

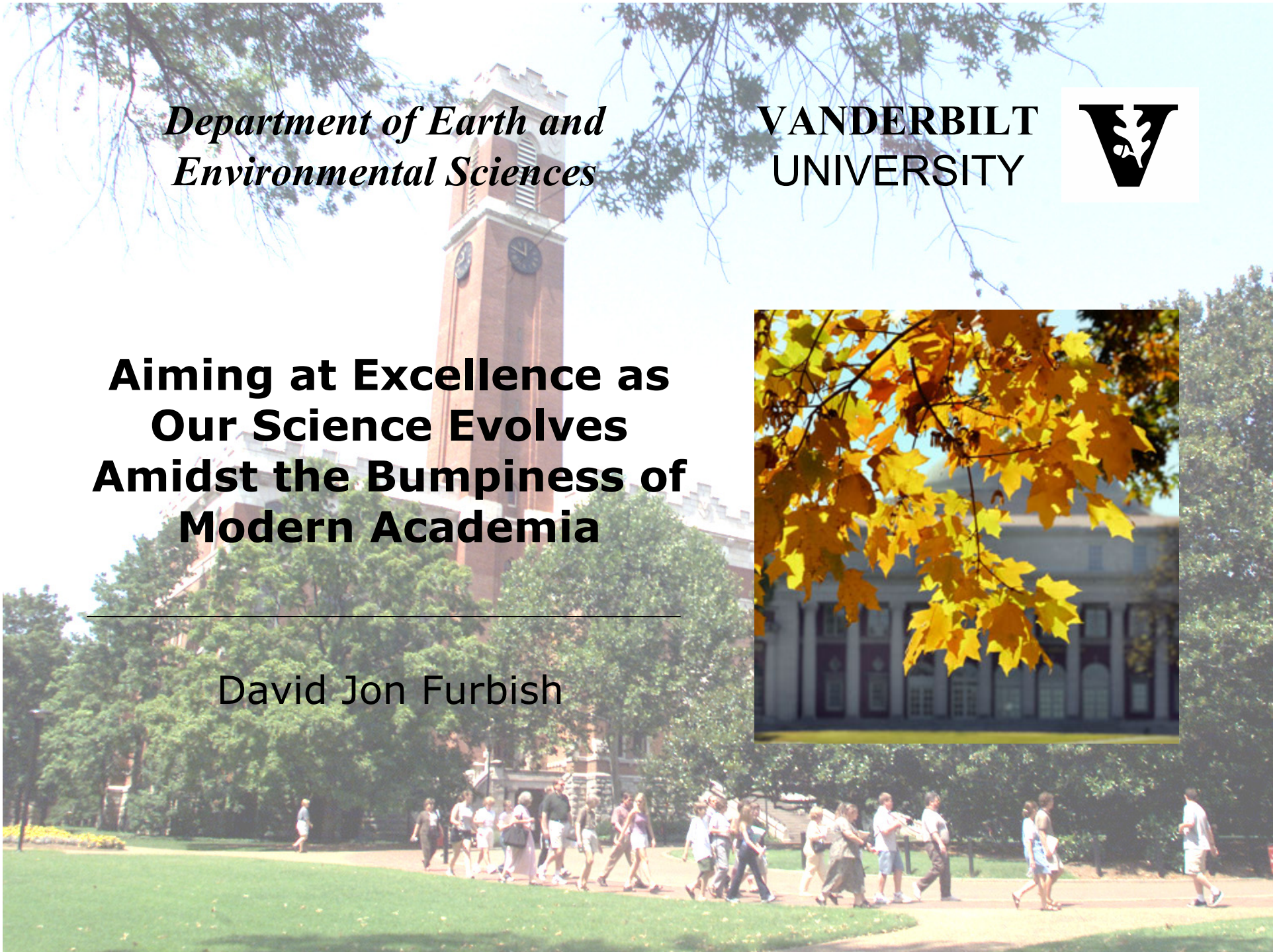
*Department of Earth and
Environmental Sciences*

