

人文哲学

科技前沿

商业思维 · BUSINESS THINKING

视频精读 VIDEO STUDY

How to Speak

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导读 视频总结

本期讲者

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第一部分 全文对照 · 附页边注释与生词标注

01 开场：沟通能力决定成败

0:19 帕特里克·温斯顿

PATRICK WINSTON: The Uniform Code of Military Justice specifies court martial for any officer who sends a soldier into battle without a weapon. There ought to be a similar protection for students because students shouldn't go out into life without the ability to communicate, and that's because your success in life will be determined largely by your ability to speak, your ability to write, and the quality of your ideas, in that order. I know that I can be successful in this because the quality of communication, your speaking, your writing, is largely determined by this formula.

《美国军事司法统一法典》(UCMJ) 是美军的军事法律体系。温斯顿用「不带武器上战场」类比「不会沟通就步入社会」。注意排序：说>写>想法质量——表达能力竟排在想法质量之前，这是全讲的第一个反直觉论点。

court martial /ˌkɔːrt ˈmɑːrʃəl/ n.
军事法庭；军法审判

帕特里克·温斯顿：《美国军事司法统一法典》规定，任何军官若让士兵不带武器上战场，都要被送上军事法庭。让士兵不带武器上战场。学生也应该受到类似的保护，因为学生不该在没有沟通能力的情况下走进社会，这是因为你人生的成就，很大程度上取决于你说话的能力、你写作的能力，以及你想法的质量——重要性就是这个顺序。我知道我能把这件事讲好，因为沟通的质量，也就是你的表达和写作水平，基本上是由这个公式决定的。

1:01

It's a matter of how much knowledge you have, how much you practice with that knowledge, and your inherent talent, and notice that the T is very small. What really matters is what you know. This point came to me suddenly a few decades ago when I was skiing at Sun Valley. I had heard that it was Celebrity Weekend, and one of the celebrities was Mary Lou Retton, famous Olympic gymnast, perfect 10s in the vault. And I heard that she was a novice at skiing, so when the opportune moment arrived, I looked over on the novice slope and saw this young woman who, when she became unbalanced, went like that.

它取决于你拥有多少知识、你用这些知识练习了多少，以及你的天赋，注意这个 T（天赋）非常小。真正重要的是你懂多少。几十年前我在太阳谷滑雪时，突然想通了这一点。我听说那个周末是名人周末，其中一位名人是玛丽·卢·雷顿，著名的奥运体操运动员，跳马拿过满分十分。我听说她刚开始学滑雪，所以时机一到，我朝新手道那边看过去，看到一位年轻女子，她一失去平衡的时候，就会做出那样的动作。

成功公式：知识K×练习P×天赋T，且T权重极小。玛丽·卢·雷顿（Mary Lou Retton）：1984年洛杉矶奥运会体操全能金牌得主，美国首位体操全能奥运冠军。太阳谷（Sun Valley）是爱达荷州著名滑雪胜地。

inherent /ɪnˈhɪrənt/ *adj.*

固有的，与生俱来的（inherent talent 天赋）

opportune /ˌɒ.pərˈtuːn/ *adj.*

恰好的，时机合适的（the opportune moment）

novice /ˈnɔːvɪs/ *n.*

新手，初学者（novice slope 新手滑道）

vault /vɔːlt/ *n.*

（体操）跳马

1:48

And I said that's got to be her. That must be the gymnast. But then, it occurred to me, I'm a much better skier than she is, and she's an Olympic athlete— not only an ordinary Olympic athlete, an outstanding one. And I was a better skier because I had the K, and I had the P, and all she had was the T. So you can get a lot better than people who may have inherent talents if you have the right amount of knowledge. So that's what my objective is today, and here's my promise. Today, you will see some examples of what you can put in your armamentarium of speaking techniques, and it will be the case that some one of those examples, some heuristic, some technique, maybe only one, will make— will be the one that gets you the job.

