Mentoring, Paradigmatic Change, and Institutional Structure: Charles E. Bessey and the Origins of the Seminarium Botanicum at the University of Nebraska

Michael R. Hill
University of Nebraska-Lincoln, michaelhilltemporary1@yahoo.com

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MENTORING, PARADIGMATIC CHANGE, 
AND INSTITUTIONAL STRUCTURE: 
CHARLES E. BESSEY AND THE ORIGINS OF 
THE SEMINARIUM BOTANICUM 
AT THE UNIVERSITY OF NEBRASKA

Michael R. Hill

Department of Sociology
University of Nebraska-Lincoln
Lincoln, Nebraska 68588-0324

Abstract

The Seminarium Botanicum was a student scientific club that originated at the University of Nebraska during the closing years of the nineteenth century under the supportive eye of botanist Charles E. Bessey. The “Sem. Bot.” (as the club was known popularly) provided a mainspring for the paradigmatic development of the American school of plant ecology (Tobey, 1981). Based on archival materials at Harvard University, the State Historical Society of Nebraska, and the universities of Nebraska and Wyoming, this paper identifies the interpersonal dynamics and institutional matrix by means of which the “Sem. Bot.” became a catalyst for intellectual inquiry. The youth and exuberance of the Sem. Bot. participants, the relatively flexible bureaucratic structure of the turn-of-the-century university, and Bessey’s laissez-faire mentoring style combined to create an educational climate conducive to productive scientific innovation.

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Introduction

Charles E. Bessey, during his professorial career at the University of Nebraska (1884 to 1915), adopted a pedagogical standpoint that — together with the relatively more malleable bureaucratic structures characterizing nineteenth-century academies on the Great Plains — resulted in scholarly conditions favorable to a major paradigmatic shift in botanical studies in the United States. The profound nature of this shift — from descriptive botany to dynamic ecology — and the intellectual origins of this shift within the University of Nebraska are well mapped by Ronald Tobey (1981) in *Saving the Prairies: The Life Cycle of the Founding School of American Plant Ecology, 1895-1955*. The present paper outlines the academic conditions at Nebraska in which Professor Bessey mentored his pupils and fostered the *Seminarium Botanicum*, a student botany club — two of whose members, Roscoe Pound and Frederic Clements — co-authored in 1898 the founding document of American plant ecology: *The Phytogeography of Nebraska*.1

Bessey as Michigan Undergraduate

At Nebraska, Bessey practiced a patient, laissez-faire pedagogical style of mentoring that contrasted sharply with his own more rigid training at Michigan State University (then the Michigan Agricultural College). Of his undergraduate work (1863 to 1869), Bessey (1915: 61) observed that “with the possible exception of Harvard University, this College [MAC] then gave the most extended and thorough course in botany in this country.” The training, nonetheless, was rudimentary. Bessey (1916: 61) recounted:

> In my own science of botany the work [at MAC] was then mainly confined to daily recitations from a textbook, accompanied later by dissections and ‘analyses’ of plants in the classroom, under the direction of the professor. We had a few simple dissecting microscopes which we used in these exercises. Here was no doubt the germ of the laboratory idea as applied to botany. But the purpose was not so much to find out the structure of the plant as to find its name. When that was accomplished we stopped further study of the plant.2

The textbook, recitations, and rote exercises were central features in Bessey’s undergraduate training. Bessey (1915: 60) noted:

> It was emphatically the period of the textbook. Some of the professors gave lectures, but in every subject the student always had his textbook as the basis of his study, and daily recitations were the rule. We learned things from books, and were

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1 As Clements noted, “It is perhaps not too much to say that out of the *Phytogeography of Nebraska* developed a synthesis of the new field of dynamic ecology, which has since spread over the globe and has exerted a profound effect upon agriculture and forestry, and upon conservation in particular” (Clements to Sayre, 17 January 1945, Edith and Frederic Clements Papers, University of Wyoming).