VANDERBILT
UNIVERSITY



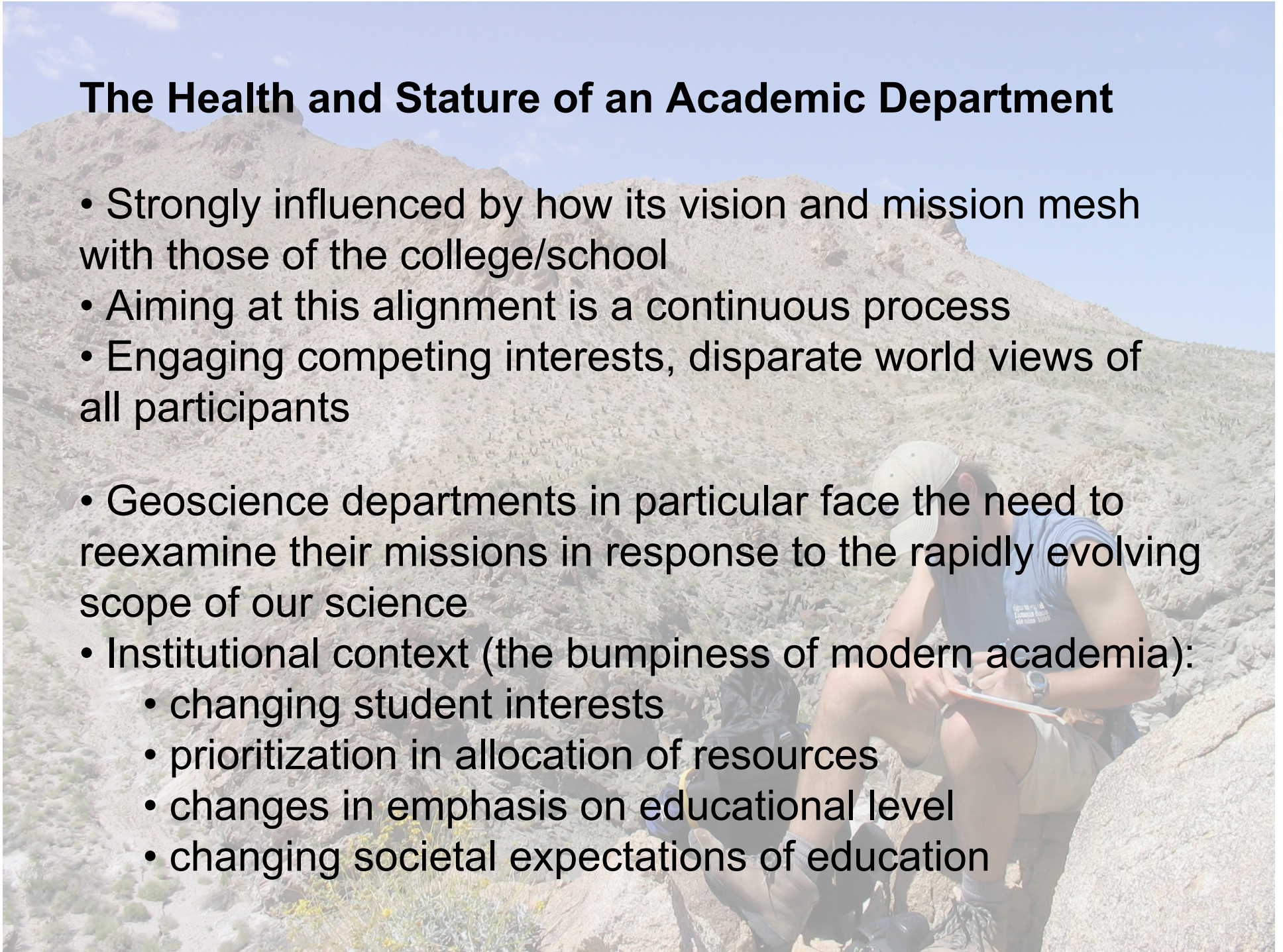
**Aiming at Excellence as
Our Science Evolves
Amidst the Bumpiness of
Modern Academia**

David Jon Furbish



The Health and Stature of an Academic Department

- Strongly influenced by how its vision and mission mesh with those of the college/school
- Aiming at this alignment is a continuous process
- Engaging competing interests, disparate world views of all participants
- Geoscience departments in particular face the need to reexamine their missions in response to the rapidly evolving scope of our science
- Institutional context (the bumpiness of modern academia):
 - changing student interests
 - prioritization in allocation of resources
 - changes in emphasis on educational level
 - changing societal expectations of education