我心想，那肯定是她。那一定就是那位体操运动员。但接着我意识到，我滑得比她好多了，而她可是奥运选手——还不是普通的奥运选手，是顶尖的那种。我滑得更好，是因为我有 K（知识），也有 P（练习），而她只有 T（天赋）。所以只要你有足够的知识，你完全可以超过那些天赋异禀的人。这就是我今天的目标，下面是我的承诺。今天你们会看到一些例子，可以纳入你们的演讲技巧武器库，而且一定会有其中某一个例子、某条经验法则、某项技巧，也许只有一个，会成为让你拿到那份工作的关键。

armamentarium原指医生的全套药械，此处引申为「演讲技巧武器库」。「某一个技巧会帮你拿到工作」这句承诺，正是他稍后讲授的empowerment promise（赋能承诺）的现场示范——整场讲座本身就是教学内容的演示。

armamentarium /ˌɑːrməˈmɛntəriəm/ *n.*

全套装备；本指医生的全套药械，喻「技巧武器库」

heuristic /hɪjʊˈrɪstɪk/ *n.*

启发式方法，经验法则

2:43

And so this is a very non-linear process. You never know when it's going to happen, but that is my promise. By the end of the next 60 minutes, you'll have been exposed to a lot of ideas, some of which you'll incorporate into your own repertoire, and they will ensure that you get the maximum opportunity to have your ideas valued and accepted by the people you speak with. Now, in order to do that, we have to have a rule of engagement, and that is no laptops, no cell phones. So if you could close those, I'll start up as soon as you're done.

repertoire /ˈrepərtwaɪr/ n.(个人掌握的) 全部技能/曲目
储备**rule of engagement** phr.交战规则；引申为活动的参与规
矩

所以这是一个非常非线性的过程。你永远不知道它什么时候会发生，但这就是我的承诺。在接下来的 60 分钟结束时，你们会接触到很多想法，其中一些你会吸收进自己的技巧储备，它们会确保你获得最大的机会，让你的想法被你交谈的对象重视和接受。那么，为了做到这一点，我们得先定一条规矩，那就是：不许用笔记本电脑，不许用手机。所以如果你能把它合上，等你弄完我就开始。

3:27

Some people ask why that is a rule of engagement, and the answer is, we humans only have one language processor. And if your language processor is enga-- could you shut the laptop, please? If your language processor is engaged browsing the web or reading your email, you're distracted. And worse yet, you distract all of the people around you. Studies have shown that. And worse yet, if I see a open laptop somewhere back there or up here, it drives me nuts, and I do a worse job. And so that ensures that all of your friends who are paying attention don't get the performance that they came to have.

「人只有一个语言处理器」是本讲的核心认知科学假设：语言理解是串行的，读与听无法并行。这一原理在第49段再次出现，用来解释幻灯片文字过多的危害——前后呼应的论证结构。

drives me nuts phr.使我抓狂 (drive sb.
nuts/crazy)

有人问为什么这是一条参与规则，答案是，我们人类只有一个语言处理器。如果你的语言处理器正忙着——能麻烦你把笔记本电脑合上吗？如果你的语言处理器正忙着上网或看邮件，你就分心了。更糟糕的是，你还会让周围所有人分心。已经有研究证明了这一点。更糟的是，如果我看到后面某处或者前面这儿有一台开着的笔记本电脑，我会心烦意乱，然后讲得更糟。这样一来，那些认真听讲的同学就享受不到他们本该得到的讲演水准了。

02 如何开场与四个演讲技巧

4:11

So that's it for preamble. Let's get started. First thing we talk about, of course, is how to start.

preamble /'pri:æmbəl/ *n.*

开场白，序言

开场白就到这里。我们开始吧。我们首先要谈的当然是如何开场。

4:25

Some people think the right thing to do is to start a talk with a joke.

有些人认为正确的做法是用一个笑话开场。

4:39

I don't recommend it, and the reason is that, in the beginning of a talk, people are still putting their laptops away. They're becoming adjusted to your speaking parameters, to your vocal parameters, and they're not ready for a joke. So it doesn't work very well. They usually fall flat. What you want to do instead is start with empowerment promise. You want to tell people what they're going to know at the end of the hour that they didn't know at the beginning of the hour. It's an empowerment promise.

