant comfort from the fact that beneath our feet and behind our back the world’s biosphere is under pressure. The practicalities of fixing up the messes we make are now more urgent than the excitement of the hunt. Such environmental problems will not go away. If there has been a shift away from solitary heroism it has been the change to a “management” ethos with its own attendant assumptions.

Does the field still exist as a heterotopic site allowing for deviance and continual negotiation of power/space? The field may still be a relatively unstable site in comparison to the laboratory. It may still generate *places in-between* – places of transgression. The field is still differentiated by its connection to physical phenomena, and in its relations to public spaces and a social “out there.” The field continues to be a site of cultural translation. The continually changing nature of the many phenomena and the temporary or transient nature of experience are fruitful sites of artistic investigation. The improvised relation between the field and the self (especially through its tools) has not disappeared entirely. The field, therefore, throws up many possibilities. The **fieldwork/fieldwalking** project set out to make work from the *thickness* of these possibilities.

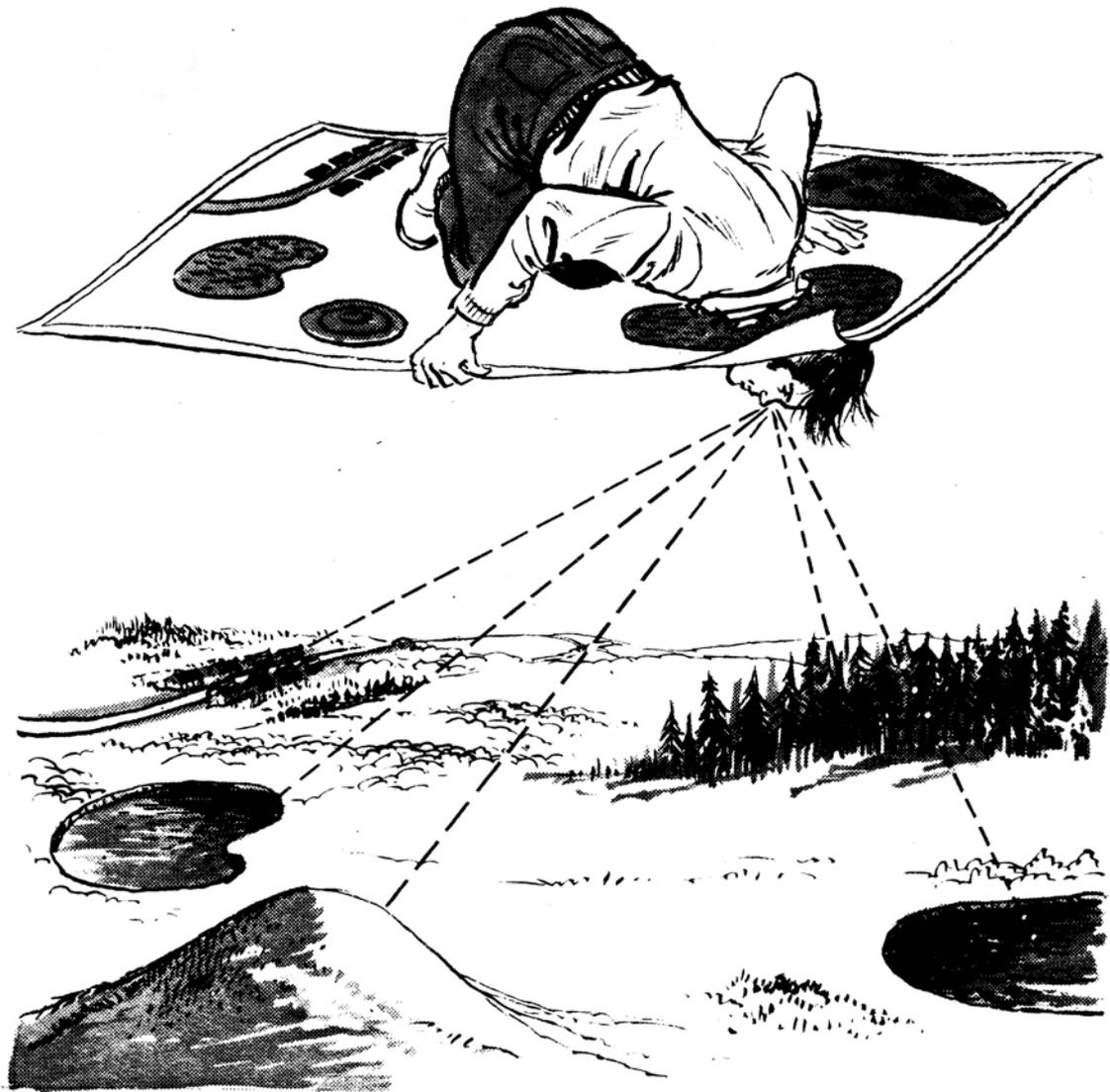


Figure A.1.5 Understanding maps (found image).