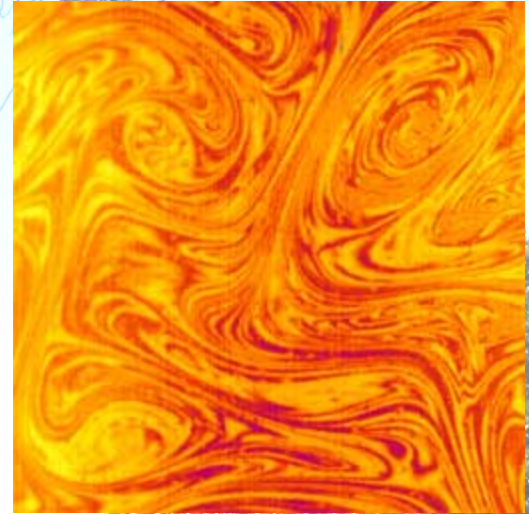
Complex Nonlinear System

$$\frac{\partial \mathbf{u}}{\partial t} = -(\mathbf{u} \cdot \nabla) \mathbf{u} + \nu \nabla^2 \mathbf{u} - \mathbf{S}(\mathbf{x}, t)$$

Destabilizing

Stabilizing

Forcing



LANL

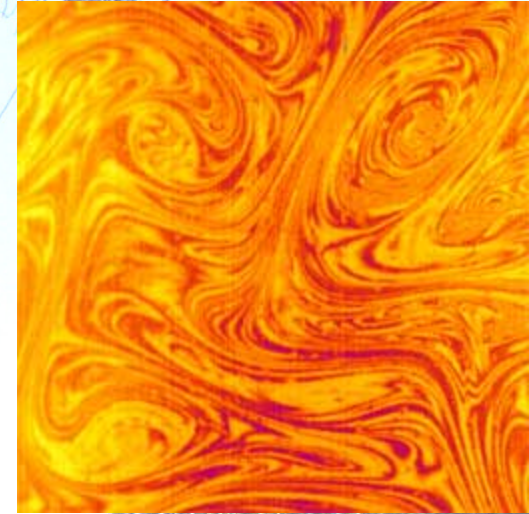
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Destabilizing

