

CAVES AS UNKNOWN WILDERNESS

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ABSTRACT

Caves are one of the final terrestrial frontiers. They remain a wilderness in the true sense, even after decades of exploration. Aircraft or spacecraft cannot remotely sense caves. Their numbers and extents are unknown. Technology aids, but does not replace, the human explorer. While cave explorers have ethics of "style," they also must push the parallel frontier of technology, developing sophisticated tools for descending and scaling pits, diving water-filled passages, digging through obstacles, etc. As a result, the caver may occasionally modify small parts of wilderness so that more may become known. In doing so they exercise restraint, which must also be practiced by the visitors who will follow to enjoy the cave as known wilderness.

KNOWN AND UNKNOWN WILDERNESS

Today, wilderness is taken to mean an intentional preserve of nature. The implicit assumption is of land explored, surveyed, photographed, mapped, assessed, bounded and then left alone. An absence of major physical modifications and the use of only human or animal transportation, not a lack of human knowledge, qualifies land as wilderness. Unknown wilderness-- places that are unexplored, unmapped, unimagable and unbounded--is exceedingly rare. Caves, while comparatively small and with finite limits imposed by geology, are unknown wilderness. As such they contain many of the characteristics of frontiers now vanished. Opportunities to reveal beauty, wonder and new scientific phenomena are based on group cooperation, personal initiative and skilled solutions to complex problems of time investment and hazard reduction.



Figure 1 Known cave wilderness under a highway interchange

CAVE VISITATION

The 40,000 or so recorded caves in the US are a substantial known wilderness, which shares many characteristics with legally designated surface wilderness areas. Mechanical conveyances are absent; the caver moves under their own power, endurance and fortitude. Like the backpacker, however, they are free to use any small technological devices that they can carry. Like most mountaineers, the cave visitor has a good idea of what awaits them; the unknown is the success and aesthetic quality of their visit (Mitchell, 1983). There is likewise an assumption of responsibility for one's own well-being, without an elaborate external "safety-net" provided by civilization at large. The caver, like the backpacker and climber, must assess nature over space and time, designing a course of action within the constraints of personal skill and unknown variables. Conserving the qualities of known cave wilderness that allow these aesthetic experiences is a major goal of caving organizations. With delicate features that are protected from surface weathering but not walking cavers, caves can be "loved to death" (Nash, 1973) more quickly and irreparably than surface features. Both malicious vandalism and benign carelessness on the part of experienced visitors have heavy impacts on caves.

