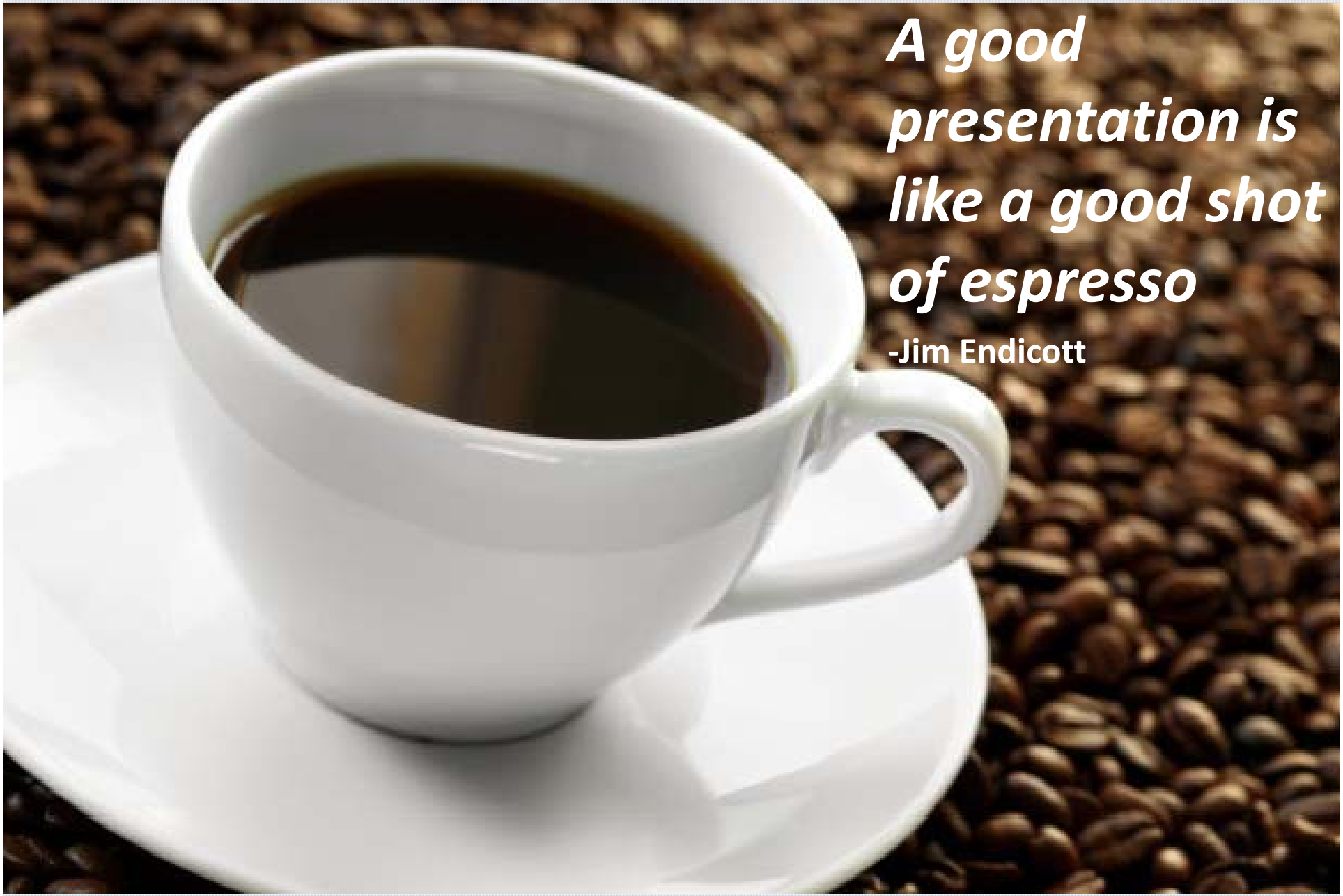
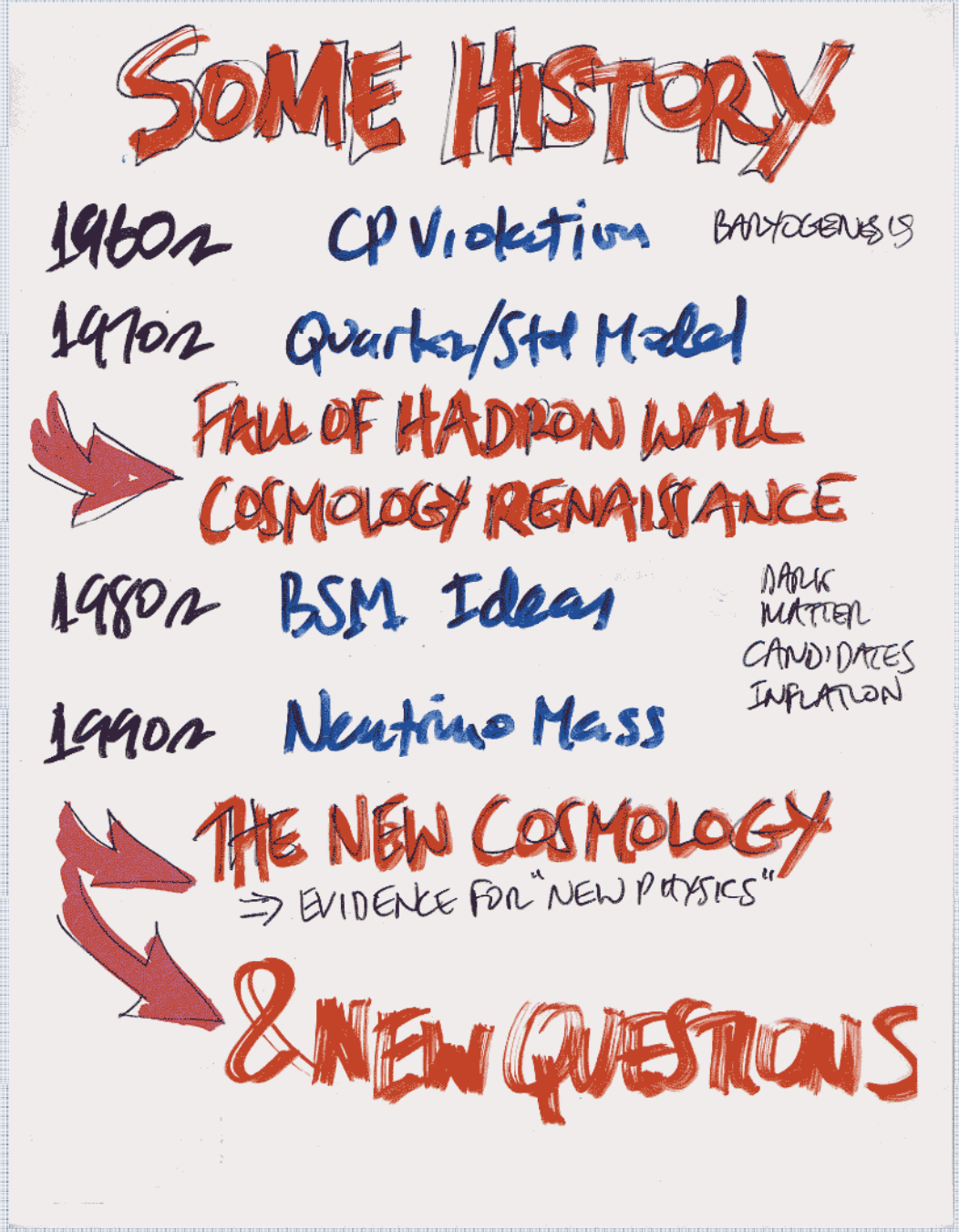
Improving your Research Presentation

Organizing Your Talk: Kendra Redmond


A good presentation is like a good shot of espresso
-Jim Endicott



Michael Turner

The University of Chicago

Professor, Departments of Astronomy and Astrophysics, and Physics, and the College; Enrico Fermi Institute; Kavli Institute for Cosmological Physics

Audience

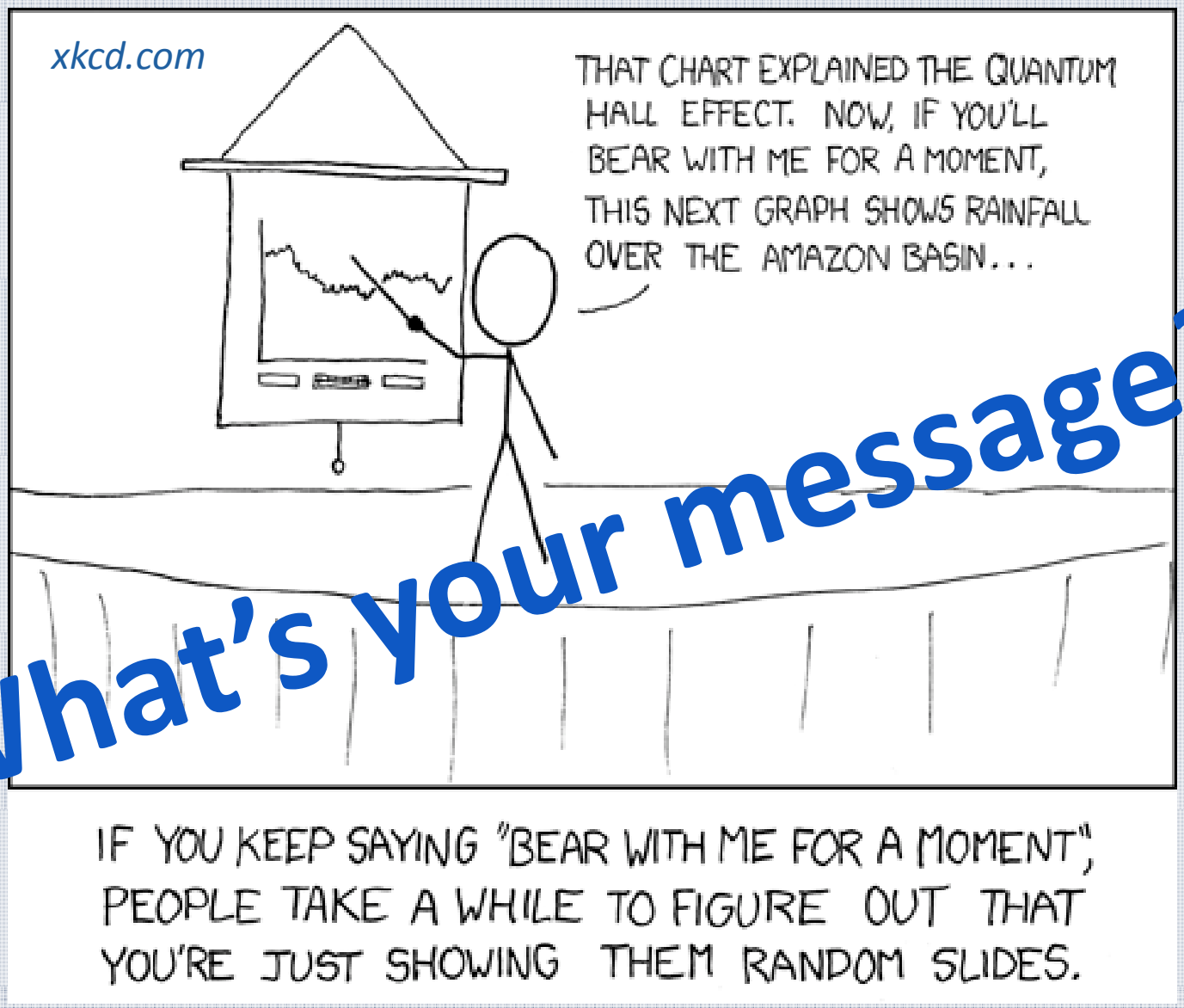
- ❑ Peers
- ❑ Colleagues
- ❑ Students

- ❑ Research Group
- ❑ Faculty & Staff

Where are they starting from?