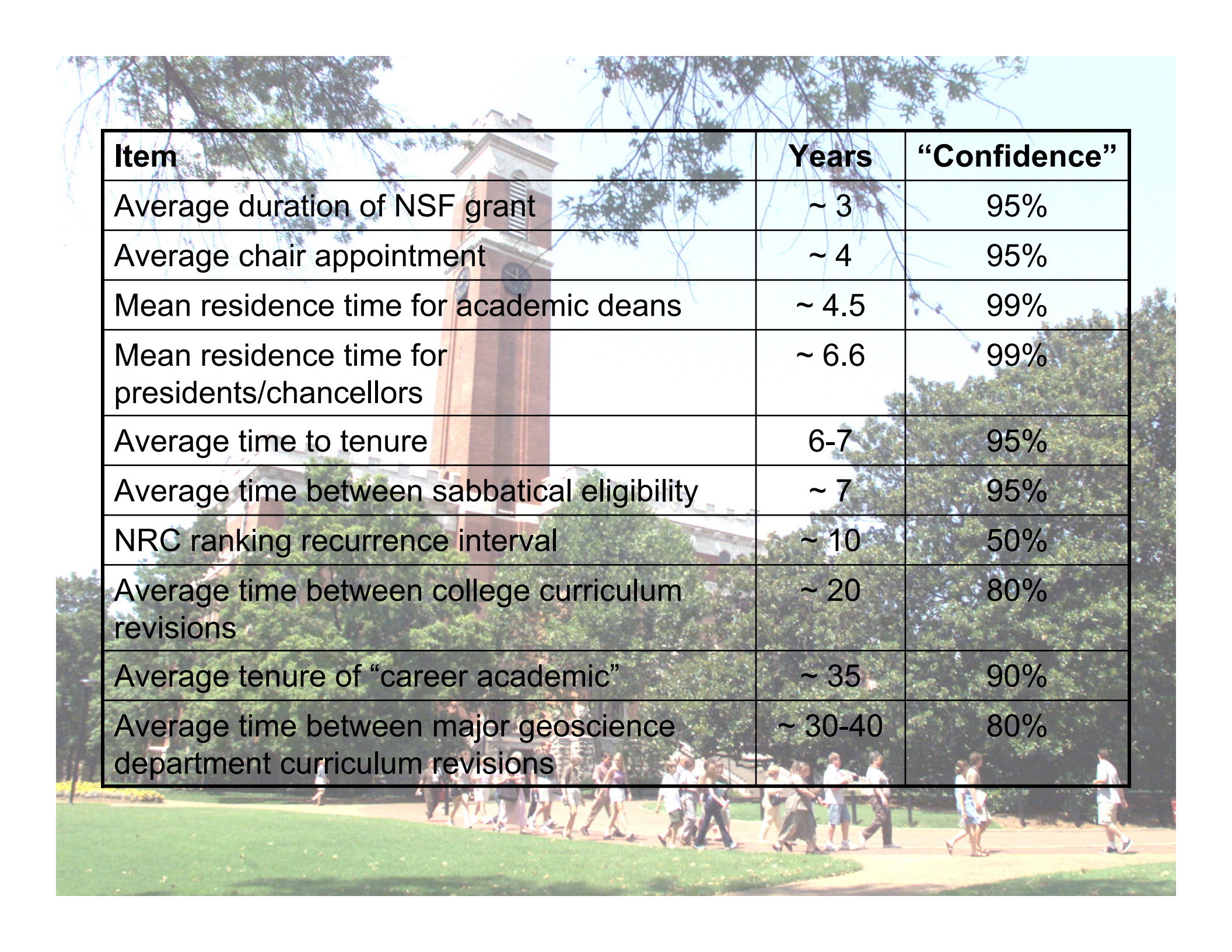
Stabilizing

Forcing

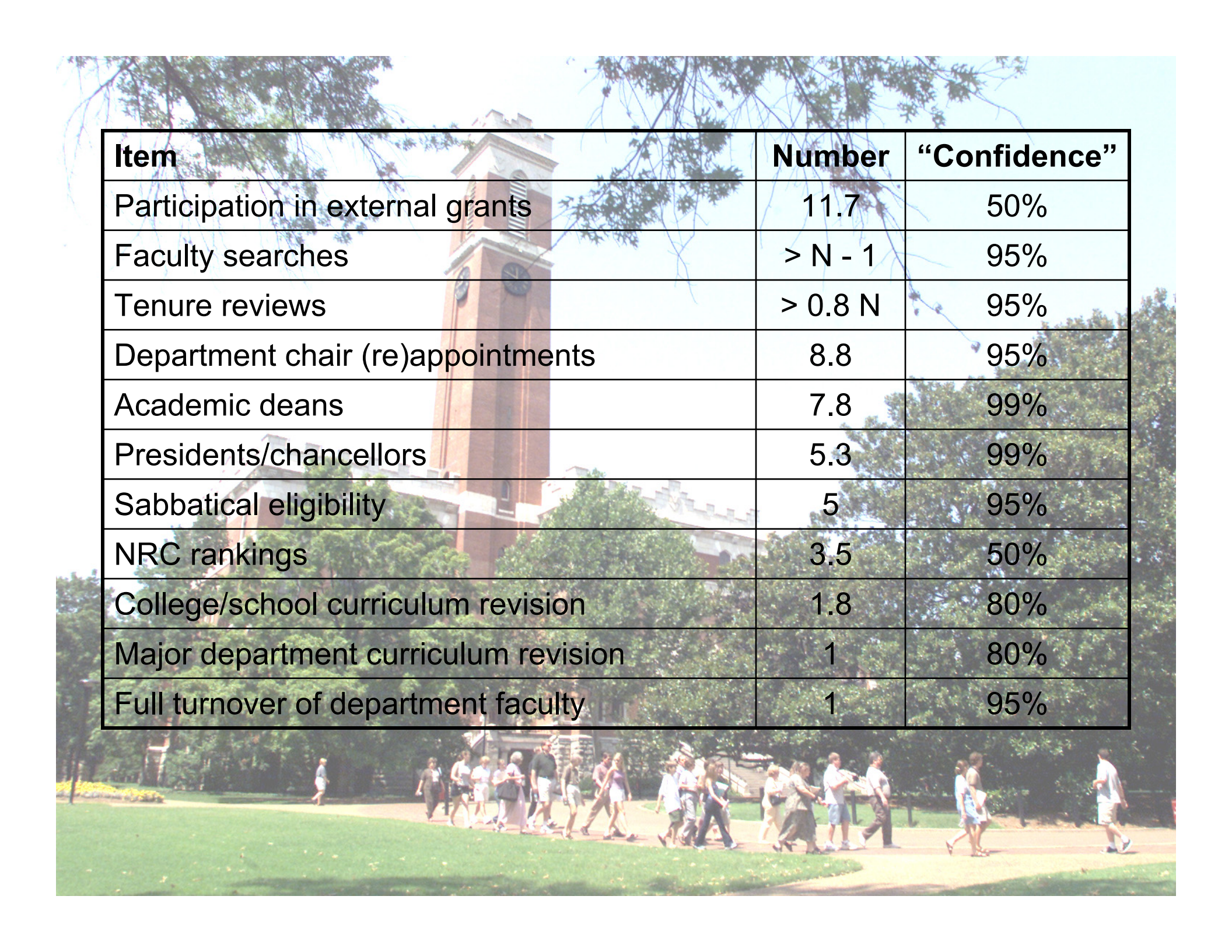


LANL

Bonus: The Department System state and its derivatives are influenced by *anticipated* future states.



Item	Years	“Confidence”
Average duration of NSF grant	~ 3	95%
Average chair appointment	~ 4	95%
Mean residence time for academic deans	~ 4.5	99%
Mean residence time for presidents/chancellors	~ 6.6	99%
Average time to tenure	6-7	95%
Average time between sabbatical eligibility	~ 7	95%
NRC ranking recurrence interval	~ 10	50%
Average time between college curriculum revisions	~ 20	80%
Average tenure of “career academic”	~ 35	90%
Average time between major geoscience department curriculum revisions	~ 30-40	80%



