

# **Nylon Ropes, GORE-TEX Clothes, and a Whole Lot of Other Gear: Transformations in Technology and the Materiality of Mountain Experiences**

**Session proposal to be submitted to Thinking Mountains 2018, Banff, Alberta, October 2-5, 2018**

Material objects serve as mediators between humans and mountain landscapes. From expedition gear to heaps of trash and human waste, every physical and cultural encounter with mountains is shaped and transformed by things, be they natural or man-made. Frequenters of high altitude spaces, be they scientists or recreationists, rely on a range of material objects to survive in extreme conditions, conduct their research, or push the boundaries of climbing. The stories of these objects often move from invention and patenting to use, adaptation, misuse, and sometimes failure. This panel explores technological transformations in mountaineering equipment to explore how shifts in material culture shape practices and knowledge-making processes, influence assumptions about human physiology and nature, and impact mountain environments.

## **Presenters:**

### **1. Michael Reidy, Professor of History**

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#### **From Hygrometers, Magnetometers, and Cyanometers to Human Bodies, Wooden Cabins, and Solar Observatories: What Early Alpinists Hauled up Mountains in the Name of Science**

When summiting high alpine peaks was first attempted, spending the night on the mountain became a requirement. The intent, moreover, was often to stay as long as possible. Saussure spent two nights on the sides of Mont Blanc in 1787, and four and a half hours performing experiments on its summit. Tyndall was the first to spend the night on the summit, where he stayed for twenty-two hours to undertake experiments in 1859. Janssen, an invalid, was carried to the top in 1890 to construct an observatory, spending a total of five days sitting in a reindeer sled. A two-story, fifteen-ton structure was eventually erected in 1893. All wrote extensively about the equipment they chose to take to the top of Mont Blanc, from alpenstocks and garments, to specialized portable instruments, to prefabricated sides of cabins. Of equal importance is what these scientist-mountaineers left behind, in order to gain baseline measurements to compare with their high-altitude observations. Using published guidebooks, instructions for traveling scientists, and the accounts of the scientists themselves, I will trace the changing nature of the gear that accompanied and sustained humans on the summits of mountains from the late eighteenth to the late nineteenth centuries. Spending the night at high altitude required specific food and fuel, a great deal of fortitude, and as I will show, not just a little bit of foolishness – establishing a tradition that we still haul with us today.

2. **Carolyn F. Roeder, Postdoctoral Fellow**

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**From the Mountains to the Manufacturer and Back: Synthetic Ropes and the Creation of Expert Knowledge in Postwar Climbing**

This paper explores the relationship between technology, climbing practices, and knowledge-making by looking at the adoption of synthetic climbing ropes. Using accident reports, manufacturer manuals, equipment reviews, and archival material from the International Mountaineering and Climbing Federation's safety commission, it demonstrates that the post-war shift from hemp to polyamide kernmantle ropes constituted more than a mere change in the material composition of ropes. New materials did not simply mean stronger equipment but also new potential usages and unknown risks. Further spurred by the adoption of other high-performance fibers such as aramids, the highly technical question of fiber characteristics established a feedback loop between producers, mountaineering professionals, and recreational climbers through which expert knowledge was created, distributed, and contested. These group of actors refined their knowledge in different spaces—mountain slopes, industrial testing facilities, and in the discursive spaces of the alpine clubs and regulatory institutions such as the International Mountaineering and Climbing Federation. While the outdoors remained a laboratory in which new application standards continuously developed, the R&D departments of the manufacturers responded to incidents, observations of degradation, and demands of the real-life experiences of climbers while also searching for marketable innovations. Overall, the shift from hemp to synthetic fibers reveals not only the intricate process of technological development but also how materials shape the way humans interact with mountain environments.

3. **Rachel S. Gross, Postdoctoral Fellow**

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**Mastering the Outdoors with GORE-TEX: Fabulous Fabrics and the Physiology of Comfort in Outdoor Recreation**

Readers flipping through the pages of Backpacker magazine in the late 1970s would have seen page after page referencing a revolution in fabric. Alongside advertisements for outdoor companies like REI were ads from chemical companies such as DuPont, Gore, and 3M announcing tents, sleeping bags, and jackets made with new miracle fibers. Synthetic fibers like Hillofil and Gore-Tex are some of the most striking examples of the broader phenomenon of massive technological innovation around materials near the end of the twentieth century. As the outdoor recreation industry grew, chemical companies learned that labeling fabrics “comfortable” because of physical characteristics was less effective than playing up the subjective, emotional aspects of comfort. This presentation uses advertisements and company archives to show how comfort physiologists at Gore and DuPont taught American consumers to reimagine comfort as a process of managing moisture and warmth. As Americans became versed in the hi-tech vocabulary of synthetics woven into their everyday lives, they reinforced consumption as a way of mastering both the outdoors and their own bodies. Bolstered by shifting ethics about leaving a minimal human trace on the land, American

outdoorspeople believed that only through consuming the newest, shiniest gear could they represent their expertise to fellow travelers and feel safe in the wilderness.

**Discussant:**

**Julie Rak, Professor**

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**Chair:**

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**Panel organizer:**

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Carolin Roeder is a Postdoctoral Fellow at the Max Planck Institute for the History of Science in Berlin. She obtained her PhD in Modern European History from Harvard University in 2017. In 2016-2017, she was a visiting instructor at Mount Holyoke College. Carolin is a broadly trained environmental historian with a transnational approach to the histories of Central and Eastern Europe, including the Soviet Union. She is currently revising her dissertation, entitled “European Mountaineers between East and West: A Transnational History of Alpinism in the Twentieth Century,” for publication. By examining how alpine clubs developed networks across changing political fault lines in an effort to regulate the usage, risk, and environment of mountain spaces, this project shows how mountaineering fostered transnational cooperation and contributed to the conceptualization of mountains as abstract spatial systems.