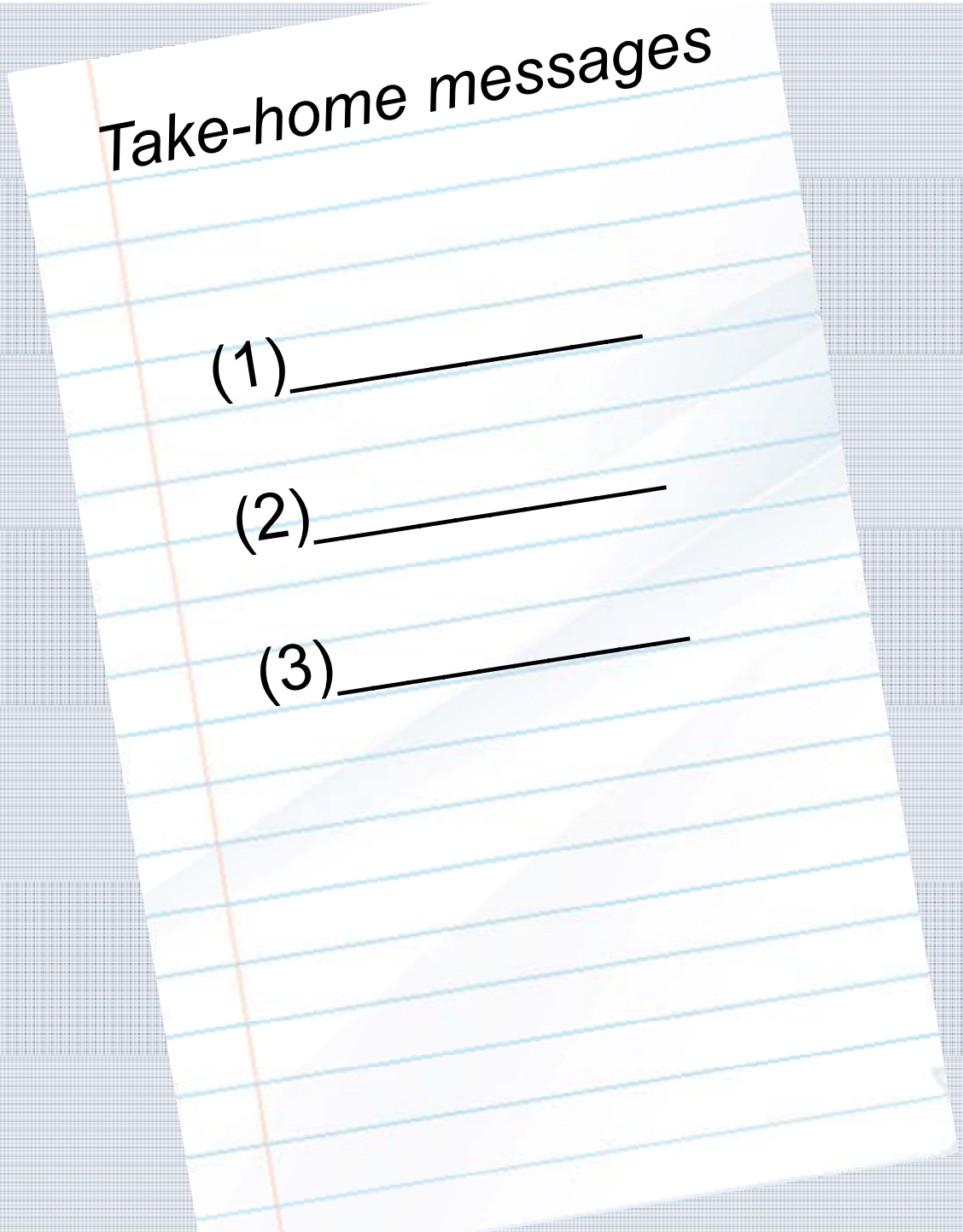
Audience

Engage
Solve a Problem
Impress
Educate
Inspire
Inform
Celebrate
Network
Goal



What's your message?

Goal



Goal

I. Outlines are
    a. Essential for planning a good talk
    b. Worth the trouble
    c. Not as boring as you think
II. For short talks
    a. You may not need to
    b. Display your outline because
    c. They can lead to awkward pauses
III. And
    a. They may not be necessary if your
    b. Talk follows a logical progression

Coherent Story

Michael Turner thought that counts
- Context

Every talk has an audience ⇒ starting place

Every talk has a message
- simple
- quick
- memorable

Every talk has a goal
- inform
- inspire
- get attention
- entertain

Every talk is a story
- beginning
- middle
- end

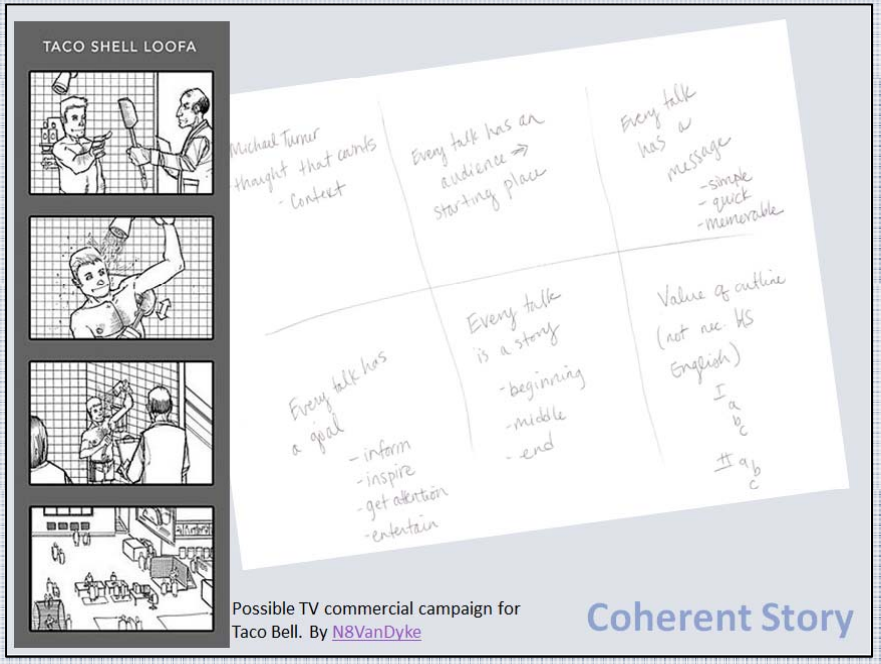
Value of outline (not nec. HS English)
I
a
b
c
II a b c

Possible TV commercial campaign for Taco Bell. By N8VanDyke

Coherent Story

Personality

Personality



Possible TV commercial campaign for Taco Bell. By N8VanDyke

Coherent Story

Personality

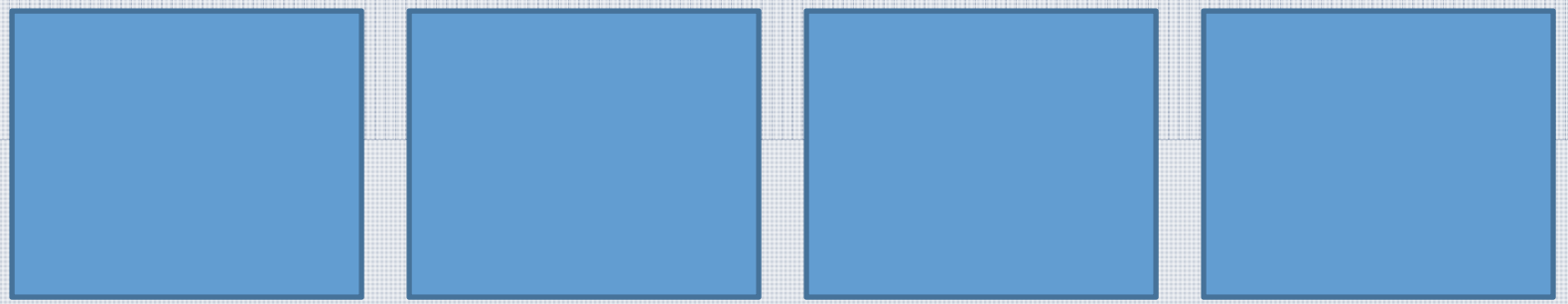
Audience:

Goal:

Message:

Take-home:

Storyline:



Improving your Undergraduate Research Presentation

Review and Revision

T. Olsen

Review & Revision

I. The “Scientific American” Test
II. A Sequence of Practice & Revision
III. Concrete Visualization/Demonstration
IV. Zooming In / Zooming Out
V. On Equations
VI. Know your Audience

Review & Revision

I. The "Scientific American" Test

II. A Sequence of Practice & Revision

III. Concrete Visualization/Demonstration

IV. Zooming In / Zooming Out

V. On Equations

VI. Know your Audience

Review & Revision

I. The “Scientific American” Test
II. A Sequence of Practice & Revision
III. Concrete Visualization/Demonstration
IV. Zooming In / Zooming Out
V. On Equations
VI. Know your Audience

A Sequence of Practice & Revision

- A Possible Schedule of Presentation / Revision
  - Aloud by yourself
  - To a fellow student, who understands the work
  - If possible, with your research supervisor
  - To a fellow student, not in the field
  - If possible, with your supervisor and students

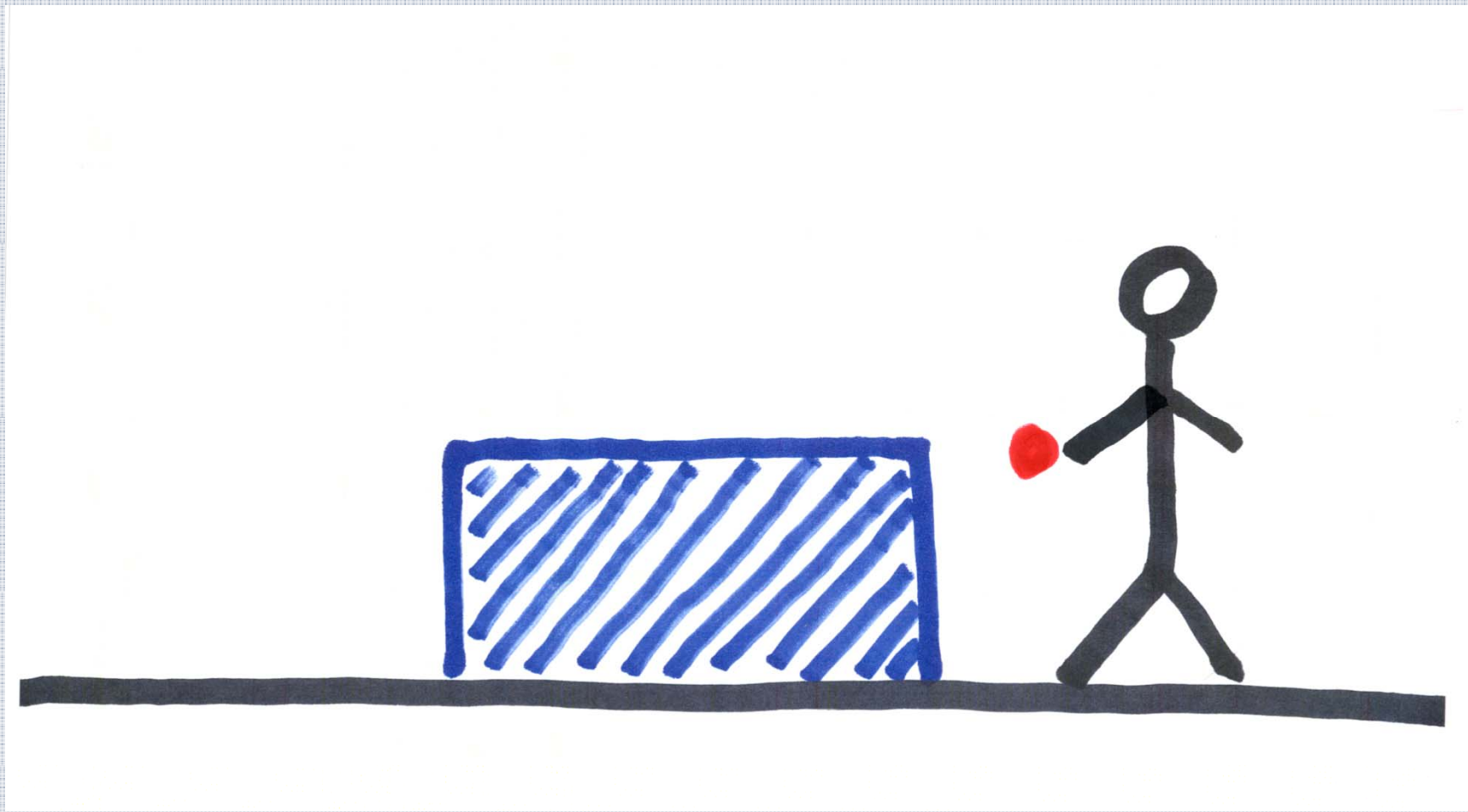
A Sequence of Practice / Revision

- After each presentation, seek out feedback; e.g.
  - What did the audience take to be your main points?
  - What did your audience find most effective?
  - What did your audience not understand?
  - About what did your audience want to know more?
  - What did your audience (especially your supervisor) think might not be accurate?
  - What did your audience think wasn't really necessary?
- Use your feedback to improve the presentation