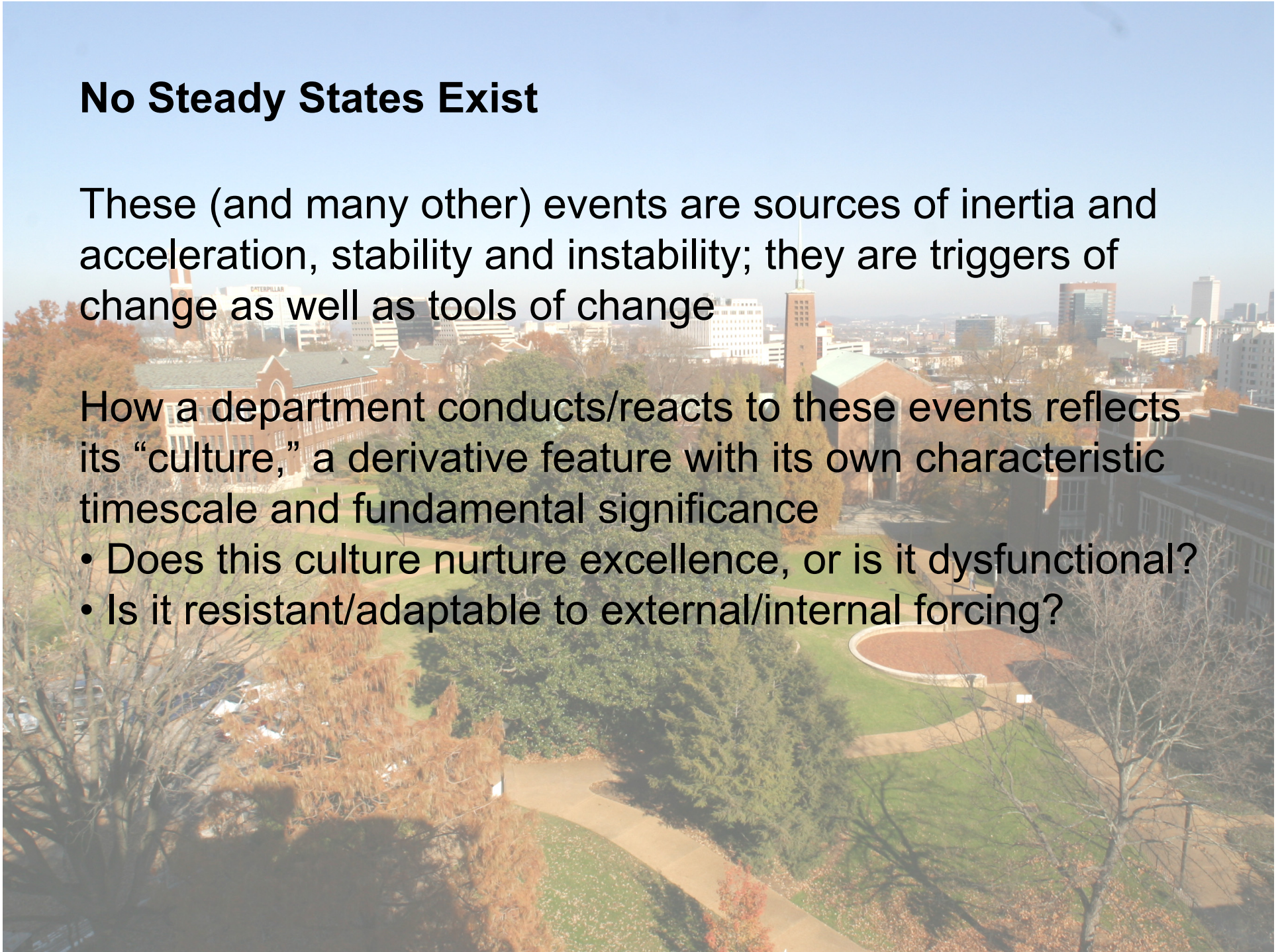
Item	Number	“Confidence”
Participation in external grants	11.7	50%
Faculty searches	$> N - 1$	95%
Tenure reviews	$> 0.8 N$	95%
Department chair (re)appointments	8.8	95%
Academic deans	7.8	99%
Presidents/chancellors	5.3	99%
Sabbatical eligibility	5	95%
NRC rankings	3.5	50%
College/school curriculum revision	1.8	80%
Major department curriculum revision	1	80%
Full turnover of department faculty	1	95%

No Steady States Exist

These (and many other) events are sources of inertia and acceleration, stability and instability; they are triggers of change as well as tools of change

How a department conducts/reacts to these events reflects its “culture,” a derivative feature with its own characteristic timescale and fundamental significance

- Does this culture nurture excellence, or is it dysfunctional?
- Is it resistant/adaptable to external/internal forcing?



Some Important Ingredients

1) A culture wherein the faculty has collective ownership of the department's educational objectives for students at all levels

- tuning to culture of college/school and university
- frequent engagement of faculty, and articulation of objectives

2) A culture that is open to frequent reexamination and tuning of the curriculum, and adjusting its implementation at all levels

- spiraling rather than redundancy
- educating for versatility

3) A culture surrounding faculty hiring that is committed to comprehensive and holistic assessments of candidates

- balanced commitment to excellence in all areas of mission
- potential and flare for intellectual engagement across disciplines
- mentoring starts during recruiting

Ingredients (continued)

4) A culture of “intellectual nurturing” adapted to all career levels, students through faculty (assistant through full)

- tuning programs of study to student aspirations
- supporting a full, but judiciously balanced, engagement of early-career faculty in all aspects of academia
- revaluing the sabbatical; supporting intellectual refreshment and change
- engaging all department members in creative exchanges (e.g. colloquia series, and details involved, matter a lot)

5) A culture where barriers are perceived as bumps, not walls; and where round and square pegs are equally valued

- How can we make this happen?
- Can we tune this idea to our vision/mission?