2 Beal (1915: 60) notes that Bessey’s remarks were part of the MAC semi-centennial celebrations in 1907.
asked to report them orally at greater or less length to our teachers. We were not asked to write out what we knew, but were required to stand up and tell it under the keen eye of the professor, and the brutally critical attention of the class. In this was we learned to think on our feet, and I have always felt that much has been lost by the general abandonment of the old-time recitation, and the substitution of the written quiz and examination.

**Bessey as Nebraska Professor**

Bessey, as a professor at Nebraska, adapted the informal interactional patterns permitted by the laboratory method to encourage students to think on their feet and give intelligent accounts of their work. Roscoe Pound recalled:

As to teaching botany, I think the most effective teaching to which it was ever my good fortune to be subjected was when Dr. Bessey used to go about from one laboratory table to another, sit on the corner of the table and simply talk. I have come to suspect that there was a good deal of system and forethought behind those apparently casual talks. A casual inquiry as to what I was doing, how I was doing it, and why I was doing it, and about things botanical generally, was much more effective than any lecture possible could be, and yet I have always felt that his lectures were models.  

Bessey’s methods were well received, and Frederic Clements noted:

Within a year or two after coming to Nebraska, Dr. Bessey with his broad outlook, genial personality, and exceptional ability as a teacher had stimulated seven young men to continue into advanced courses.

**Creating Conditions for Innovation**

Bessey’s significant pedagogical accomplishment was to create the conditions under which young minds were freed to discover new points of view. Bessey emphasized this point in a letter to a former student when the latter bridled at the clerical and managerial chores of administrative work. Bessey counseled the importance of executive direction:

It sometimes seems as tho one’s time was merely frittered away and yet I am not sure but that one is rendering as good service to the world as tho he were digging out some obscure matter in his own science. As I grow older I realize more and more that some of the things that we call large work are not really large. Any candidate for the doctor’s degree can, when relieved of the necessity of doing anything else and especially when some other man helps to think out and plan for him as well as to get material, I say such a man can work out many problems that we are in the habit of regarding as large problems. As I look over the theses of the young fellows who secured the doctor’s degree at Germany and elsewhere, I realize that after all it is very

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3 Pound to Clements, 27 March 1924, Roscoe Pound Papers, Box 9, Folder 29, Harvard Law School Library.

4 Clements to Sayre, 17 January 1945, Clements Papers, University of Wyoming.
largely mechanical work done under the direction of some other man. When such young fellow winds up a forty page thesis with some conclusions, all of the latter that have any value come really from the man who gets mighty little credit, that is the professor who has made an environment which the young fellow will never again have.\textsuperscript{5}

The pedagogical distinction in Bessey’s case lies in the character of the academic environment he fostered at Nebraska: he rewarded intellectual independence in his students rather than mechanical replication. The success of such an approach, however, depended on having disciplined, insightful students who could respond productively to a free hand. Thus, it was Bessey’s good fortune to have Roscoe Pound as his first Nebraska doctoral student. Indeed, Pound’s Ph.D. (1897) was the first regular doctoral degree awarded by the University of Nebraska (Hill 1989).\textsuperscript{6}

\textbf{Roscoe Pound and the Seminarium Botanicum}

The mentor-student relationship of Bessey to Pound was remarkably productive, and not the least outcome was Pound’s central role in establishing the Seminarium Botanicum, a student-initiated botany club, also known as the “Botanical Seminar” or the “Sem. Bot.” Unfortunately, space precludes a full review of the origin, activities, and extraordinary accomplishments of the “Sem. Bot.” In three previous studies, however, I have: (1) recorded Roscoe Pound’s early interest in botany and his 1886 founding — as an undergraduate — of the “Sem. Bot.” (Hill 1989); (2) detailed the exploits of “Sem. Bot.” members during 1888-89, the year in which Pound wrote his master’s thesis under Bessey’s tutelage (Hill 1988); and (3) chronicled the Sand Hills Botanical Expedition of 1892, immediately after which Pound and the “Sem. Bot.” members formally organized the Botanical Survey of Nebraska (Hill 1992). Here, it must suffice to note the pedagogical conditions under which two of Bessey’s students, Roscoe Pound and Frederic Clements — both senior members of the Seminarium Botanicum, wrote the first major classic in the American school of plant ecology.

