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**AESTHETIC CONSIDERATIONS AND IMPLICATIONS
OF SNOW MASS AND TEXTURE CHANGES**

**K.A. Colorado, International Artist and Snow Sculptor,
K.A. Colorado Fine Art, U.S.A., kacolorado@shaw.ca**

I would like to share some observations about global climate change based on my international experience with snow sculpture. I have performed snow sculpture competitively now for 16 years, and am therefore sharing personal observations based on work with packed snow. Currently, my dedication to snow sculpture is motivated by the desire to capture and record in visual artistic representation climatic events that are now happening internationally.

My experience with competitive snow sculpture began in 1981 in Savonlinna, Finland, where I was appointed the lead sculptor for the United States snow sculpture team participating in that year's international competition. The Finnish competition provided me with the first chance to participate artistically in this medium. The following year, 1982, I received a gold medal with Kyle Gribskov at a competition in Breckenridge, Colorado, USA; however, prior to that, I had spent the previous six years in Alpine climbing throughout Europe. I also had experience in Aspen and Vail, CO with winter conditions that added to my information about the Alpine situation in America.

Overall, then, I have had over twenty years of involvement in snow pack conditions around the world. These combined years of experience have led me to conclude that we're experiencing changes to the structure and moisture content of snow pack. Combined with observations regarding the annual avalanche conditions in Europe, I have come to the conclusion that the process of increased humidity and moisture is repeating and accelerating. Overall, my belief is that we are quickly approaching a global environmental event that is almost past the point of return, and that any natural tendency is at least compounded by the overuse of fossil fuels, the dissemination of greenhouse gasses, the over-cutting of forest natural vegetation, and the emissions of carbon dioxide. As the ice shields seem to have begun shrinking, the reflective properties of ice and snow sheets have caused increased absorption of heat by the exposure of ground and rock cover. Yet, here I would like to comment not about scientific observations necessarily, but rather on incidental considerations regarding the aesthetics and architecture of snow sculpture performance as they have been affected by these developments.

Some background now. Snow sculpture competition involves the building and sculpting of large snow mass that has been prepared at local sites. The snow sculpture material is formed from the accumulation of snow into an approximate three meter by three meter square mass that has been packed by pressure before competition. In theoretical optimal conditions, the snow should be light, fluffy, and dry when packed, which allows for sculpted forms to be built and leveraged in such a way that they can be tunneled and extended out from the primary mass. This method of carving should take four days duration, and the resulting completed sculpture form can last between two to five weeks without substantial loss or melt. Currently, these conditions have changed.

Current conditions that increasingly affect snow sculpture build are substantial moisture content, smaller wetter snowflake, and shorter durations of cold. This also contributes to heavier snow loads which makes the carving and removal of snow debris on-site more difficult, taxing, and substantially more dangerous for the sculptor. The sculptors have also noted that this repeated pattern in Europe in past years seems to have increased landslides, roof collapse, and avalanches reported in increasing frequency in the Alpine areas.

Having worked with older sculptors in snow areas for the past twenty years, I have also had the opportunity to discuss their experiences as well. It is not that the temperatures are warmer necessarily, however; it is more that the duration of length of snow fall is more extreme. So now we appear to have shortened durations of snow fall event, colder, but shorter, through the typical season, beginning later and ending sooner.

I have to say here that I am not the only snow sculptor noticing these changes. The genesis for the idea of keeping track of changing ice sculpture conditions goes back to a meeting of snow-sculptors in St. Moritz, Switzerland. We sat down as a group of snow-sculptors and talked about what we had observed. We arrived in fact in St. Moritz having completed snow sculpture in Valois, France. The conditions of snow pack in Valois were very strange. In general, international team participation enables the exchange of experiences, ideas, and stories from past competitions. The sum total of the verbal record that I have come across during the past years has led me to recognize that not only was there a change, but that it is a quickly evolving event. In particular, the consensus among the community of sculptors is that the humidity has, indeed, increased, and that sculpting conditions have been more uncomfortable generally. It seems that, forty years ago, a dry cold was not as difficult as the damp cold that pervades equipment and protective clothing today. Most importantly, each year it becomes more and more difficult to locate the correct conditions for snow sculpture.

To complicate things, I would also like to comment on the difficulty I've encountered in my search for the perfect conditions in the Arctic and Antarctic areas outside of the snow sculpture competition circuit, as some of my artistic endeavors have required working in arctic conditions. I had begun a series of paintings six years ago that involve arctic icebergs and I am currently performing sculptures on icebergs. Last season I traveled to Labrador and Newfoundland in an attempt to locate and carve on an iceberg; however,

K.A. Colorado Fine Art

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after considerable television and press coverage, I was embarrassed because of the total lack of material in that area. I traveled by air along the national iceberg corridors; I called ahead along coastal shoreline towns; I accessed Canadian satellite ice flow conditions, and finally went to the University of Newfoundland's ice research center, only to discover that no ice material of size had flowed down that season. This was most unusual, as normal conditions see approximately a total of 1,000 icebergs each year. None were found that summer.

Also, I would like to note that two years prior to this, while trying to do a project for the Iditarod race in Alaska, again, I discovered that no appreciable snow fell on the ground and the dogs had to travel on dirt and stone in mid-winter with special booties or shoes to protect their feet. I would also like to comment on my experiences in Perm, Russia and the conclusions that I have drawn from them. I originally traveled to Perm 13 years ago and performed the first public snow sculpture with Kyle Gribskov there. I originally was invited by George Woodal and the Perm Cultural Department through Gorky Park to perform this piece. My reason for traveling to Perm was to find a better condition in Perm than I found in Europe that year. My belief was that Perm geographically was remote enough from the ocean's warming effects and isolated continentally against the Ural mountain range that it would provide the best results. It did turn out that Perm's conditions of snow were superior to any place I had traveled that year. The snow pack was light and dry. After having organized an international competition and having invited representatives of many countries to perform there, the Perm competition has grown into an annual event. However, I again believe that I am witnessing a slight change and degradation affecting the competition there. It is my belief that the arctic band is dropping lower so that in winter some areas have increased snow accumulations and have brought colder snaps rather than a warming effect. Summers are more humid, warmer, while winters seem to be milder except for the little great events of cold snaps. This year, Perm had beautiful conditions but they were a little alarming: I successfully performed the first kinetic snow sculpture in the world. While the air was clear and bright, the air was cold and the snow was damp. This affected the sculpture quality, because the snow was heavy and difficult to build with, and it also seemed somewhat elastic. I believe this is due to increasing humidity, but that humidity is basically contained in the air. It didn't snow, it didn't rain, yet the snow was wetter than usual.

Finally, my chief concern is now in arctic changes, especially at the North Pole, which has led me to conclude that there is a possibility that within my life I will witness a complete disappearance of the structural ice mass. I am now convinced that we are entering a new time of change, and I hope that the artistic endeavors that I have tried to record and capture visually will provide a piece of this emerging puzzle.