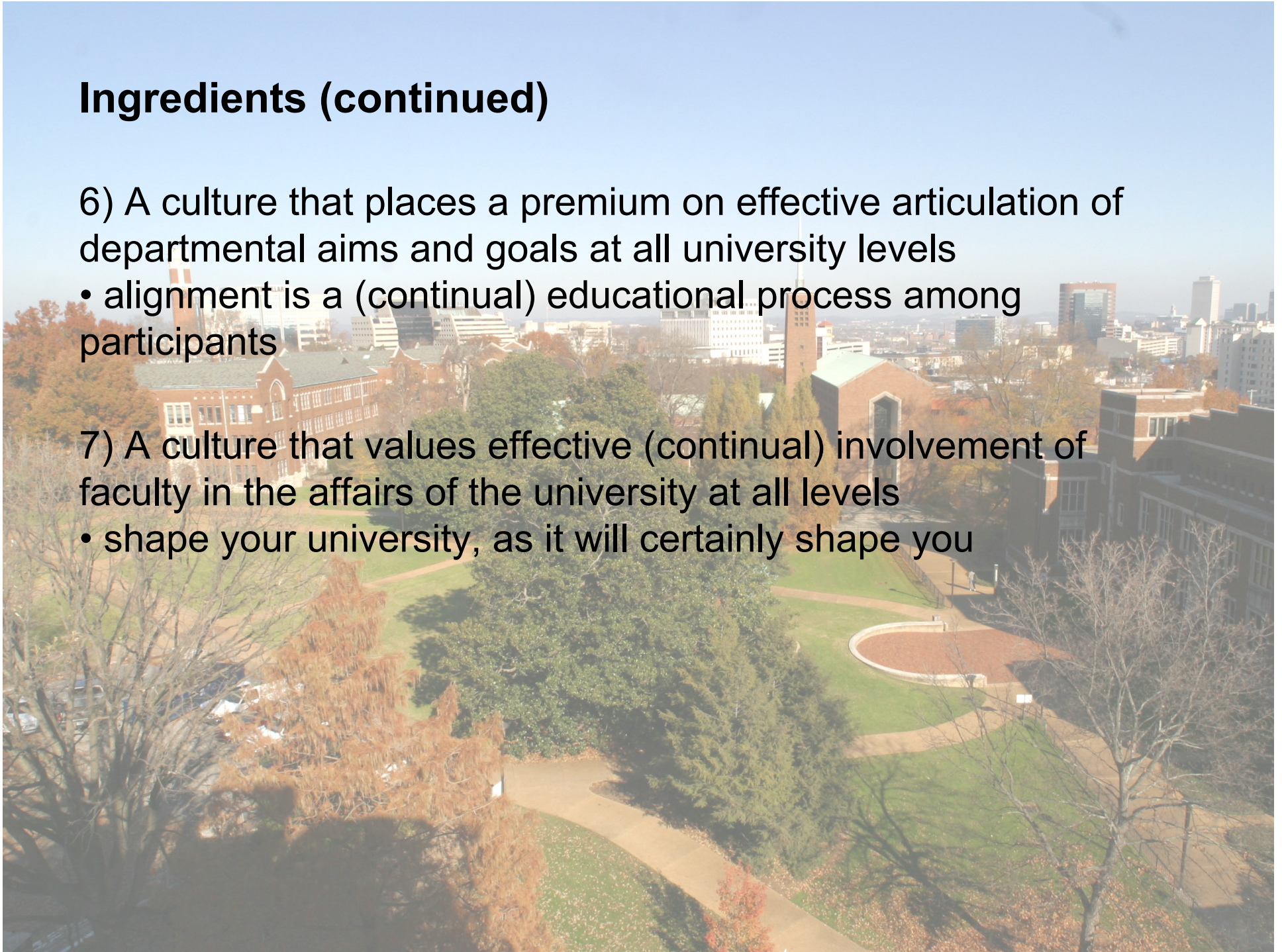
Ingredients (continued)