The forward looking ideas of The Phytogeography of Nebraska arose from a long series of projects sponsored by the “Sem. Bot.” and discussed at great length during the extra curricular “Sem. Bot.” meetings.\textsuperscript{7} Thomas Kuhn (1970) observed in The Structure of Scientific Revolutions that

\begin{flushleft}
\textsuperscript{5} Bessey to Clements, 7 November 1908, Charles E. Bessey Papers, Reel 19, University Archives, University of Nebraska-Lincoln. Emphasis added.

\textsuperscript{6} An earlier doctorate was conferred without fanfare upon a University of Nebraska instructor who had completed his course work elsewhere. Pound was the first student at Nebraska to complete what today are called “residency requirements” for a doctoral degree (Hill 1989). Initially, Pound and Clements were to receive doctorates at the same time, but Clements was delayed a year by a deficiency in his minor. Pound wanted to postpone his own degree so that the two research partners could receive their degrees together, but Clements argued to Pound, “Yours is the first doctor’s degree the University has granted. Everyone will be disappointed not to see you receive it. Won’t you go?” Following a short protest, Clements reports, “Pound marched briskly down the aisle, crossed the traditional bridge over the orchestra pit and stood before the Chancellor” to receive the degree (Clements to Sayre, 17 January 1945, Clements Papers, University of Wyoming).

\textsuperscript{7} Roscoe Pound, for example, spoke several times on topics related to The Phytogeography of Nebraska (see the appendix to this paper for a comprehensive list of Pound’s thirty-nine formal presentations to the “Sem. Bot.”). Pound and Clements (1897) wrote in the preface to The Phytogeography of Nebraska that:
\end{flushleft}
The study of the vegetation of Nebraska, begun when Dr. Bessey came to the University, in 1884, was carried on, chiefly from the floristic side, by members of the Seminar from 1886 to 1892, with zeal and effect. When the Botanical Survey was organized in 1892, both of the authors became members, they have directed the work of the Survey with a view to the ultimate publication of a report.

Frederic Clements attributed the accomplishments of the “Sem. Bot.” to the youthful Roscoe Pound, noting:

Although the Seminar owed much to Dr. Bessey indirectly, its actual origin and the brilliance of its performance through two decades were due to Pound’s insight and perspective, as well as to his scientific cast of mind.

Fortunately, Pound and Bessey thought along similar lines, and Pound always retained a lively and respectful appreciation of Bessey’s intellectual powers.

The crucial role of liminality in communitas generating rituals in everyday life is discussed in Deegan (1989) and the specific part of uncertainty and liminal play in doctoral dissertation research is examined in Deegan and Hill (1991).

Clements to Sayre, 17 January 1945, Frederic Clements Papers, University of Wyoming. On the occasion Clements’ death, his wife Edith wrote to Pound, “You may be grateful for having had so much influence on him and his work. I think his ambition to try to equal you in the things of the intellect was in part at least due to your example” (Edith Clements to Pound, 15 September 1945, Frederic Edward Clements Papers, Box 1, Correspondence, 1945, Nebraska State Historical Society).

For example, Bessey later asked Pound to write a brief review of Bessey’s latest work and send it to Science, observing, “I do not know of anyone who appreciates this sort of thing any better than you. Most of the botanists look upon general taxonomy from a different standpoint from what we do.” (Bessey to Pound, 26 March 1908, Bessey Papers, Reel 21, University Archives, University of Nebraska-Lincoln).

