Thanks to Kim and Russ for organizing this symposium and all of you for coming. The panel is called "How We Got Here," a question that, as a historian, I find myself asking about quite a few things. Strange, then, that my talk is going back about 80 years and adding in the question, "have we been here before?" I will, in this talk, point out a lot of similarities, but also a great number of important differences that will hopefully put a lot of the work of the past twenty, thirty, forty years into perspective. What struck me as similar was the following line in the description of our panel:

> This corner of the field is composed of a very diverse confederation of academic disciplines and areas of practice, and therefore, of perspectives on the very mission this field should take up.

To me, this is the most exciting aspect of any collaboration, but also the most challenging. As confederations emerge, so do questions about who organizes it? On what basis? In what agency/institution/field? Is there a common basis for communicating across these diverse boundaries? What are the trading zones—to quote historian of physics Peter Galison—between these disciplines? What governance structures have emerged? As a historian of the atmospheric sciences in the New Deal and postwar era, I find some striking parallels with an earlier period of interdisciplinary collaboration in the public interest: The problem of land use planning in the late 1920s and early 1930s, and the role of climatology, meteorology, and geography in the land use planning process.

Agriculture in the 1920s, in the opinion of many officials and policymakers, was in crisis. An agricultural outlook given to the National Association of Land Grant Colleges in 1929, Nils Olson, Chief of the Bureau of Agricultural Economics, depicted

a series of abandoned farms that dotted the landscape, "mute evidence of the slow and painful adjustments that farmers have been compelled to make." And he cast those "adjustments" as a problem of unplanned expansion: "In the process of settling our agricultural empire, large areas have been occupied that were poorly suited to continuous cropping." Olson said that supply had to balance demand, and "planless expansion" had to be replaced with development of areas "in keeping with the probable demand for the products of such lands, the economic soundness of such developments, and the probability of returns that will enable such lands to rest on their own bottoms."[1] The onset of the Great Depression added urgency to this problem by encouraging the migration of large numbers of people from urban to rural areas. In response to Olson's outlook, Secretary of Agriculture Arthur Hyde set the state of agriculture in context:

> The epic of land settlement in this country is nearly complete… We have come now to the time when we should write a new epic—the epic of adjustments, of regrouping, of retirement from cultivation of lands which the pioneer subdued, but which stubbornly refuse, to yield to his grandchildren a reasonable standard of living...[2]

"Balance," "adjustment," and planning replaced expansion, settlement, and exploitation as the watchwords of the narrative, the "epic," of American progress.

The next few years saw a number of new committees stood up. The National Land Use Planning Committee within the Department of Agriculture issued a report on the *Scope and Character of a National Cooperative Research Project in Land*

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[1] National Conference on Land Utilization, *Proceedings of the National Conference on Land Utilization* (Washington, DC: U.S. Government Printing Office, 1932), 17.
[2] Ibid., 36.

Utilization. The first step was to take stock of the physical properties of the land; the final step was to classify the land "based on the major economic uses for which it is best adapted."[3]

The proposed scheme shows a number of things. First was the practical challenge of coordinating different scientific disciplines. It's hard to read the report without seeing a very concise subtext, which I interpret as "What in the world are we doing?" But as they fumbled around through this process, they outlined conceptual boundaries and disciplinary hierarchies. The base consisted of the "physical" properties, then the "ecological associations," then its "adaptability," and finally, the economic use of the land. This was justified by the perception, among the authors, many of whom were social scientists, that the physical features of the land changed slowly, especially in comparison with the rapid changes in social and economic life of its settlers. The hierarchy implied that the direction of the process should "be entrusted to a competent economist," since the data contributed by the various agencies should be "selected and related with a view to arriving at economic conclusions."

The vision outlined by the Land Use Planning Committee did not sit well with some of the other scientists who would become involved, but before we introduce them, we need to pause for a moment and recognize a crucial political development: The inauguration of Franklin Delano Roosevelt in 1933, and the advent of the New Deal. Planning got a major boost with the election of Franklin Delano Roosevelt in 1933 and the proliferation of government agencies such as the Soil Erosion Service,

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[3] U.S. Department of Agriculture, National Land Use Planning Committee. *Scope and Character of a National Cooperative Research Project in Land Utilization* (Washington, DC: National Land Use Planning Committee, 1933), 6–10.

National Planning Board, the Resettlement Administration, and a number of quasi-independent committees like the Science Advisory Board at the National Academy of Sciences and the Study of Population Redistribution at the Social Science Research Council.

The problem with land use planning in the federal government, according to many of the natural scientists, was that the social scientists did not appreciate the complexity of the "physical features." This was especially apparent to the geographer Isaiah Bowman, a major knowledge broker between the NAS and the federal government. Bowman wrote to Hugh Bennett, the head of the Soil Erosion Service, that "I can assure you that the natural science content is almost completely overlooked." In a memo to the Science Advisory Board, Bowman wrote that "the land economists have not given sufficient attention to the natural science content of the problem. The phrases of natural science are embedded in their texts but of the realities behind them they are unaware."[4] A final statement betrays the difficulties that social science-physical science collaboration posed: It was "assumed by so many administrators in the Government that we can reach out and obtain all the science that we need for any given problem, and this is not true and never has been true." In other words, science was not a repository of old information and data that could be drawn upon without consultation of the scientists or their analysis, anymore than land was simply a backdrop that sluggishly changed.

Bowman and his fellow geographer, Carl Sauer, set out to change that perception in a report on soil erosion. Knowledge of climate, argued Sauer, was

[4] Isaiah Bowman, memorandum to the Science Advisory Board, March 13, 1934, Committee on Land Use: 1934, General, EX Bd, NAS.

crucial for understanding the "geographic totality" of a region. "Soil erosion hazards," Sauer wrote, "are quite as much a matter of climate as of slope." He also defined climate not as a relatively stable feature of the landscape, but as "an area that changes irregularly year by year as to its limits." Drawing on the work of some of his students, like R.J. Russell and John Leighly, he wrote that a desert, for instance, was an area that consistently experienced arid conditions in its "nuclear" area, while its margins fluctuated between arid and semiarid. Climate, in other words, provided a crucial illustration of the fact that the physical features of the land were not just backdrops to human action, raw data for economic decision making. Rather, they were dynamic systems whose study was ongoing and whose variability needed to be taken into account and analyzed, in this case by geographers. Land, for Sauer, was a totality, where the physical, ecological, and social on equal footing.

It's crucial to recognize that this isn't a blueprint, but a starting point for further discussion. There are some differences between then and now. Especially interesting is that, at that time, it was that the innovation was to integrate the natural sciences more fully with the social sciences, not the other way around. The biggest difference between then and now, which is that the current movement is a grass-roots movement that is evolving not in service to one particular problem, but rather in a collective process of defining problems. But it, too, is involved in collectively defining their objects of study: Weather. Society. Weather and society. It's that final object, a hybrid that is no more easily separated than "economy," "climate," and "soil" in the 1930s, that we'll be defining and redefining in the coming years.