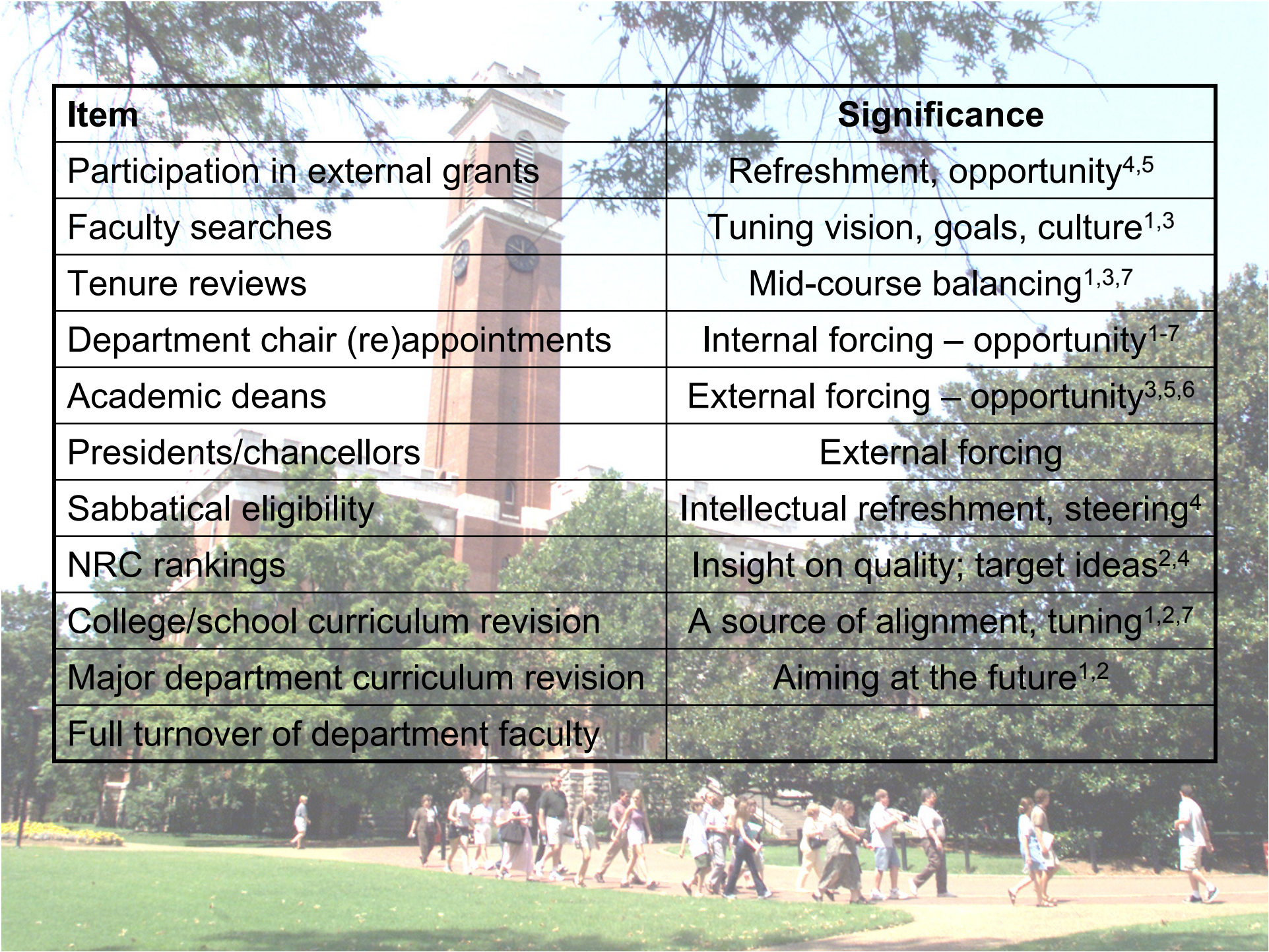
6) A culture that places a premium on effective articulation of departmental aims and goals at all university levels

- alignment is a (continual) educational process among participants

7) A culture that values effective (continual) involvement of faculty in the affairs of the university at all levels

- shape your university, as it will certainly shape you





Item	Significance
Participation in external grants	Refreshment, opportunity ^{4,5}
Faculty searches	Tuning vision, goals, culture ^{1,3}
Tenure reviews	Mid-course balancing ^{1,3,7}
Department chair (re)appointments	Internal forcing – opportunity ¹⁻⁷
Academic deans	External forcing – opportunity ^{3,5,6}
Presidents/chancellors	External forcing
Sabbatical eligibility	Intellectual refreshment, steering ⁴
NRC rankings	Insight on quality; target ideas ^{2,4}
College/school curriculum revision	A source of alignment, tuning ^{1,2,7}
Major department curriculum revision	Aiming at the future ^{1,2}
Full turnover of department faculty	