Just before Bessey’s death in 1915, Pound wrote:

Only night before last I was talking with one of the two or three greatest botanists in the country about Dr. Bessey’s new book. He spoke particularly of the really wonderful mental youth which it showed. Here is a book which has held the field for more than a generation. Most authors would stand pat, merely putting in a few references to show that it had been superficially brought down to date. Dr. Bessey, however, was not content with anything of this sort but re-wrote the book form top to bottom, brought in as many new ideas and new methods of presentation in his last edition as in his first — and the first edition was quite
Roscoe Pound, Frederic Clements, and *The Phytogeography*

Bessey encouraged Pound and Clements over a period of several years, and provided physical work space, but otherwise let the two young botanists tackle the main work of *The Phytogeography of Nebraska* with little interference. During the writing of their joint treatise, which took place in the Herbarium at the University over a period of six months, Pound and Clements:

alternated in the major tasks of dictating and transcribing, pausing now and then to discuss a point, seek new inspiration, or to relax by whistling in unison snatches from favorite grand operas. At such times, Dr. Bessey would occasionally look in, to say that he knew the work was going well when the strains floated down the corridor.\(^2\)

In sum, Bessey-as-mentor allowed his students the necessary freedom to find their own way to a new conception of botany.

Bureaucratic Flexibility

The bureaucratic context of the late 1800's was much less rigid than today, often permitting flexible, individualized responses to the needs and initiatives of students (albeit primarily for white males).\(^3\) The Pound-Clements collaboration, for example, would today be highly unusual in that the two students were permitted without appreciable obstacle to offer *The Phytogeography* as a jointly authored doctoral dissertation — the protocols and precedents for doctoral work were not yet so fixed as they are today. The loosely-organized *Seminarium Botanicum* and the official-sounding Botanical Survey of Nebraska enjoyed a degree of autonomy combined with appreciative recognition and institutional legitimation by the University that is unimaginable today.\(^4\) Further, Bessey

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\(^2\) Clements to Sayre, 17 January 1945, Clements Papers, University of Wyoming.

\(^3\) Despite the relative openness of western universities to women, sexism in various forms was still the norm. For example, in canvassing Clements to nominate a candidate for an open position at Nebraska, Bessey wrote:

> I must have a man; I will not take a woman. I have all the women now in the department that is permissible. I am afraid of “feminization,” so I want a young man who is sufficiently prepared to help as an assistant in the big laboratory (Bessey to Clements, 18 July 1908, Bessey Papers, Reel 19, University Archives, University of Nebraska-Lincoln).

\(^4\) It may well be that friction with the University administration was avoided in part by the otherwise dubious distinction that Pound paid for much of the “Sem. Bot.” and Botanical Survey projects out of his own funds. Clements notes that Pound’s generosity was outstanding, “Since the Seminar had no dues, the increasing costs, especially of publication, were met by Pound for nearly twenty years, until the University was finally able to take them over” (Clements to Sayre, 17 January 1945, Clements Papers, University of Wyoming).
knowingly winked at campus regulations that, in his mind, interfered unreasonably with his students’ progress. Politically and bureaucratically, these were rare times, a point wistfully recalled by Clements who later wrote that, “the situation at Nebraska . . . can never again approach the condition of the early nineties.”

**Personal Consequences to Bessey**

Bessey’s pedagogical approach came at a high cost to himself, however. By putting students first, his own research suffered and he diverted scarce funds to facilities for student use. Pound later recalled that Bessey, “maintained his office in holes and corners, systematically giving up the best quarters to what he has always thought of as the paramount interest, namely, his students;” that Bessey gave up “opportunity to do the work of research and write books in order that his pupils might get the credit of what was really his work;” and that Bessey exhibited, “infinite patience which put him continually at the service of every student so that it is a wonder he ever found time for anything else.”