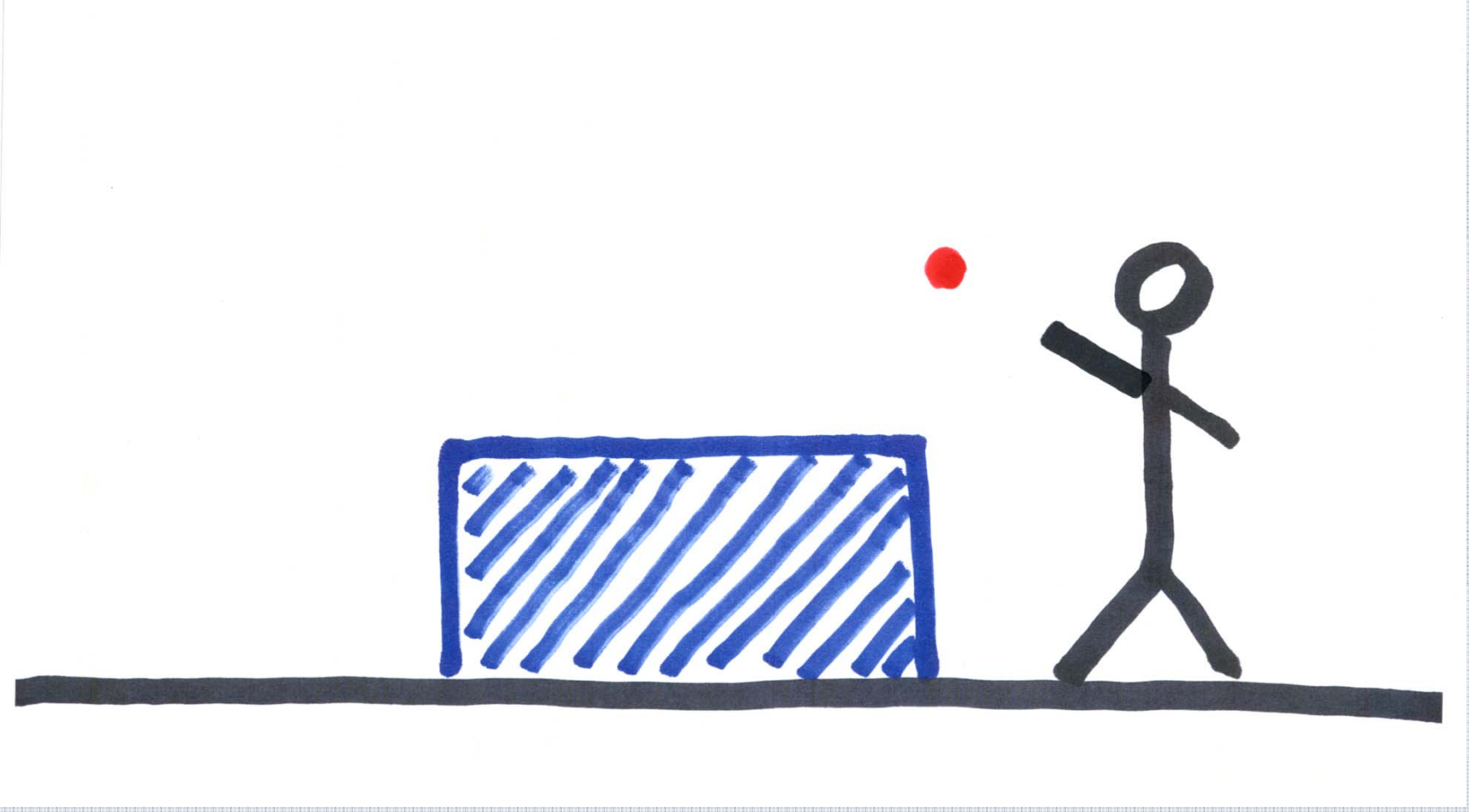
Review & Revision

I. The “Scientific American” Test
II. A Sequence of Practice & Revision
III. Concrete Visualization/Demonstration
IV. Zooming In / Zooming Out
V. On Equations
VI. Know your Audience

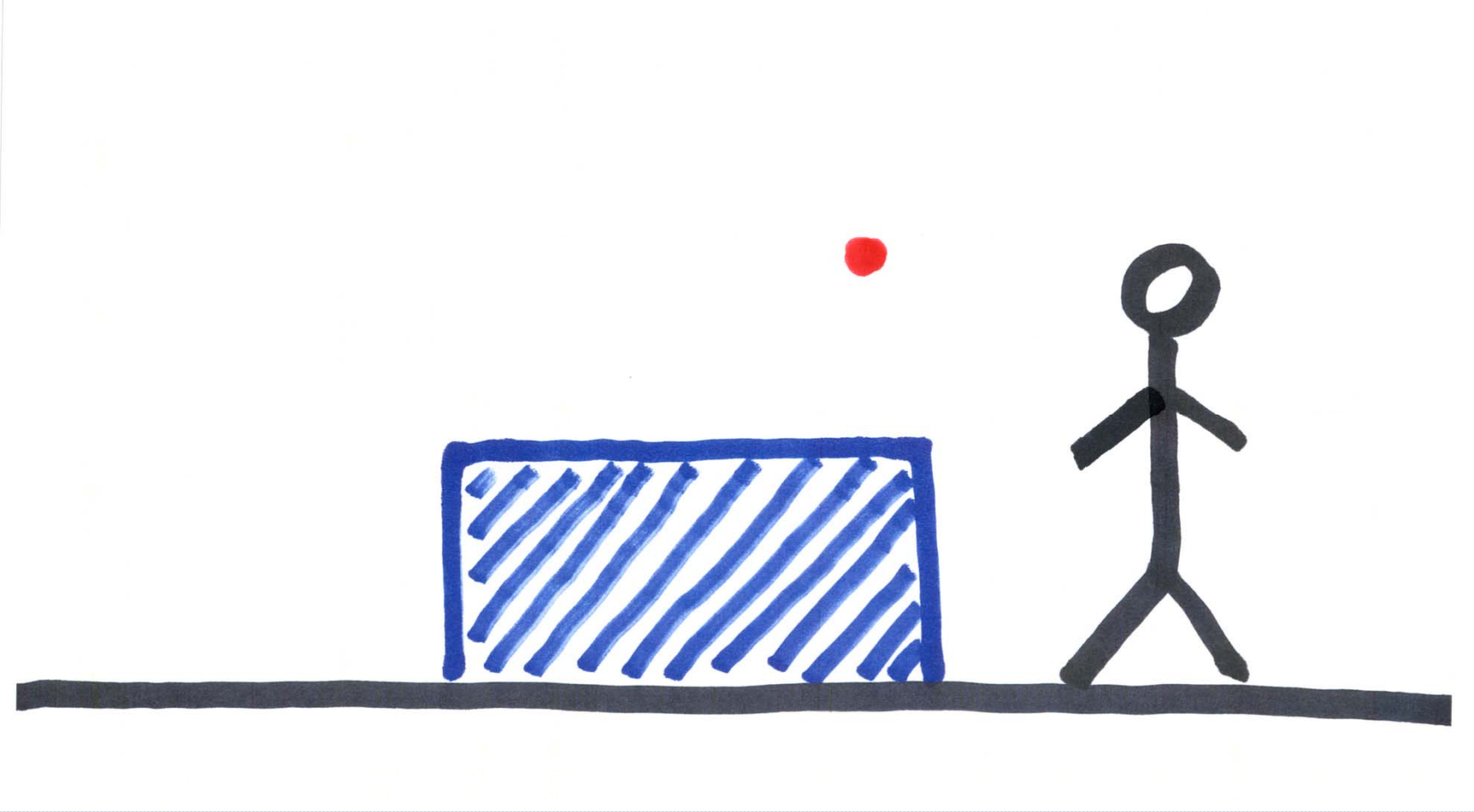
Concrete Visualization/Demonstration Predictable Motion



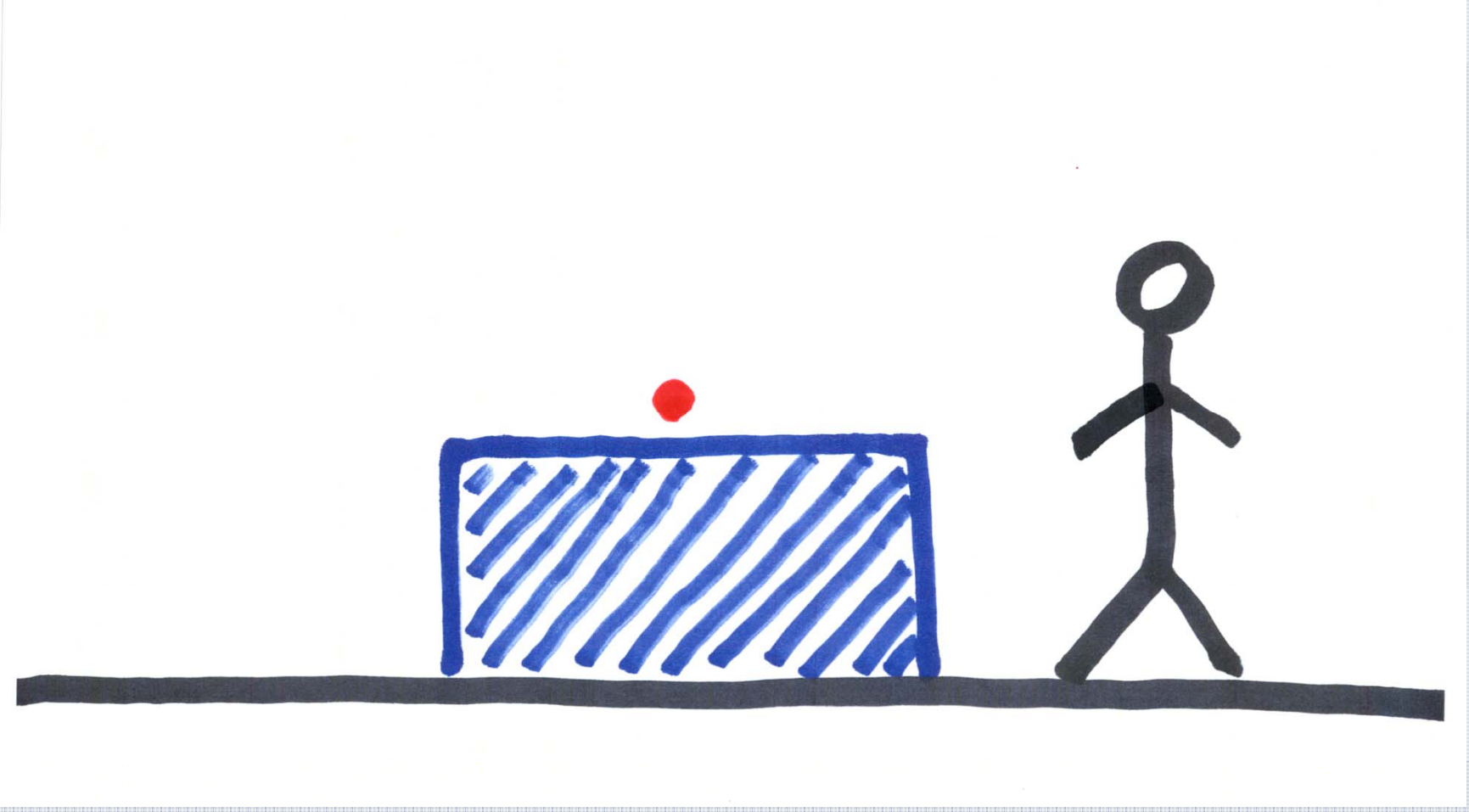
Concrete Visualization/Demonstration Predictable Motion



