The conversation at this Topical Lunch centered on a problem faced by many colleagues at Cornell (and elsewhere), working in old and inefficient buildings in an age increasingly committed to carbon neutrality. Anabel Taylor chapel, and the Baroque Organ (construction cost of $2.3 million in 2011) housed within it, were the main subject of discussion: how to mitigate the effects on the intricate wooden parts of the organ of extreme dryness in the building during the winter (as well as high humidity levels in the summer), and of changing temperatures across the year. Short of an impossibly expensive renovation of the whole building, how might the climate challenges in the building be combatted with imaginative measures, acting either on the whole space or on the area locally around the organ?

The central problem has to do with the survival of the instrument, and especially its windchests which must remain absolutely airtight year-round; with extreme winter dryness leading not only to shrinkage of the leather seals but also, more dangerously, to cracking of the wooden boards themselves, preventative solutions must be found: in the short term such steps might well be stop-gap, implemented over the coming year (before next winter), but the goal is that they would also be cumulative, leading to a durable solution that provides the organ's local environment with sufficient humidity to prevent further damage. The ideal ambient humidity for the organ is between 45% and 50%; for extended periods this past winter the humidity has remained at viciously unacceptable levels around 20%. In such conditions the organ will not remain playable for many years longer, and Cornell's investment will have been squandered.

With participants from a wide variety of backgrounds, numerous questions were asked, and ideas floated, pointing up the particular challenges posed by this building (its relatively cheap construction, its lack of insulation, the poor condition of the windows), and suggesting ways in which the interior environment might be improved. Ideas were suggested for attending to the instrument itself: these included the possibility of creating micro-climates by various means, either within the wind system, or in the area of the chapel occupied by the instrument; or of setting up an Emergency System that could respond automatically in some way when sensors record dangerously low levels of humidity. A system for highly accurate sensors outside and inside the instrument was also recommended in order better to understand the crucial differences in humidity and temperature between the instrument's interior and exterior: this information would be vital in predicting (and preventing) warping effects of humidity differences on wood and damaging condensation. Suggestions for installing jet fans that would mix the air in the high space, reducing the need for measurement at multiple levels within the building, were very welcome, as was the insistence on basic work to seal the building (especially the windows) better from the exterior environment. Dessicants were also mentioned as a mode of introducing humidity in the region of the organ.

The meeting has generated new interest in this complex of problems among campus scientists and engineers and will, we hope, result not only in new research but also opportunities for students to become involved in thinking through the issues, their

possible solutions, and the wider application of the results to other spaces (as well as to questions of environment, preservation and curation of art objects). Preservation architect Walter Sedovic of Boston was in attendance along with a robust showing of Cornell scientists interested in, and expert in, aspects of this problem. Sedovic seemed very eager to collaborate with the Cornell community in developing steps to securing the future of this unique cultural treasure.

Atkinson Center for a Sustainable Future TOPICAL LUNCH

Title: *Saving the great Cornell baroque organ from the ravages of the environment: a problem for architects, planners, engineers, acousticians and music lovers*– **Dr. Annette Richards -** Professor of Music and University Organist, Executive Director, Westfield Center for Historical Keyboard Studies, Department of Music, Lincoln Hall
Date: Monday March 16, 2015 – 12:00 – 1:00pm

Organizers: Todd Cowen, Zellman Warhaft, David Yearsley and Annette Richards

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