In Bessey’s later years, the self-sacrificing patience and considerate understanding that he lavished on his students went too often unreciprocated by the state and the academic organization in which he labored. This was due, in part, to a series of sweeping social trends at the turn-of-the-century that ruthlessly dismantled the gentlemanly university system in which Bessey came of age. Further, Pound held Nebraskans as a whole responsible for taking collective advantage of Bessey: “He was shamefully imposed upon for many years,” wrote Pound, “the truth is the state has literally lived upon him scientifically at the expense of his health and strength . . . .” Today, sadly, the “Sem. Bot.” is but a dusty memory at the University of Nebraska. Modern universities are rarely conducive to — or husband — the spontaneous energy, playful creativity, and paradigm shifting insight that Bessey fostered in his Nebraska students.

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15 For example, Clements recalled, “An antiquated regulation to the effect that University buildings were not open in the evening for individual workers below the rank of professor made it necessary to enter and leave by means of a high window, the latch of which was carefully checked every afternoon. Dr. Bessey and the night watchman were both fully aware of the arrangement, and this patent subterfuge finally led to dropping the rule, but too late in the year to be of service” (Clements to Sayre, 17 January 1945, Clements Papers, University of Wyoming).

16 Clements to Bessey, 19 November 1908, Bessey Papers, Reel 19, University Archives, University of Nebraska-Lincoln.

17 Pound to Barbour, 13 February 1915, Barbour Papers, Correspondence 1915, Po-Pu, University of Nebraska State Museum.

18 For discussion of the dynamics of this crucially important change, see Hill (1989, 1991).

19 Pound to Barbour, 13 February 1915, Barbour Papers, Correspondence 1915, Po-Pu, University of Nebraska State Museum.
### APPENDIX

**ROSCOE POUND’S EXTRACURRICULAR PRESENTATIONS TO THE SEMINARIUM BOTANICUM, 1888-1899**

<table>
<thead>
<tr>
<th>Date</th>
<th>Title of Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-02-88</td>
<td>The Yeast Plants.</td>
</tr>
<tr>
<td>02-28-89</td>
<td>History of the Classification of Fungi.</td>
</tr>
<tr>
<td>03-21-89</td>
<td>The Origin and Relationships of the Carpophytic Fungi.</td>
</tr>
</tbody>
</table>

[Note: During the academic year 1889-1890, Pound attended Harvard Law School, and no formal papers were read by any members of the Seminarium Botanicum during the year; nor were any papers read during the academic year of Pound’s return to Lincoln, 1890-1891].

<table>
<thead>
<tr>
<th>Date</th>
<th>Title of Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-21-91</td>
<td>The Latin of Botanical nomenclature.</td>
</tr>
<tr>
<td>02-06-92</td>
<td>Kuntze’s <em>Revisio Generum</em>.</td>
</tr>
<tr>
<td>04-22-92</td>
<td>A Sketch of the History of Botany.</td>
</tr>
<tr>
<td>06-13-92</td>
<td>The Effect of Linnaeus’s Work on Botany.</td>
</tr>
<tr>
<td>12-17-92</td>
<td>Symbiosis and Mutualism.</td>
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</tbody>
</table>

[Note: At this point, the Seminarium Botanicum adopted rules to “require an address or lecture of each resident sem. once each year.” (Book of the Sem Bot, p. 23).]

<table>
<thead>
<tr>
<th>Date</th>
<th>Title of Presentation</th>
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<tbody>
<tr>
<td>12-20-92</td>
<td>The Flora of the Sand Hills. (Presented at the Nebraska Academy of Sciences).</td>
</tr>
<tr>
<td>02-18-93</td>
<td>Von Tavel’s <em>Vergleicheude Morphologie</em>.</td>
</tr>
<tr>
<td>04-15-93</td>
<td>Suggestions for a Revision of the Imperfect Fungi.</td>
</tr>
<tr>
<td>06-08-93</td>
<td>The Capitalization Question.</td>
</tr>
<tr>
<td>11-11-93</td>
<td>Kuntze’s <em>Revisio Generum III</em>.</td>
</tr>
<tr>
<td>12-16-93</td>
<td>Saccando’s “Il numero delle piante”.</td>
</tr>
<tr>
<td>12-26-93</td>
<td>Progress of the Botanical Survey of Nebraska (Presented at the Nebraska Academy of Sciences).</td>
</tr>
<tr>
<td>02-17-94</td>
<td>Sketch of a Revision of the <em>Mucoraceae</em>.</td>
</tr>
<tr>
<td>05-05-94</td>
<td>The <em>Laboulbenieae</em> and their relation to Recent Theories as to the <em>Asconcycebes</em>.</td>
</tr>
<tr>
<td>09-22-94</td>
<td>Dr. Kuntze’s <em>Nomenclatur-Studien</em>.</td>
</tr>
<tr>
<td>11-03-94</td>
<td>Recent Aspects of the Nomenclature Question: (1) Rand and Redfield, Flora of Mount Desert, (2) The Status of Nomenclature in the Fungi.</td>
</tr>
<tr>
<td>12-27-94</td>
<td>Pound read a paper at the Nebraska Academy of Sciences.</td>
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### Appendix — Continued