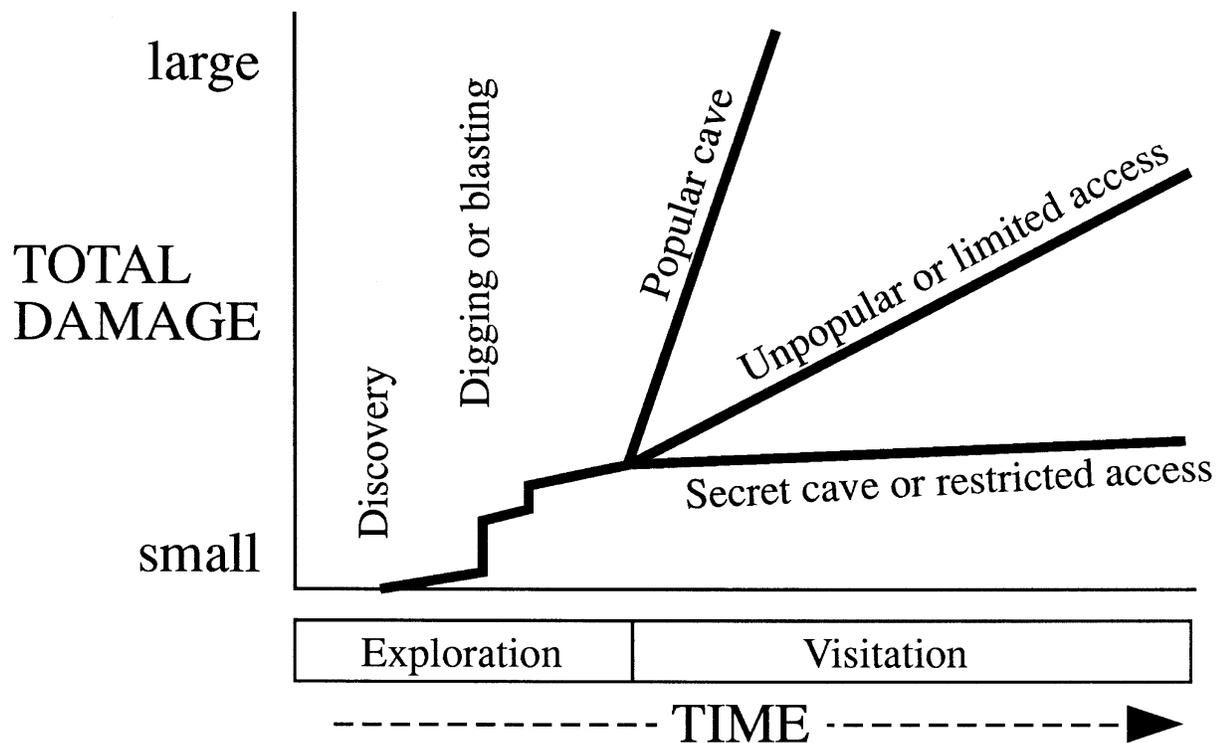


Figure 2 Damage vs. time during the exploration and visitation phases of a hypothetical cave. Total damage will vary widely depending on popularity, knowledge, limitations on access, experience of visitors, etc. (From Ganter, 1989b.)

CAVE PRODUCTION

Known caves also form a gateway into the unknown, and it is in this respect that cavers can be *explorers* in a distinctly different sense than others who spend time out of doors. The explorer produces new caves (or passages in known caves) through their efforts and thus new knowledge. In recent years cave explorers have found stadium-sized rooms and passages, unexplained geological processes and well-preserved artifacts of early humans. None of these finds are accidents. They come from broad research, detailed planning and extraordinary drive. The idea of investment is paramount; the explorer assumes that they will work diligently with many failures before making a find.

It is thus essential that the explorer become a manager of information and resources. They must research geological conditions, the character of known caves, and the efforts of their predecessors recorded in written and oral tradition. Most importantly, they must utilize and create maps in order to systematize their spatial knowledge, particularly in understanding parts of caves and their relationships to the land surface (Figure 1).

Cave production often involves the rearrangement of small parts of caves. Potential entrances may need to be excavated, sometimes through debris of human origin (e.g., slash or sediment from logging). Within caves, rocks, passage walls, floors or ceilings, and sediments may have to be moved in places by digging, hammering or blasting to admit the explorer. Analogously, there are trails in our known surface wilderness. This is the price that must be paid.

Unfortunately, some cave visitors think that there is a conflict between this initial "destruction" (Figure 2) and the conservation ethic that minimizes the impacts of subsequent visitors. (This ethic is summed up by the motto of the National Speleological Society: "Take nothing but pictures, leave nothing but footprints, kill nothing but time.") The crucial difference is intent. The cave producer is not a vandal because they (like the surgeon as opposed to the murderer) are engaged in a creative process with a positive goal (Ganter, 1989b). The cave producer explores passages, documenting with photos, maps and accounts what they find (Ganter, 1989a). The result is known wilderness.

THE FUTURE OF CAVE PRODUCTION

Cave exploration is synonymous with technology. Humans do not come equipped with the multiple lights, sturdy footwear and synthetic fabrics which are the most basic tools of the cave explorer. The recession of cave frontiers has corresponded precisely to new technology (nylon ropes, synthetic fabrics, scuba gear, etc.) that allows barriers to be overcome (Stone, 1983). At present, rebreather equipment is under development which will allow explorers to spend days traversing water-filled passages miles from cave entrances (Stone, 1989). This will result in knowing a whole new realm of wilderness.

There are still surface frontiers for caving, places where one can walk on the land and find caves that have never been entered. Most of these are far from population centers. Closer to home, finding unknown wilderness is much more difficult. It is here that caving diverges in one of many ways from mountaineering. Those who climb usually have different ethics for near and far trips. What technology is permissible (that is, "in good style") varies depending on the resources required to begin work on the objective. Helicopters may be used to approach Everest, while a certain climbing aid may be in poor taste on a local cliff (Mitchell, 1983). Because caving still has frontiers, there is less need for self-imposed limits. Caves closest to home may require the highest level of both skill and technology because all the easy discoveries have been made.

It is thus interesting to consider the progress of cave exploration in the eastern United States over the past 30 years. An enormous number of caves have been discovered, totaling several thousand miles of passageways. During the 1950s and 1960s, the enabling technology was simply systematic "pushing" by groups who

mapped to understand where they were going. During the 1970s, it became necessary to blast in strategic locations that had stopped previous explorers. In the 1980s, it has become necessary to excavate entrances (sometimes using heavy machinery) to find major new caves. During the 1990s, it seems likely that these trends will continue. This increase in technology naturally requires highly developed ethics and a great deal of care to protect the wilderness thus revealed.

SUMMARY

Caves should be understood as both known and unknown wilderness. There is a difficult balance between cave conservation (protecting known caves from vandalism and unintentional wear) and cave exploration (pushing back frontiers). Exploration may sometimes require enlargement of passageways and it is the responsibility of the explorer to minimize the damage that results. More importantly, the larger numbers who follow and enjoy the experience of known caves must use great care, since the effects of individual actions will be masked as the total damage grows.

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