

Challenging
Times –
Chairs + 1

Eric M.
Friedlander

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TPSE: October 7, 2016

with [Jim Gates](#), [Mark Green](#), [Phillip Griffiths](#),
[Tara Holm](#), [Brit Kirwan](#), [Karen Saxe](#), [Uri Treisman](#)

Night owl

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(Despite the fact that this is before 6:00am Pacific Time, and some of us are **night owls**.)



I don't think we need another
wake-up call.

We do need **ACTION!**

Bottom Line

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THE BOTTOM LINE



Our students **NEED MATHEMATICS.**

Our challenge is to **BETTER EQUIP** them with the math they need.

GOALS:

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Reach many more students of DIVERSE backgrounds.

Improve OUTCOMES for our students.

Improve EXPERIENCES for our students.

Increase awareness of the VALUE of mathematics.

Now what?

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Today, you will learn of **ACTIONS** underway:

Phillip Griffiths will mention some of TPSE's activities.

Uri Treisman's panel will highlight remarkable action in Ohio.

Mark Green's panel will focus on mathematics curriculum developments which aim for engagement and relevance outside of academia.

Most important:

We **urgently** seek your **input** and your **active participation** this weekend through questions and through discussions in multiple break-out sessions.

Why Now?

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Why?

ACT
NOW!

FORCES for **CHANGE** have aligned as never before!

Change NOW!

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- Pressures of **demand** by students and other disciplines.
- Efforts of **many organizations** focused on post-secondary mathematics education.
- Evolving acceptance of **active learning methodology**.
- Opportunity to **bridge the gulf** between mathematical scientists and those who do research on teaching methodology.
- Increasing influence of *changing* mathematics in the **service of more and more careers**.

PHILLIP GRIFFITHS is a fantastic leader.

URI TREISMAN has generated a whirlwind of **activity**.

Destroy those Silos

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We need to **break down silos**, bring the post-secondary education community *together*.

Mathematical scientists AND **Math ED** education researchers.

Research AND **teaching**.

2-year colleges AND **4-year colleges** versus **universities**.

Graduate training AND **teacher training**.

Pathways to Success

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This weekend, there will be much discussion of **PATHWAYS**.

In lower division courses (especially in 2-year colleges), there has been considerable success in offering students **multiple pathways**. Some students find some subjects (e.g., algebra versus statistics, or mathematical biological versus traditional calculus) more attractive and engaging than others.

What can we offer students which is both **rigorous and useful**?

Complementing this are courses which introduce students to powerful, new mathematical applications and the mathematical ideas behind these developments. This is what one might call **enhanced alternative pathways**.

Tear down barriers

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There are too many **bureaucratic barriers** to success.



As examples, **course credits** across institutions;
obstructions to **co-teaching** interdisciplinary courses;
competition for student enrollment within a given institution.

Important assets

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We have many assets in addition to

effective leadership and external pressures:

Successful innovations exist at the local level.

Interest and commitment of many in our community.

Awareness of the necessity of change.

Support of foundations, funding agencies, some administrators.

Our constraints

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- More students and **fewer regular faculty** (students often need more personal attention) and **shrinking** budgets.
- **Weak mathematical background** of many students (e.g., role of Calculus in high schools).
- **Competition** with mobile devices, etc for our **students'** attention.
- Fitting our efforts to match the needs/goals of educators of **other STEM fields**.
- **MOTIVATING** faculty to innovate.

Opportunity beckons

We have the **OPPORTUNITY** to make a **DIFFERENCE**.



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Questions you might ask

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What **additional resources** would be most useful?

- i.) A clone of yourself.
- ii.) More faculty.
- iii.) Flexibility to reward excellence.
- iv.) A bigger budget (\$ \$ \$).

What inputs from **other Mathematics Departments** would be most helpful?

- i.) Details of active learning experiences.
- ii.) Detailed information about new courses.
- iii.) Guidance for reaching out to client departments.

What **bureaucracy** do you find most frustrating?

- i.) Transfer of course credits.
- ii.) Unreasonable demands by administrators.
- iii.) Meeting enrollment pressures with fewer instructors.

Thank you

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Let us **EXCHANGE** our ideas and **CHANNEL** our efforts
in order to improve mathematics education for all our students.

THANK YOU!