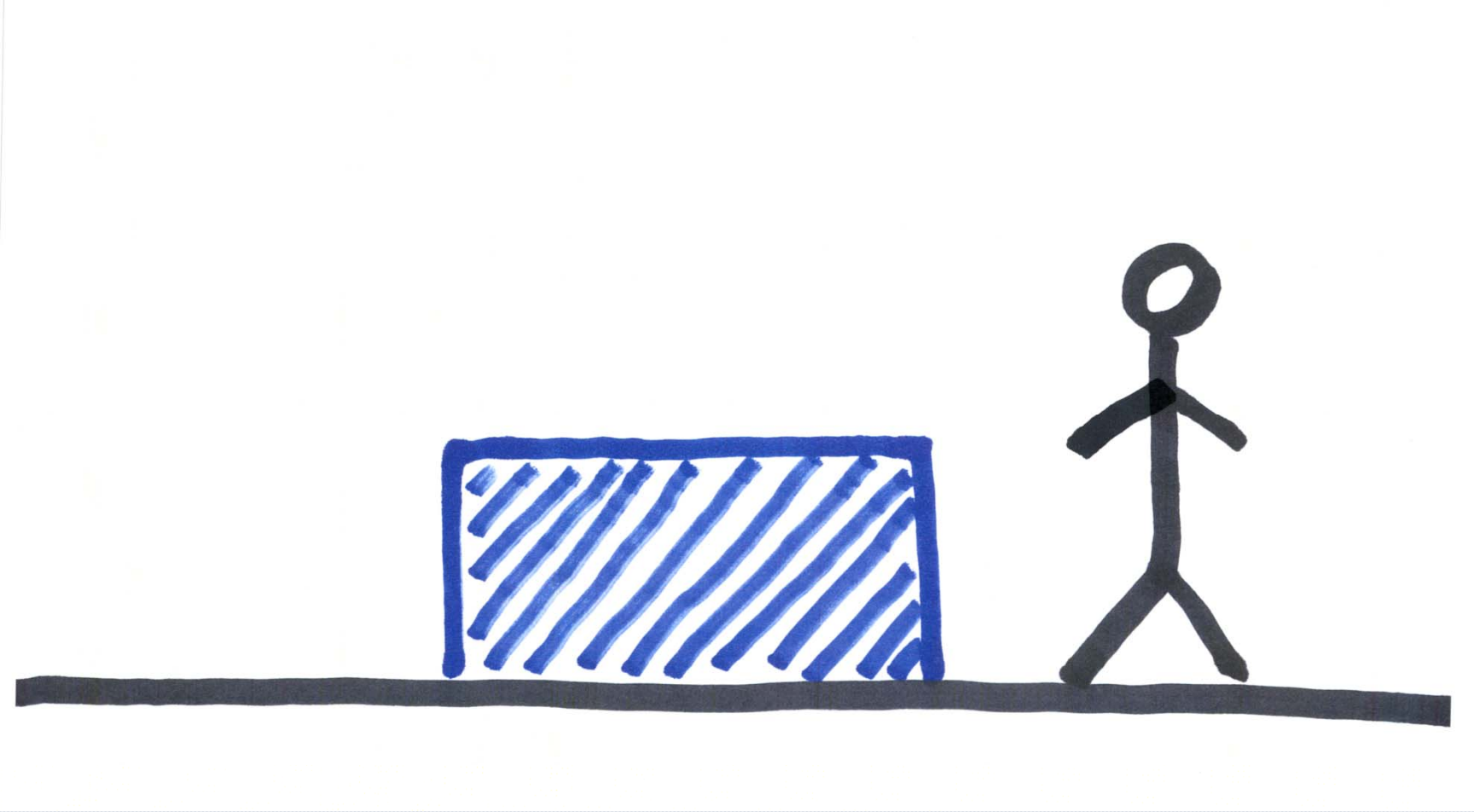
Concrete Visualization/Demonstration Predictable Motion



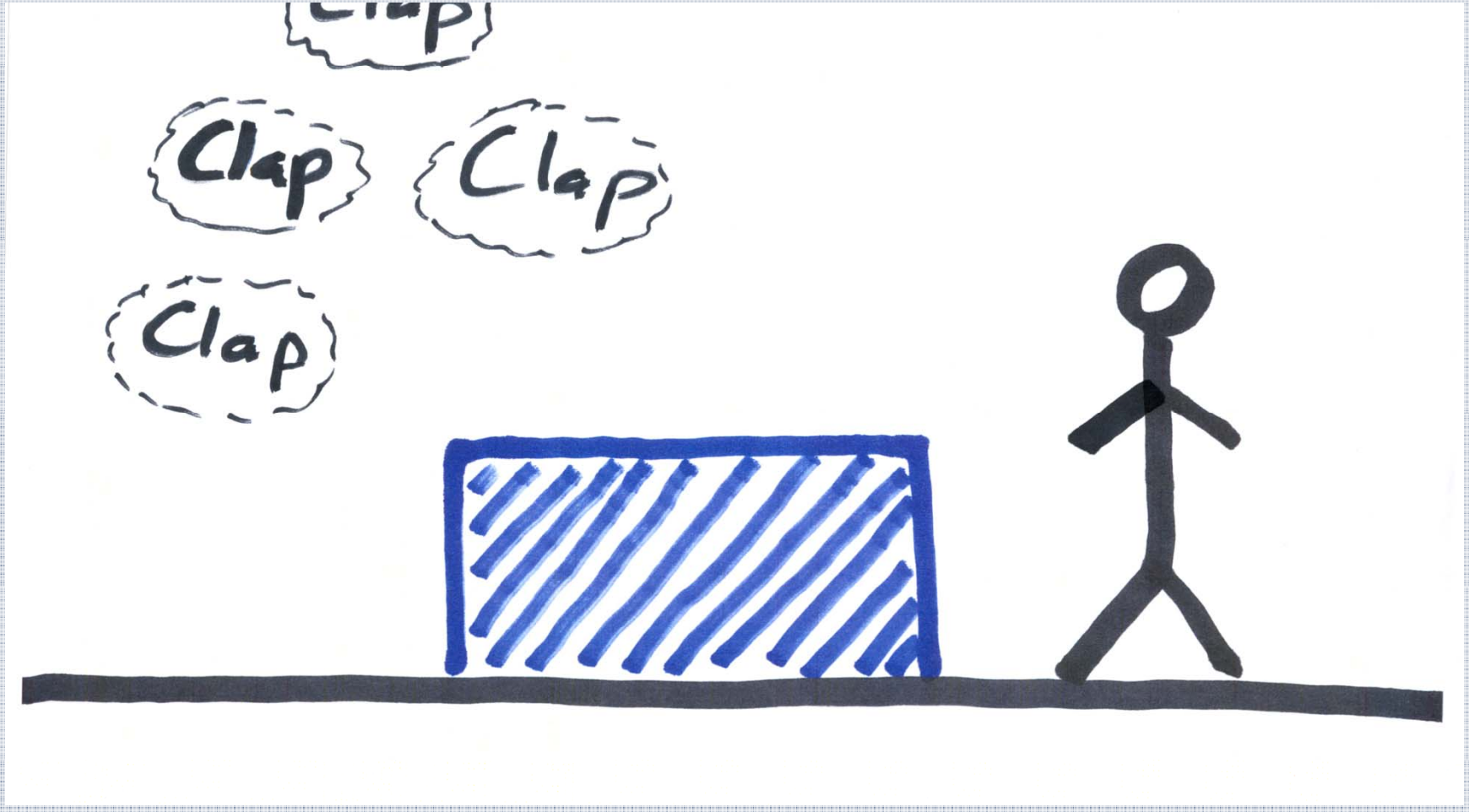
Concrete Visualization/Demonstration Predictable Motion



