Ten simple rules for Lightning and PechaKucha presentations.

An interesting opportunity has emerged that bridges the gap between lengthy, detailed presentations of scientific findings and ‘sound bites’ appropriate for media reporting – very short presentations often presented in sets. Lightning or Ignite (20 slides @15 seconds each) and PechaKucha (20 slides @20 seconds each) presentations are common formats for short, rapid communications at scientific conferences and public events. The simple rules for making good presentations also apply, but these presentation formats provide both unique communication opportunities and novel challenges. In the spirit of light, quick, and exact (but without the fox), here are ten simple rules for presentation formats that do not wait for the speaker.
Ten simple rules for Lightning and PechaKucha presentations.

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Preamble

Scientific communication is rapidly becoming an independent research domain. It now comprises a set of critical activities for many research programs including those that directly influence global and human health [1]. Scientific communication has evolved because it does not have to happen only at the final stages of a research endeavor but can be used to engage the public to fund the research (https://scifundchallenge.org), participate in the data collection (http://www.audubon.org/conservation/science/christmas-bird-count), or process the evidence (https://www.zooniverse.org). Ironically, scientific progress in some fields such as climate change has outpaced our capacity to effectively communicate and contextualize findings for the public [2]. An interesting opportunity has emerged that bridges the gap between lengthy, detailed presentations of scientific findings and ‘sound bites’ appropriate for media reporting [3] – very short presentations often presented in sets. Within the scientific community, the public, and various media formats, these shorter, rapid presentations with a priori transparent structure are increasingly common. This intermediate format is particularly suited to online dissemination and sharing through YouTube with most major scientific institutions and organizations administering channels of curated content. TED also provides an instant filter to content by duration with the first option set at up to 6 minutes (https://www.ted.com/talks?sort=newest&duration=0-6). Many major scientific conventions such as the Ecological Society of America and the American Geophysical Union annual meetings include offerings of rapid-format talks - at first to communicate meta-science - but now to also share primary research findings. At least two formats are common. Lightning talks are frequently constrained to a total of 20 slides set to advance every 15 seconds (https://en.wikipedia.org/wiki/Lightning_talk). This format is also organized into ‘Ignite’ series (http://www.ignitetalks.io) and features public involvement on numerous topics including science. PechaKucha talks are very similar with 20 slides but at 20 seconds each that auto-advance, and this specific format is also a very common public presentation format in many
urban centers globally (http://www.pechakucha.org/). Succinct prose is thus a critical element in communicating science using these presentation formats.

Effective oral prose is not dissimilar from literature. Depending on the literary theory and school of criticisms that one subscribes, ‘lightness, quickness, exactitude, visibility, multiplicity’, and also consistency in writing [4] apply to rapid brief presentations. The simple rules for making good presentations also apply [5], but Lightning and PechaKucha presentations provide both unique communication opportunities and novel challenges. The pace is rapid providing very limited time for the audience to read or process an individual slide; the slide deck auto-advances and the speaker must perfectly time delivery; and the net time is either a total of 300 seconds (5 minutes) for Lightning or 400 seconds (6 minutes and 40 seconds) for PechaKucha limiting the potential scope of coverage of a topic and sometimes depth. These challenges can become benefits if handled effectively. A swift tempo engenders enthusiasm, energy, and the expectation that a landscape view of a topic will be provided to quite literally ‘get the audience up to speed’ on the salient issues. In the spirit of light, quick, and exact (but without the fox), here are ten simple rules for presentation formats that do not wait for the speaker.

**Rule 1.** Plan a clear story with limited to no detours, tangents, or side-anecdotes. Amusing anecdotes by accomplished speakers can be compelling, useful tools to engage and connect the speaker to the audience emotionally. In longer talks, they can also serve as a reprieve from detail-laden or inaccessible issues, and anecdotes can reframe the science into more general contexts. In a short, brisk talk however, immediacy is paramount, and tangents are best avoided. A total of 20 slides do not leave sufficient room for a story-within-a story.

**Rule 2.** Use simple visuals.
Slides move by very rapidly in these talk formats. Similar to the rules for better figures [6], identify the key message and avoid superfluous visual elements. Explicitly direct the audience to the attribute you wish to highlight because there is no time for them to search for the visual point on each slide. If you choose to let the audience search on some slides, limit the number of slides that require more than cursory processing. Expecting an audience to do this twenty times in short order is unreasonable, and they will tune out.