<table>
<thead>
<tr>
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<th>Title of Presentation</th>
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<tr>
<td>05-27-95</td>
<td>Family Nomenclature.</td>
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<tr>
<td>10-19-95</td>
<td>The Vienna Propositions</td>
</tr>
<tr>
<td>01-25-95</td>
<td>A Re-arrangement of the <em>Hyploneycetes</em>.</td>
</tr>
<tr>
<td>05-02-96</td>
<td><a href="#">Note: “Mr. Pound and Mr. Clements also discussed cell division in the fungi.”</a></td>
</tr>
<tr>
<td>06-05-96</td>
<td>The Phyto-geography of the Little Blue Valley.</td>
</tr>
<tr>
<td>11-14-96</td>
<td>The Vegetative Covering and Its Subdivisions.</td>
</tr>
<tr>
<td>12-05-96</td>
<td>Mycological Statistics of Nebraska.</td>
</tr>
<tr>
<td>12-26-96</td>
<td>Outlines of a Phyto-geography of Nebraska.</td>
</tr>
<tr>
<td>01-23-97</td>
<td>Sclerocter’s Arrangement considered as a Modification of the Brefeldian Arrangement (The Relation of Morphology to Classification).</td>
</tr>
<tr>
<td>02-27-97</td>
<td>[Note, Pound was scheduled to read a paper on this date but no title or other record of the anticipated presentation has been located].</td>
</tr>
<tr>
<td>03-27-97</td>
<td>Ecological and Distributional Statistics of Nebraska Grasses.</td>
</tr>
<tr>
<td>05-29-97</td>
<td>The Habitat Groups of the Prairies.</td>
</tr>
<tr>
<td>01-22-97</td>
<td>Origin of the <em>Amphiaster</em>.</td>
</tr>
<tr>
<td>02-26-98</td>
<td>Difficulties in Geographical Mycology.</td>
</tr>
<tr>
<td>04-23-98</td>
<td>Hitchcock’s Ecological Plant Geography of Kansas.</td>
</tr>
<tr>
<td>05-21-98</td>
<td>The Relation of Ecology to Phytogeography.</td>
</tr>
<tr>
<td>10-22-98</td>
<td>Kuntze’s <em>Revisio Generum III</em></td>
</tr>
<tr>
<td>12-17-98</td>
<td>Symposium on Nomenclature: The Berlin Rules and Dr. Kuntze.</td>
</tr>
<tr>
<td>02-25-99</td>
<td>Cowles’ Vegetation of the Sand Dunes of Lake Michigan.”</td>
</tr>
<tr>
<td>04-01-99</td>
<td>The Treatment of the Cryptogams.</td>
</tr>
</tbody>
</table>

**Source:** Minutes of the Sem. Bot., Box 1, Department of Botany, Records of Botanical Seminar, University Archives, University of Nebraska-Lincoln.
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Cambridge, Massachusetts

Harvard Law School Library, Harvard University
— Roscoe Pound Papers

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University of Wyoming
— Edith and Frederic Clements Papers

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