Concrete Visualization/Demonstration Predictable Motion



Concrete Visualization/Demonstration Predictable Motion

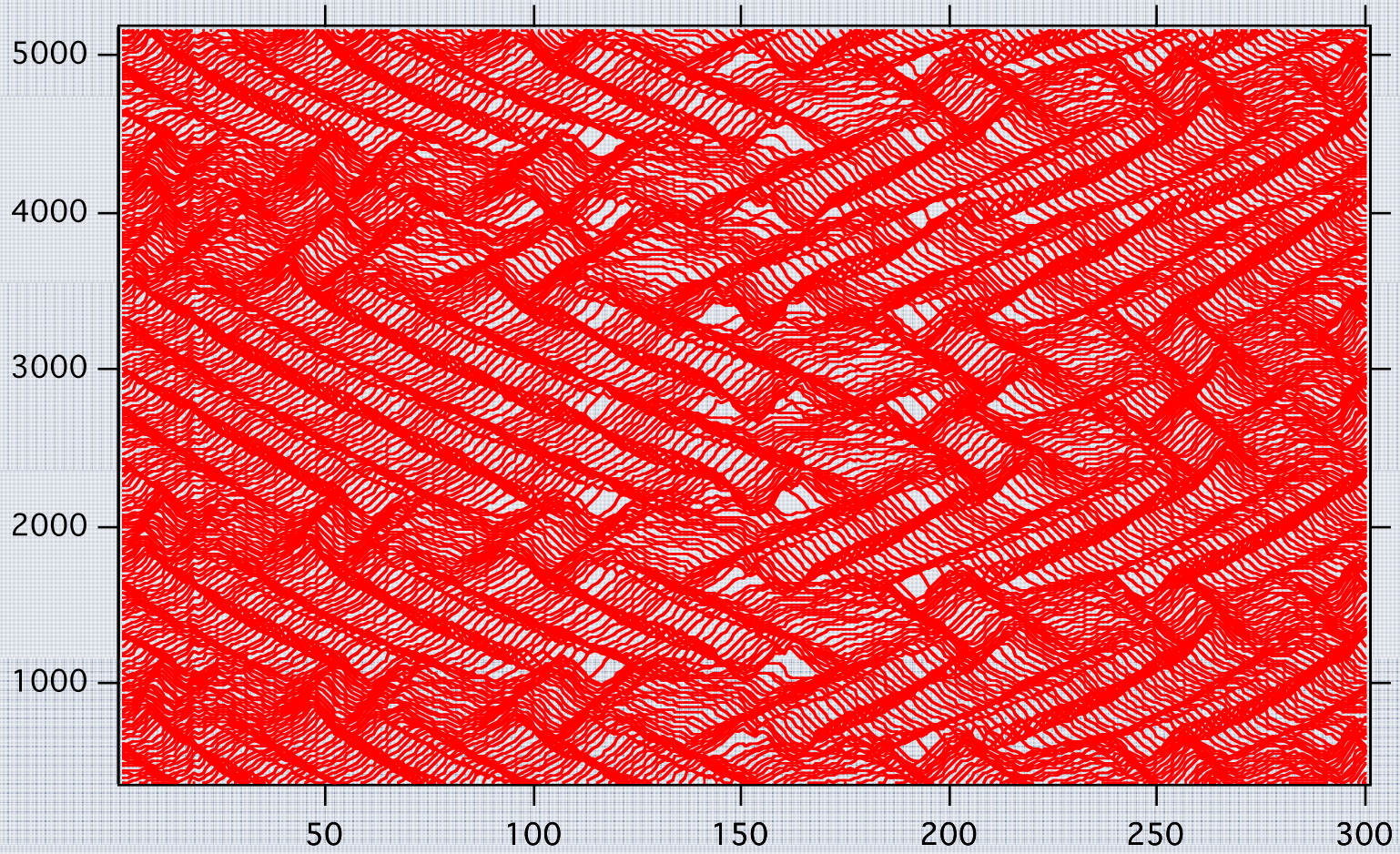


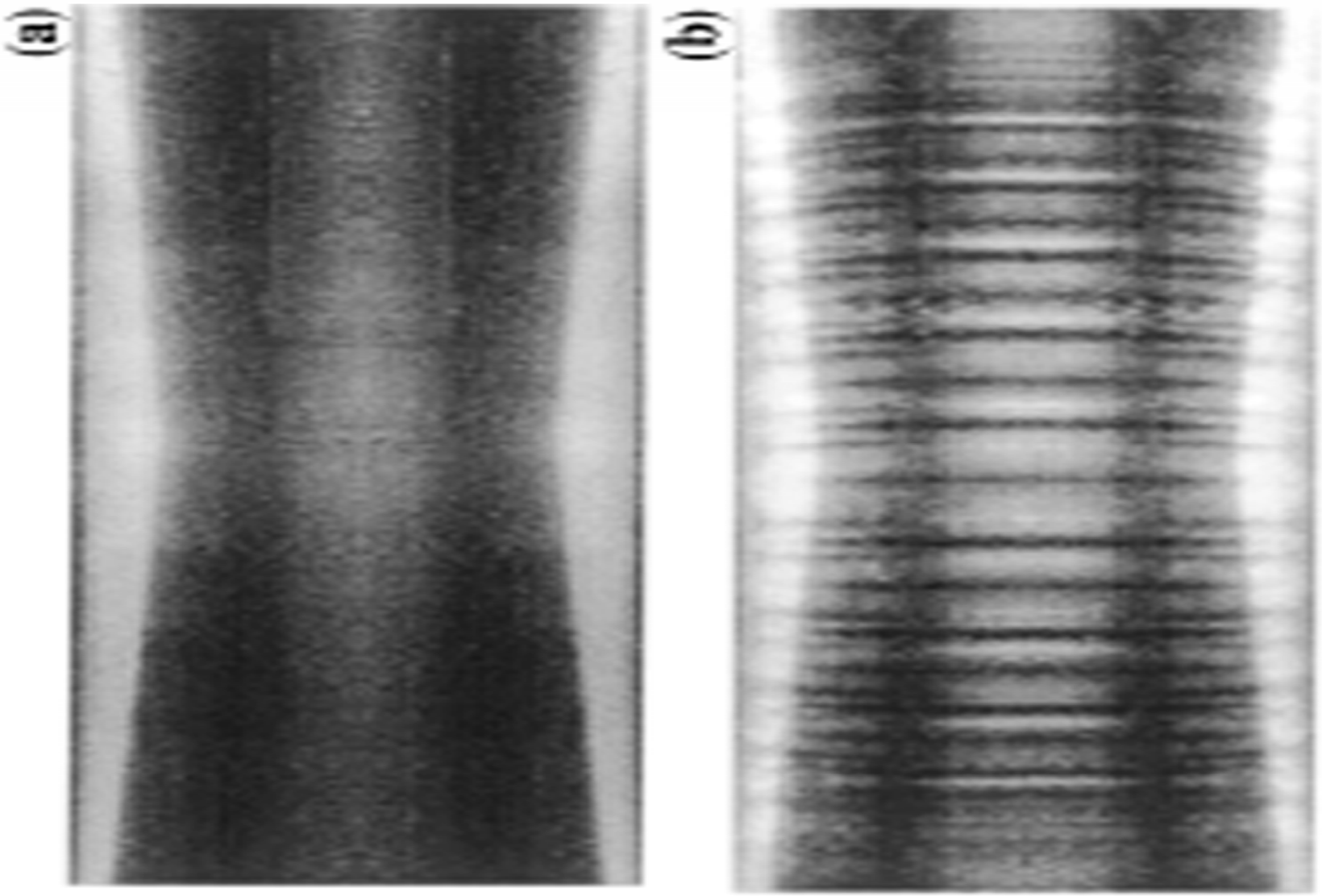
Concrete Visualization/Demonstration Unpredictable Motion

Review & Revision

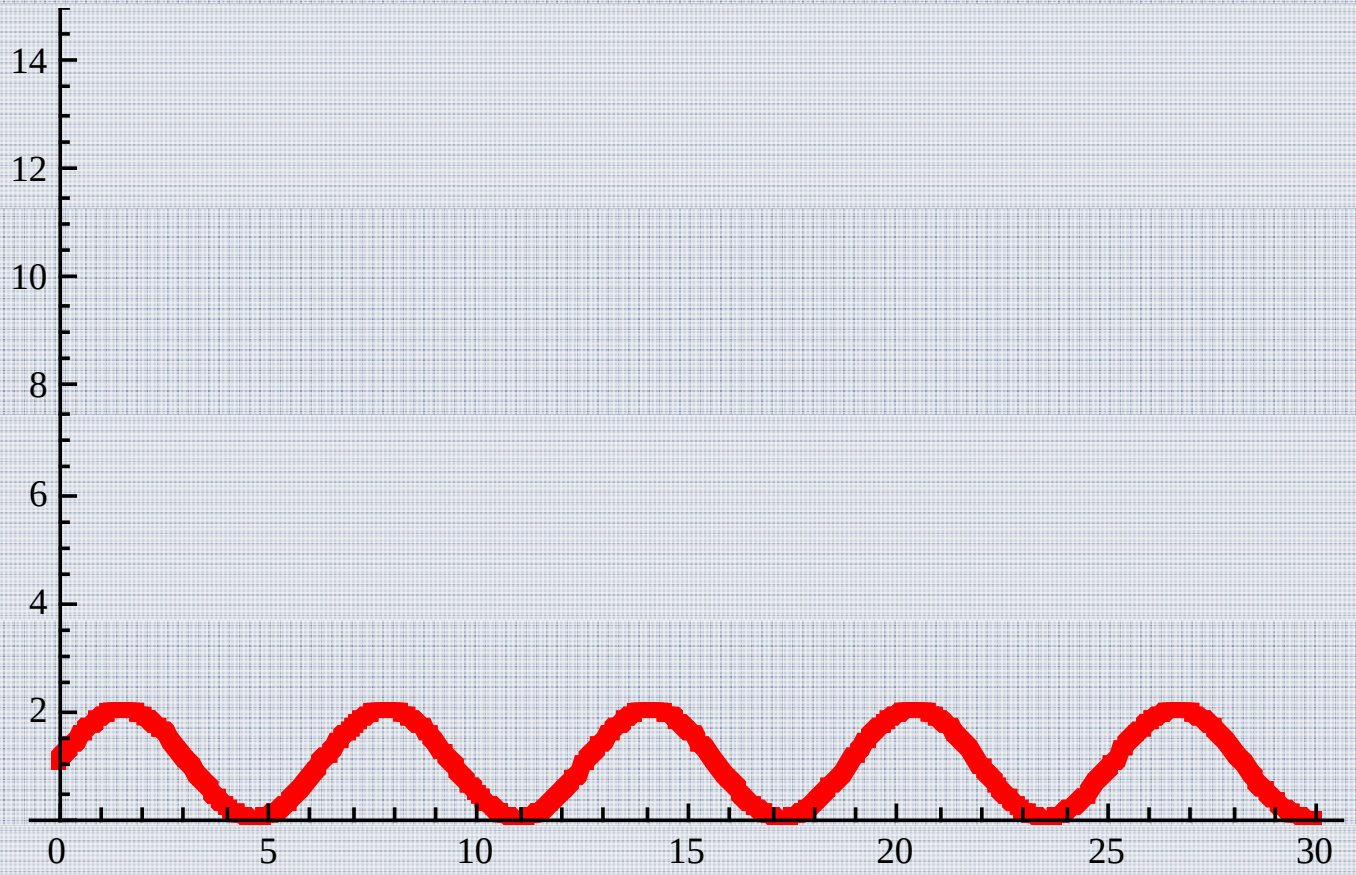
I. The “Scientific American” Test
II. A Sequence of Practice & Revision
III. Concrete Visualization/Demonstration
IV. Zooming In / Zooming Out
V. On Equations
VI. Know your Audience