**Rule 3.** Limit use of text.

It is much quicker for you to directly state the purpose of a given slide (see rule #2). Nonetheless, parsimonious use of text can assist the audience in scanning each slide for meaning and relevance. Treat the slides like scientific figures – ‘captions are not optimal’ [6] and can be powerful aids if they do not detract from the visuals. An alternative approach is to show the visual/figure on a full slide, maximized for viewing, and use the subsequent slide for a single, brief sentence stating the finding or implication. This has added value in that it provides the speaker with more time to explain the findings and mimics a rapid but effective show-and-tell approach. Important data visualization can benefit from this presentation technique.

**Rule 4.** Develop a consistent theme.

In style, graphical design, language, and imagery, be consistent. This will ensure that the audience can allocate processing and scanning time on each slide to the salient elements that change and not to those that do not explain, support the science, or advance the main purpose of the presentation. The ‘branding’ of your presentation and scientific message is important [1]. Use this consistency to reinforce the importance of your brand (and thus indirectly your message).

**Rule 5.** Provide only one major point per slide.
You have a story tell with very limited time. Ensure each slide is a step forward. If not forward, some of the slides can be used to support a difficult step taken (see rule #3, show then tell). This reinforcement ensures the audience is sufficiently informed to move forward with you on the following slide. Balance support and advancement appropriately.

**Rule 6.** Repeat critical message twice using different visuals.

It is very easy to miss the main message in a rapid-fire talk – even more so than in a more traditional presentation. A total of 15 to 20 seconds to summarize the major implication or finding is very short. Consider using a visual analog, metaphor, or simpler re-statement of the major finding/implication in a subsequent slide. Typically, the assumption in these formats is that you do not cut and paste the exact same slide twice to provide oneself with more time (i.e. cheating), but you can certainly use a new slide to re-emphasize or extend the major finding. Three is a crowd and feels unduly repetitive in brief presentations. Stick with only one repetition.

**Rule 7.** Identify the most parsimonious description of a process that requires explanation.

Exactitude is as virtuous in literature as in science [4]. Ensure the process or finding genuinely requires explanation. Showing a finding and limiting what you say can be a powerful means to emphasize importance. This technique also has the added benefit of providing the audience with the ‘space’ to think, even momentarily, without distraction from the ongoing speaker dialogue. Statistics, field sampling, experimental design, and implementation strategy for the process proposed should be described in at most two succinct sentences (likely one) within a 15 to 20-second interval. Explain what you need and consider engagement through less not more on some slides within the presentation deck.

**Rule 8.** Allocate at least three slides to effectively end the narrative.
Around slide 16-17 (see rule #9 for rationale on the exact point), begin closing the larger (and hopefully singular) story arc. Abrupt termination of a talk can be an effective means to jar or shock the audience but should be used sparingly. This technique comes at the cost of potential acceptance and reconciliation with the methods and implications offered. It is also natural for the audience to match the pacing and tempo of the speaker cognitively, and an abrupt end unnecessarily signals the end of a discussion and dialog.

**Rule 9.** Save the final slide for contact information and links to additional resources.

The total presentation time is likely a third, or less, relative to most traditional oral papers at scientific conferences. Furthermore, many Ignite and PechaKucha series do not provide time for questions or feedback at the end of each presentation. Consider using this final slide to also reference your social media accounts or any other mechanism you prefer to both leverage your broader corpus of work and provide a point of contact for questions. Another trick of the trade within these series is to publish the slide deck online using a service such as SlideShare (www.slideshare.net) and provide a link to the deck within the deck at the end of the presentation. The audience thus has an opportunity to follow-up and review the slides at a more leisurely pace if they are so inclined.

**Rule 10.** Always practice the presentation with the slide deck on timed, auto-advance.

Speaking rapidly and clearly is not necessarily a given even for accomplished speakers. The advancement of the slides without the speaker is a necessary condition of many of these rapid formats. Practice with the timing set in your preferred application. There is a goldilocks effect in the spoken word needed for these formats. Too little can be disconcertingly awkward. Too much is always disastrous. Furthermore, each slide need not suffer from the same limitations. Some require more, others less (see rule #7). Use these differences to your advantage, and this can only be discovered through practice.
Comments

Rules are meant to broken. Not all of them and not all at once. If you elect to violate some of the rules above (best treated as suggestions), you can captivate with a story, change tempo by saying less more slowly on some slides and more on others to convey urgency, and highlight complexity without overwhelming. The goal of these specific talk formats is to synthesize a topic for audiences but without a major commitment of their time. If your topic and use/misuse of the above rules stimulates some discovery for your audience and they elect to pursue the topic in greater depth, then you have absolutely succeeded. An alternative goal in considering these simple rules and in using a brief format to communicate science is to promptly share your passion for your science. If nothing else, address the ‘why’ of the science at hand and emphasize that science is always a celebration of process and discovery. Time is up!
Literature cited