Zooming In / Zooming Out

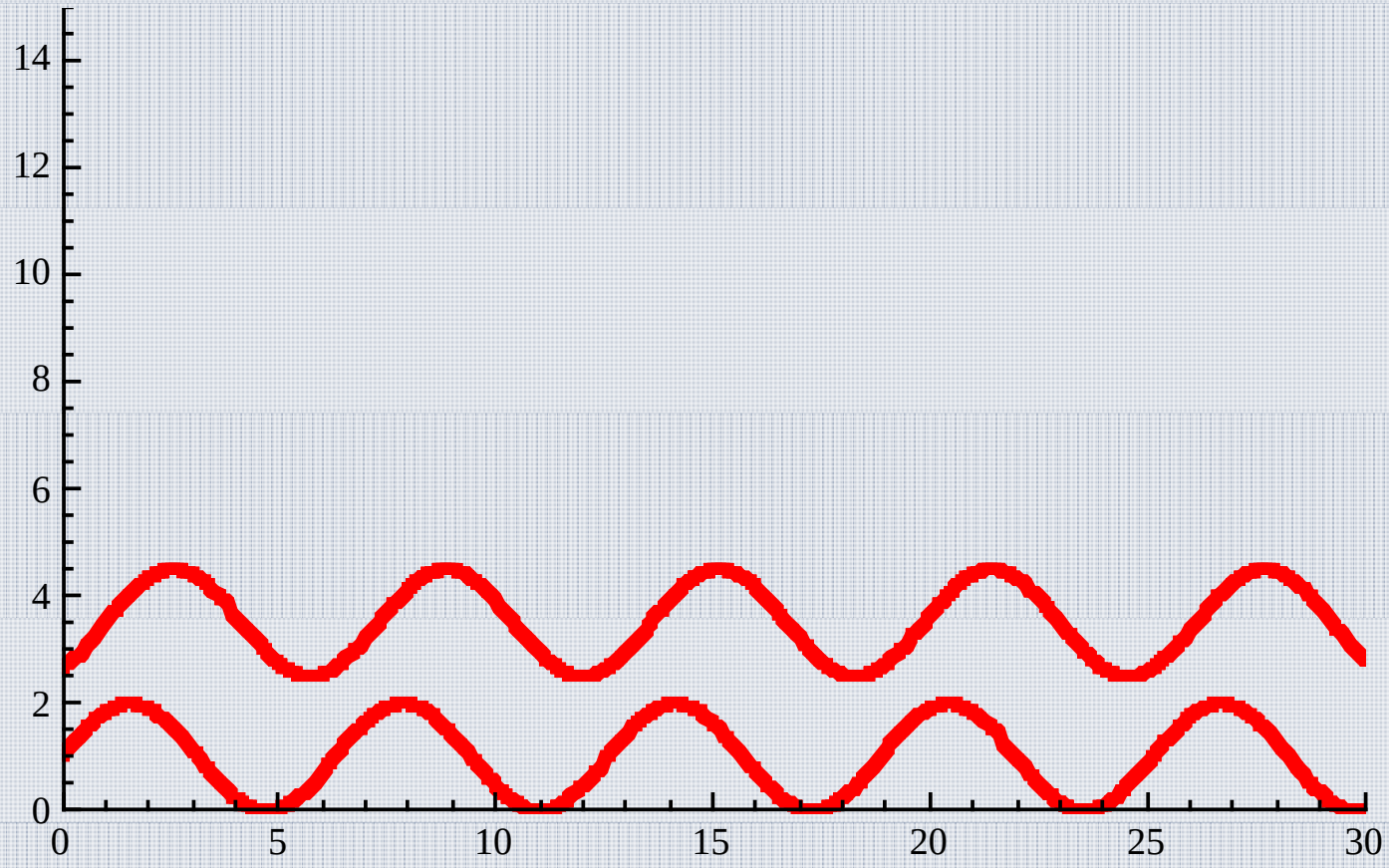



a
c

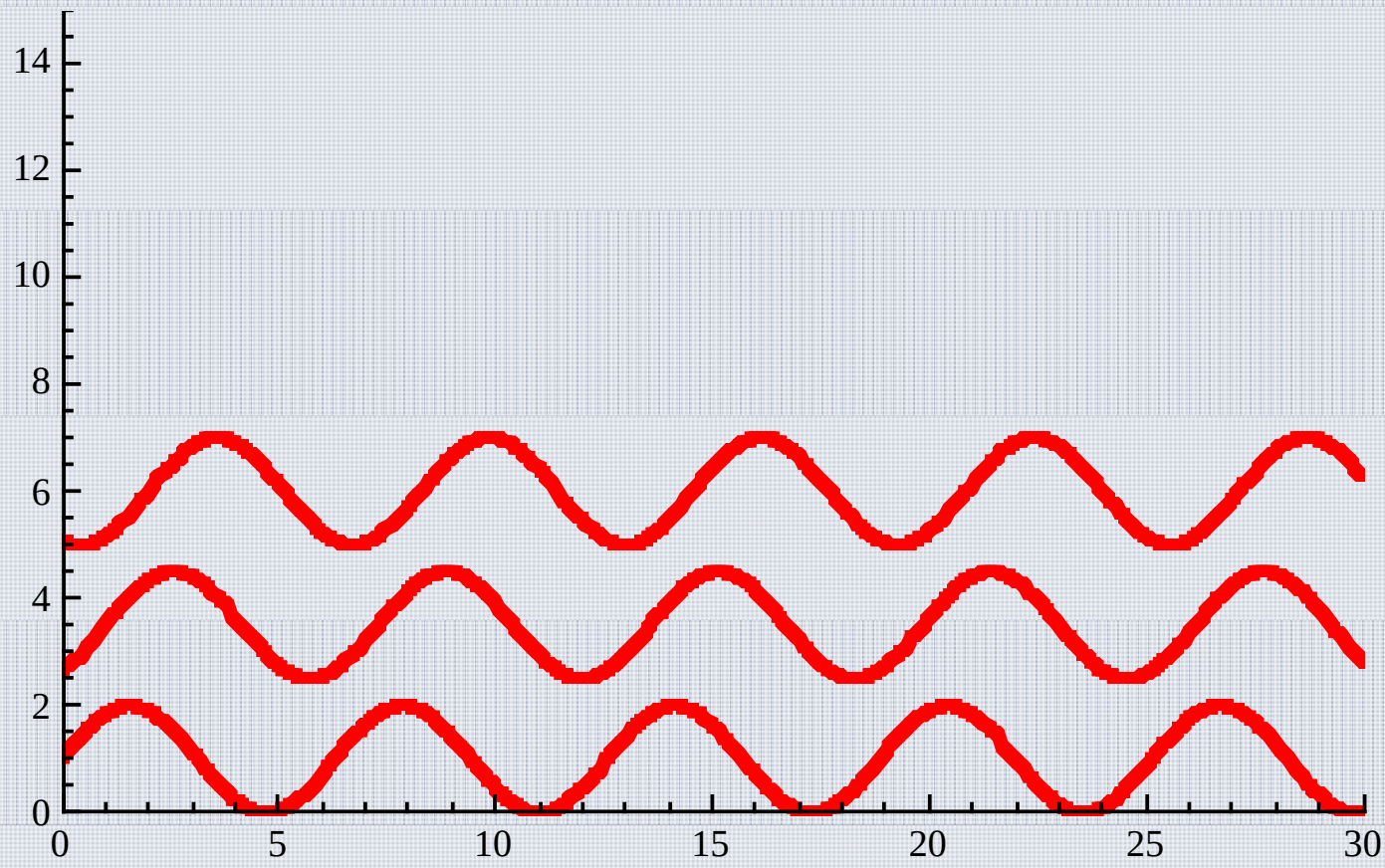
Space-Time Diagrams



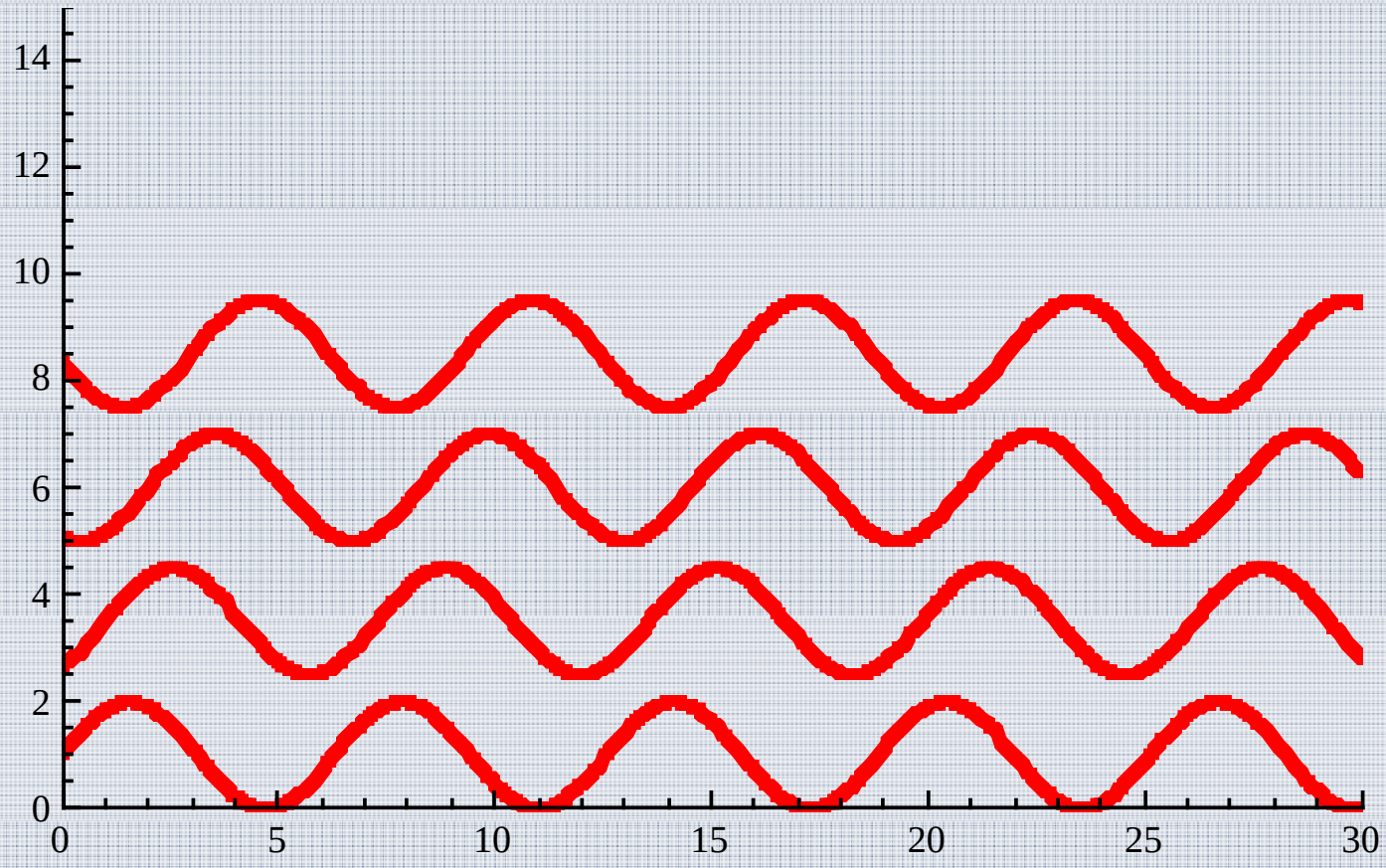
Space-Time Diagrams



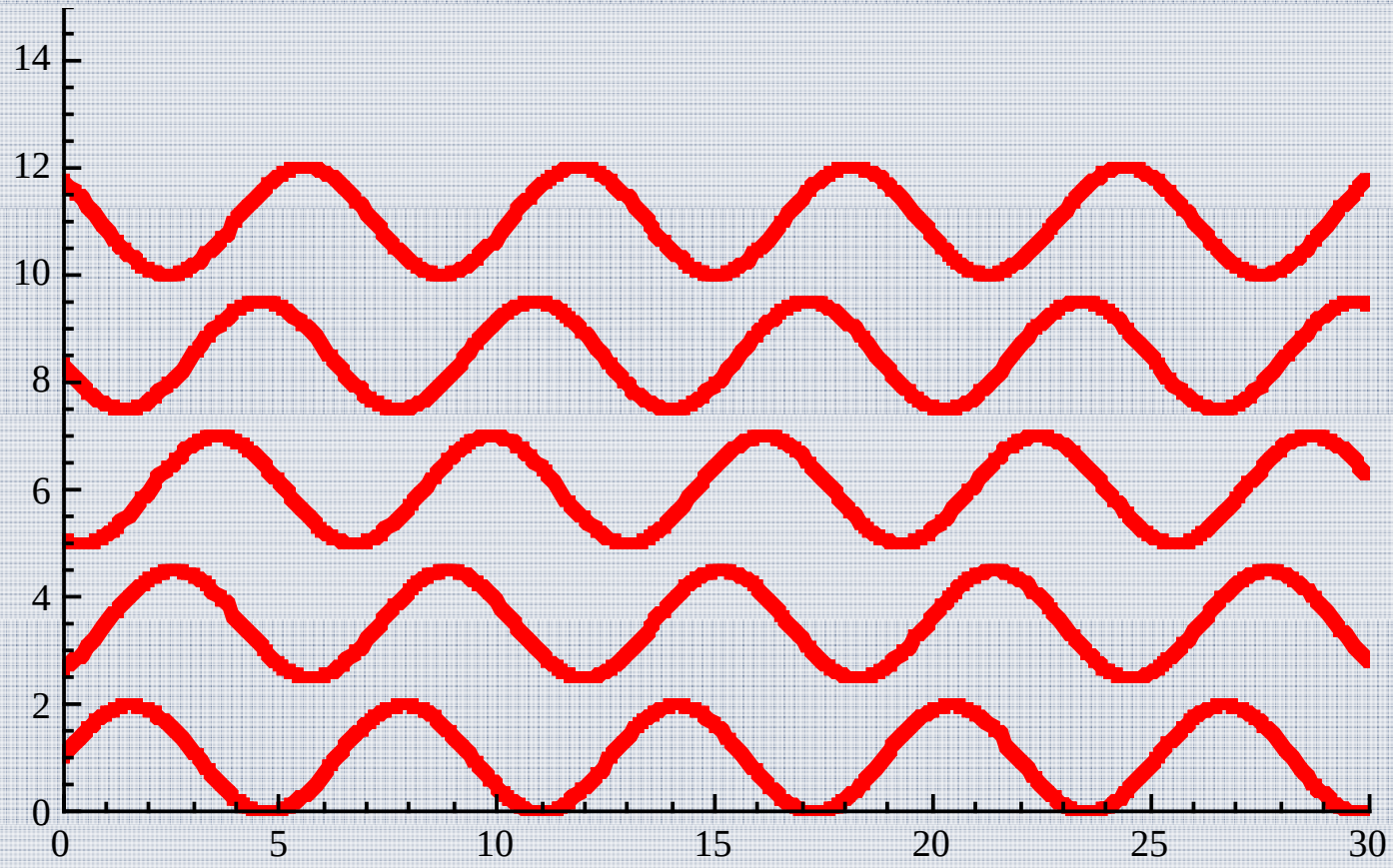
Space-Time Diagrams



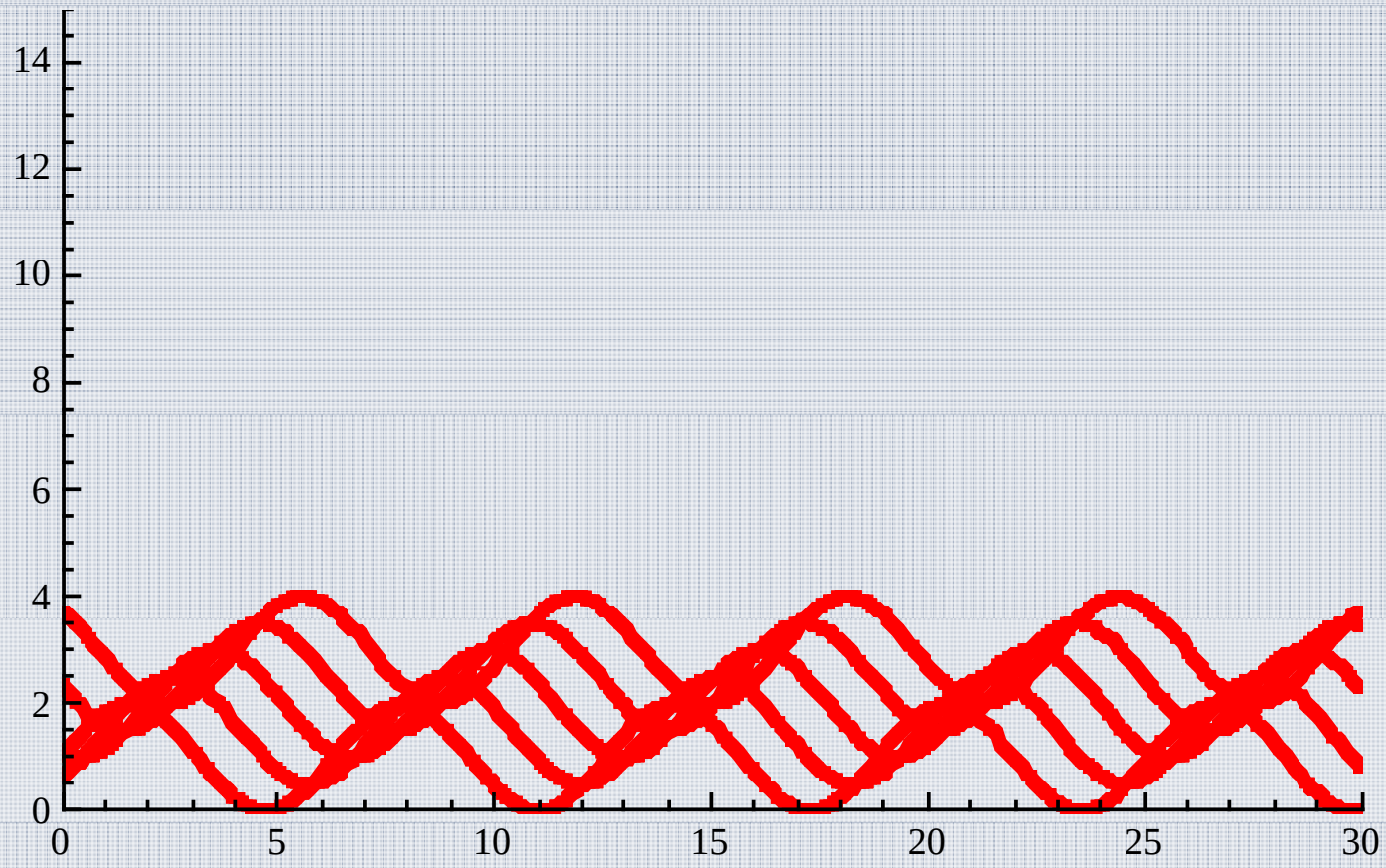
Space-Time Diagrams

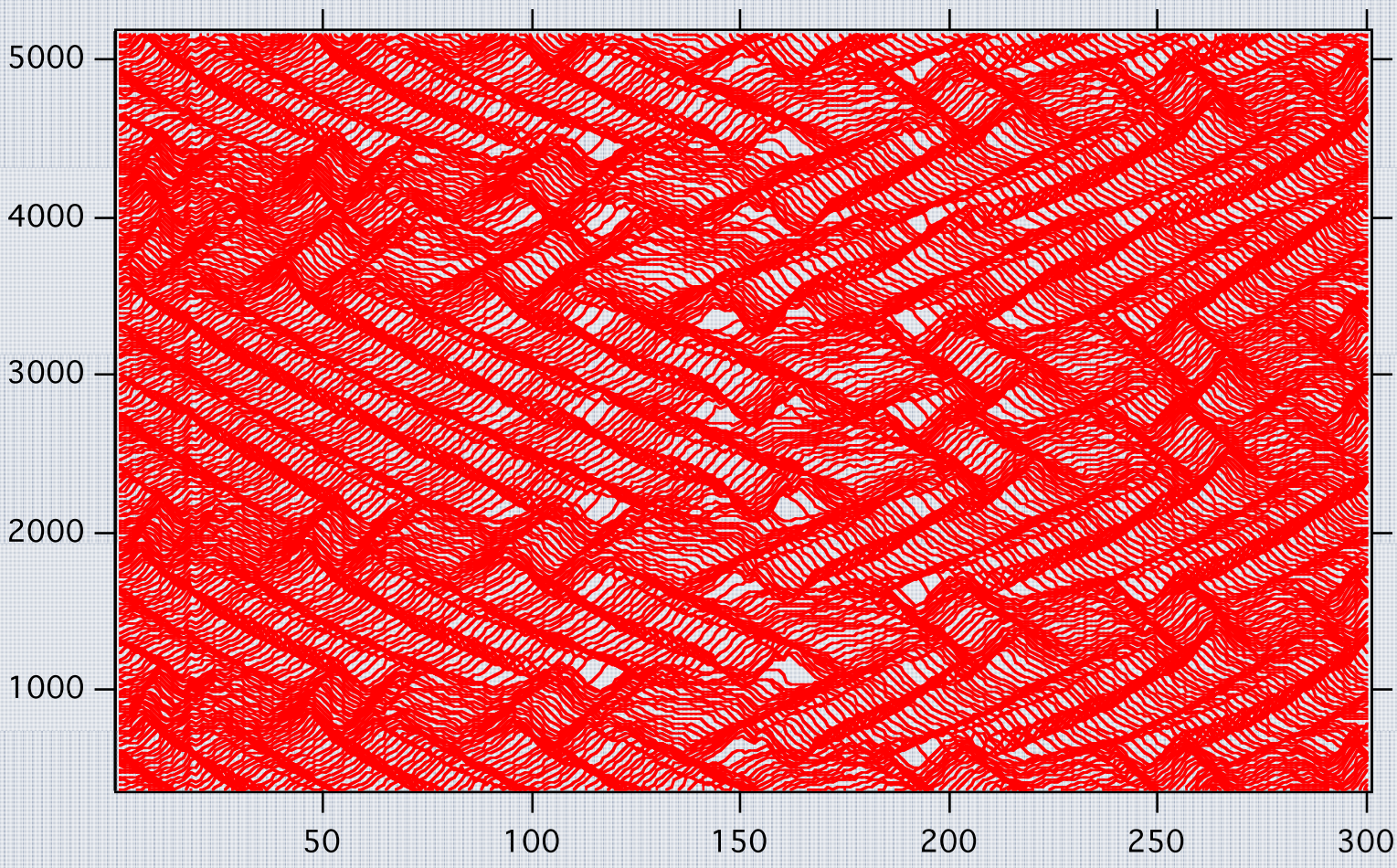


Space-Time Diagrams



Space-Time Diagrams




5000
4000
3000
2000
1000
50
100
150
200
250
300

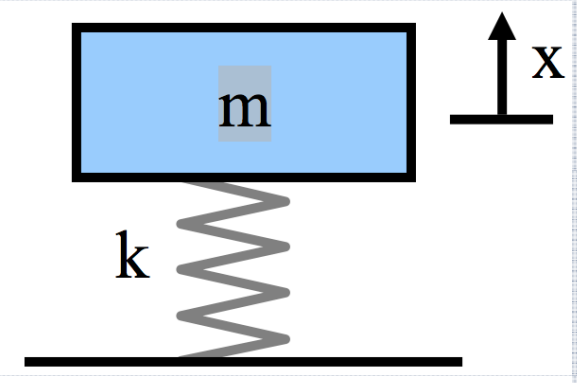
Review & Revision

I. The “Scientific American” Test
II. A Sequence of Practice & Revision
III. Concrete Visualization/Demonstration
IV. Zooming In / Zooming Out
V. On Equations
VI. Know your Audience

On Equations

- The amount of time that an equation should appear on the screen is inversely proportional to the density of symbols it contains.

On Equations

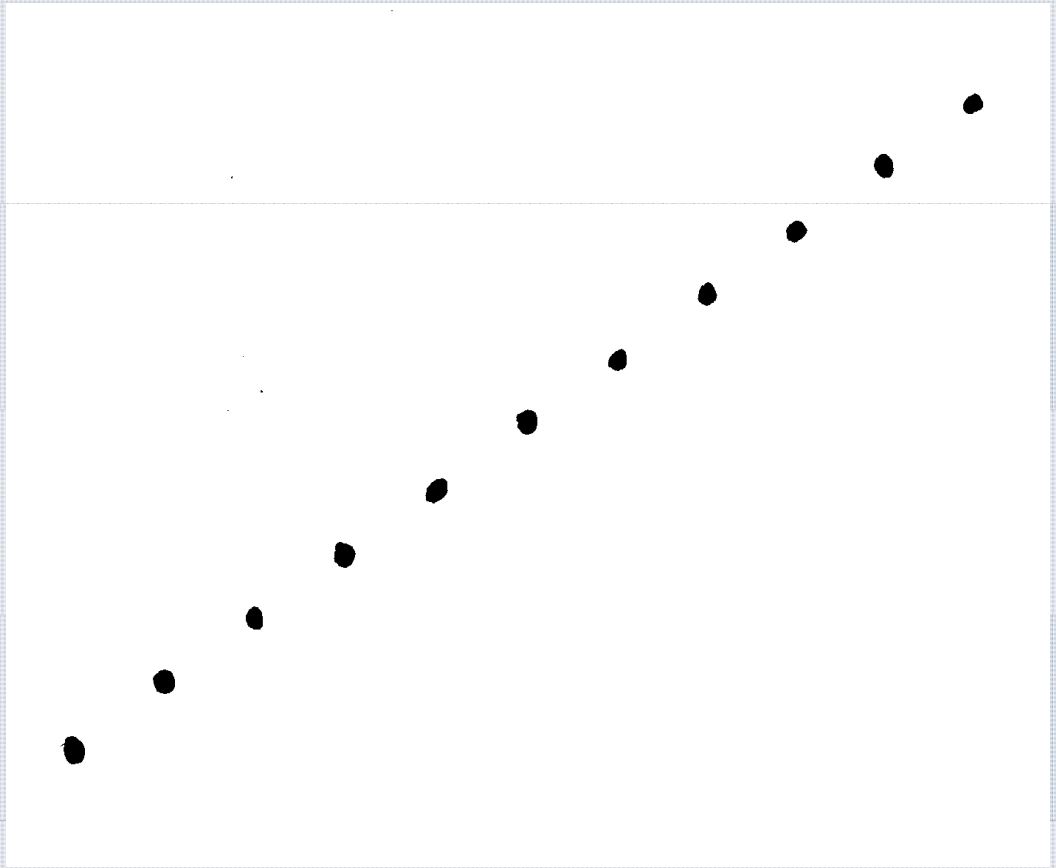


$$F = -kx$$

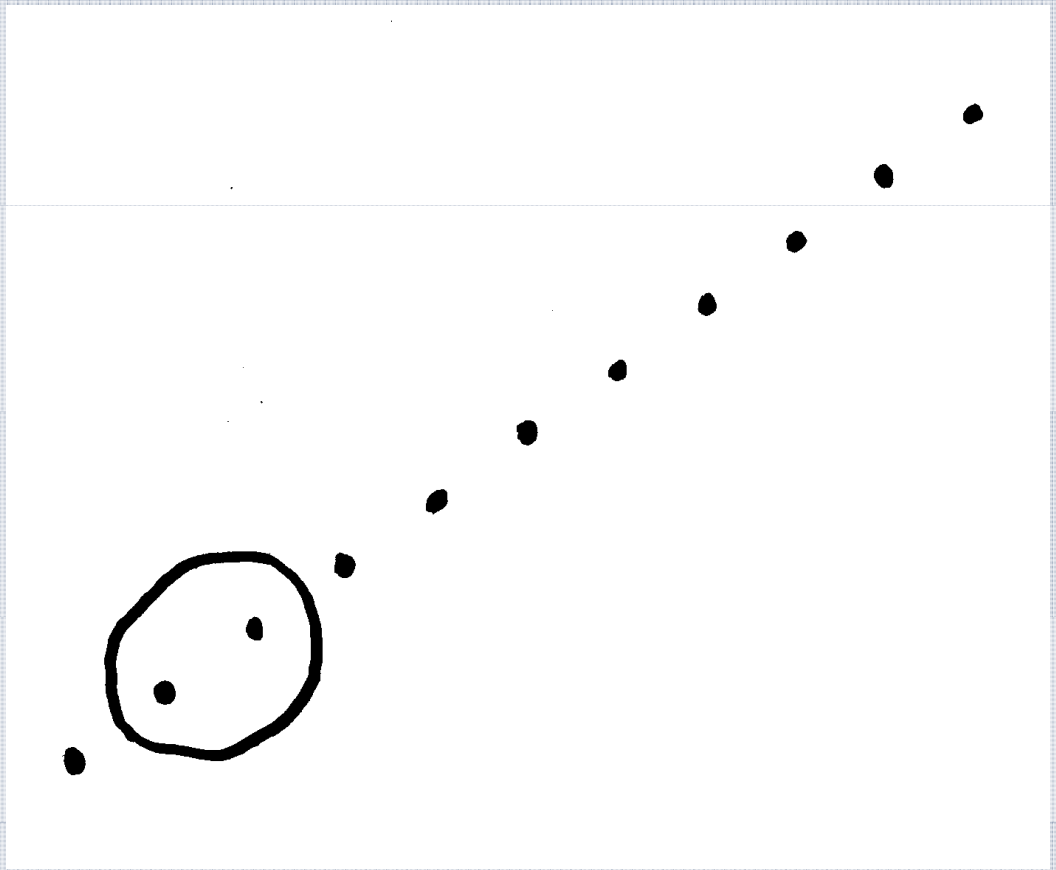
$$F = -kx - bv$$

$$F = -kx + \alpha x^2 - bv$$

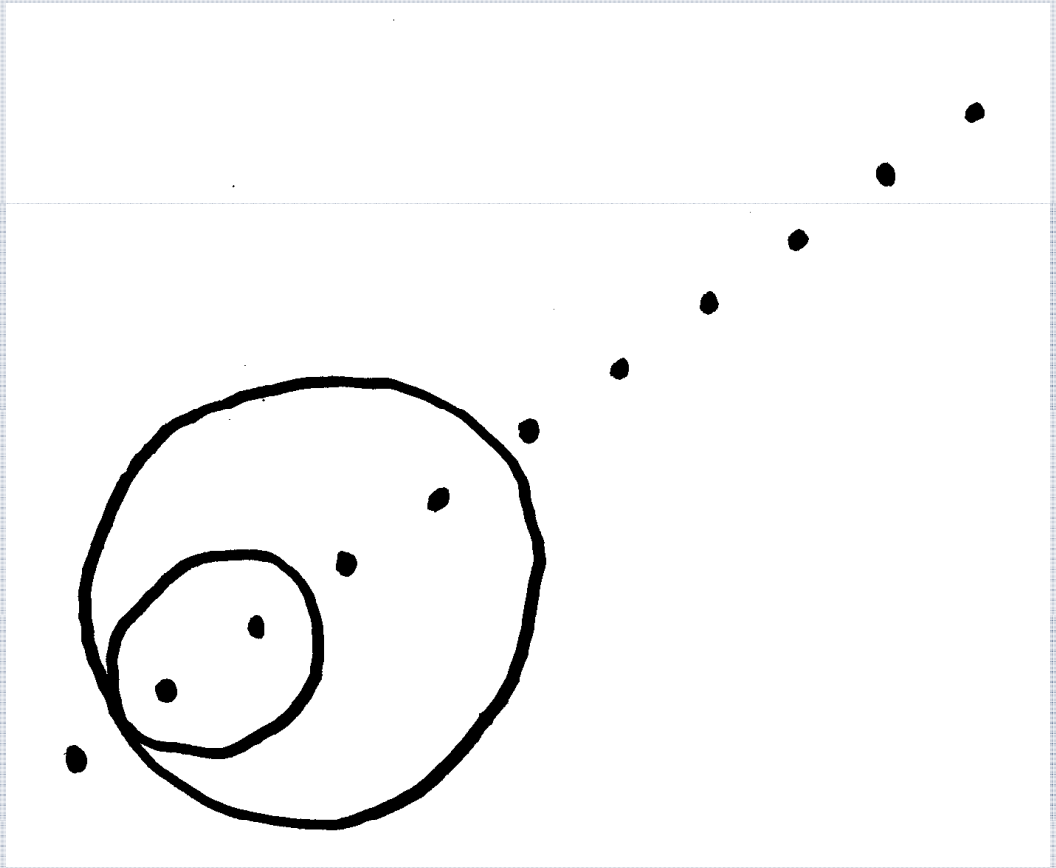
Fractal Dimension



Covers 2 Points

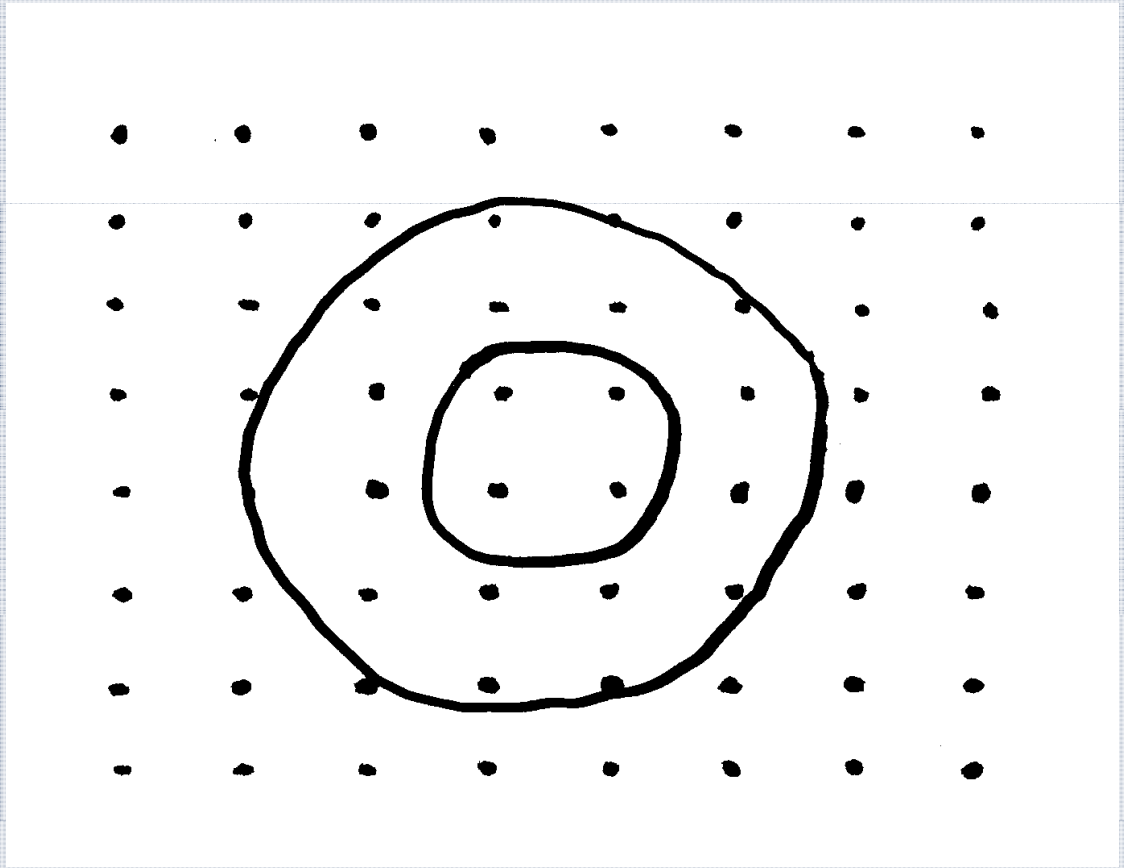


Covers 4 Points



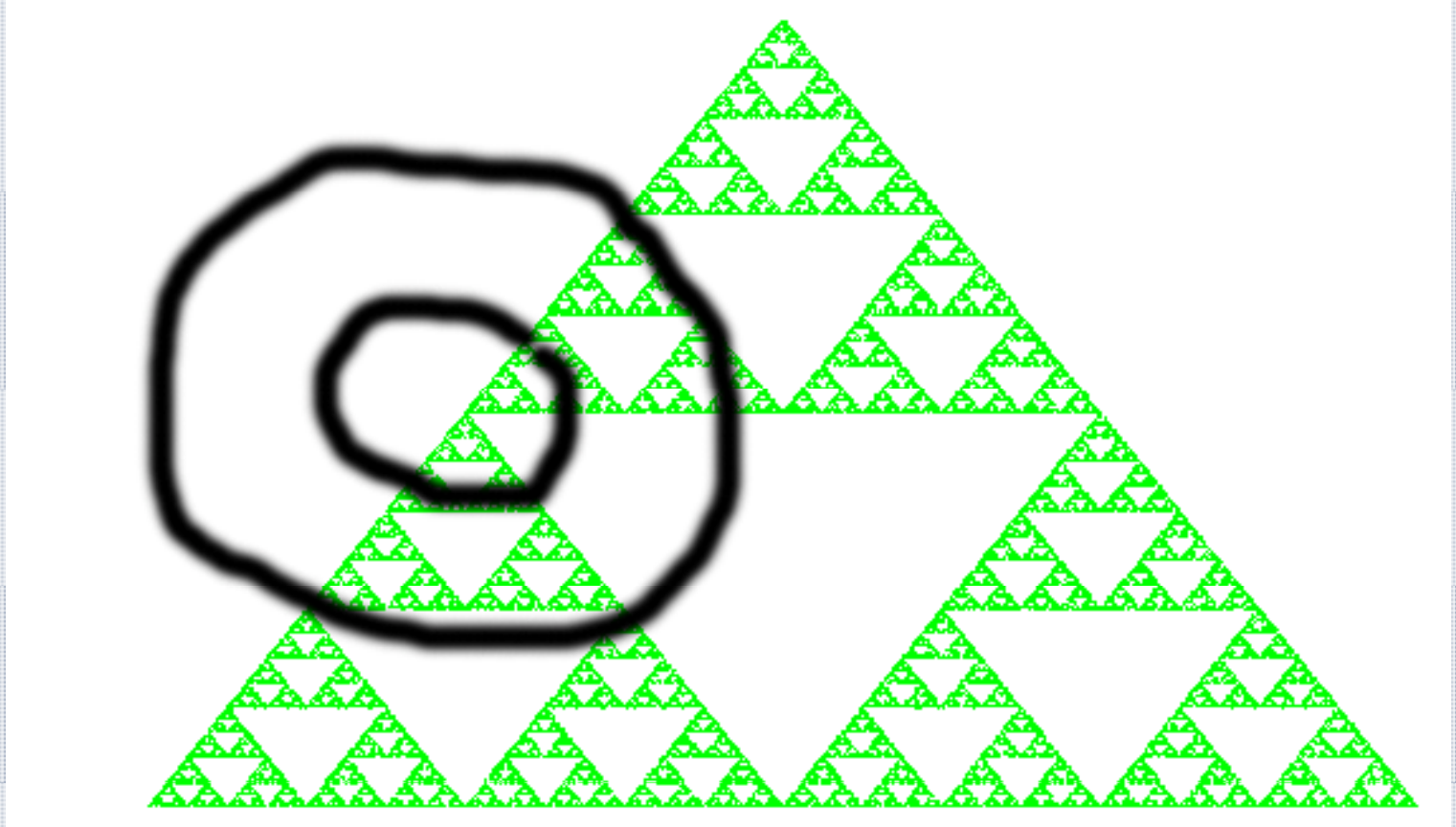
$N \alpha R^1$; Dimension = 1

$N \alpha R^2$; Dimension = 2



Serpinski Triangle

$N \alpha R^{1.585}$; Dimension = 1.583



$$D_q = \frac{1}{q-1} \lim_{l \to 0} \frac{\log \sum_i p_i^q}{\log(l)}$$

$$D_1 = \lim_{l \to 0} \frac{\sum_i p_i \log(p_i)}{\log(l)}$$

Generalized form of fractal dimension; application of l'Hospital's rule for q=1

Review & Revision

I. The “Scientific American” Test
II. A Sequence of Practice & Revision
III. Concrete Visualization/Demonstration
IV. Zooming In / Zooming Out
V. On Equations
VI. Know your Audience

1. Communicating to your audience why one should care about the outcome of your research is more important than communicating the results

2. Giving your audience opportunities to draw their own conclusions will help them to remember your talk

3. It's more important that a listener learn one new thing than it is for you to present a massive amount of results

4. A small amount of humor can be very helpful

5. An (uncomplicated) picture is worth a thousand words

6. Practice, (I know, it feels awkward, but do it anyway)

7. Cite your sources and thank your mentors/sponsors/colleagues/moral support/etc.

8. End your talk with “Thank You”, not “That’s All”

Thank you for your kind attention.