反对开场讲笑话的理由：听众尚在适应讲者的语音参数（音量、语速、口音），笑话必然冷场。对照第100段——结尾讲笑话反而有效，因为那时听众已完成适应。同一手法在不同时机效果相反。

fall flat *phr.*

（笑话、表演）完全没效果，冷场

empowerment /ɪm'paʊərmənt/ *n.*

赋能，赋权（empowerment promise 赋能承诺）

我不推荐这么做，原因在于，在一场演讲的开头，大家还在收拾自己的笔记本电脑。他们还在适应你的讲话方式、你的嗓音特点，还没准备好听笑话。所以效果并不好。笑话通常都会冷场。你应该做的是从「赋能承诺」开始。你要告诉大家，这一小时结束时他们将会知道些什么，而这些是他们在开始时并不知道的。这就是赋能承诺。

5:17

It's the reason for being here. What would be an example? Oh, I see. At the end of this 60 minutes, you will know things about speaking you don't know now, and something among those things you know will make a difference in your life. Yeah, that's an empowerment promise, so that's the best way to start. So now that I've talked a little bit about how to start, what I want to do is give you some samples of heuristics that are always on my mind when I give a talk, and first of these heuristics is that it's a good idea to cycle on the subject.

赋能承诺 (empowerment promise): 开场即告诉听众「一小时后你将获得什么」, 给出留下来的理由。这是温斯顿方法论中取代笑话的标准开场。

这是他们来这儿的理由。举个例子? 哦, 我明白了。在这60分钟结束时, 你们会学到一些关于演讲的、现在还不知道的东西, 而在这些你们学到的东西里, 总有一样会改变你们的人生。没错, 这就是赋能承诺, 所以这是最好的开场方式。现在我讲了一点如何开场, 接下来我想给你们举几个启发式方法的例子, 这些是我每次演讲时都会记在心上的。其中第一个启发式方法是: 围绕主题反复循环是个好主意。

5:56

Go around it. Go round it again. Go round it again. Some people say, tell him what you want to tell him. Tell him again, and then tell him a third time, as if people weren't intelligent. But the point is— the reason is— well, there are many reasons, one of which is, at any given moment, about 20% of you will be fogged out no matter what the lecture is. So if you want to ensure that the probability that everybody gets it is high, you need to say it three times. So cycling is one of the things that I always think about when I give a talk.

「说三遍」的量化依据: 任意时刻约20%的听众在走神。重复不是低估听众智力, 而是概率工程——确保每个人至少在某一遍接收到信息。

fogged out *phr.*

(口) 走神, 脑子放空

绕着它讲一遍。再绕一遍。再绕一遍。有人说, 先告诉他们你要讲什么。再讲一遍, 然后第三次再讲一遍, 好像听众都不聪明似的。但重点是——原因在于——嗯, 原因有很多, 其中之一是, 在任何一个时刻, 大概有20%的人会走神, 不管这堂课讲的是什么。所以如果你想确保每个人都听懂的概率足够高, 你就得说三遍。所以循环是我每次演讲时都会考虑的一件事。

6:33

Another thing I think about is, in explaining my idea, I want to build a fence around it so that it's not confused with somebody else's idea. So if you were from Mars, and I was teaching you about what an arch is, I might say to you, well, that's an arch. And that's not to be confused with some other things that other people might think is-- this is not an arch. That's not an arch. I'm building a fence around my idea so that it can be distinguished from somebody else's idea. So in a more technical sense, I might say, well, my algorithm might similar-- might seem similar to Jones's algorithm, except his is exponential, and mine's linear.

「围篱笆」(build a fence): 用正例与反例、对比性表述(如「他的算法是指数级的, 我的是线性的」)划清自己想法与他人想法的边界——学术演讲中定位自身贡献的常用手法。

exponential /ˌekspeɪˈnenʃəl/ *adj.*
指数的; 指数级增长的 (与 linear 线性相对)

我会考虑的另一件事是, 在阐述我的想法时, 我想给它围一道篱笆, 这样它就不会被跟别人的想法混淆。比方说你是从火星来的, 而我要教你什么是拱门, 我可能会对你说, 嗯, 这就是拱门。而它不该跟另外一些东西混淆, 别人可能会以为——这个不是拱门。那个也不是拱门。我在给我的想法围一道篱笆, 好让它能和别人的想法区分开来。从更技术性的角度讲, 我可能会说, 嗯, 我的算法可能类似——可能看起来类似于Jones的算法, 只不过他的是指数级的, 我的是线性的。

7:18

That's putting a fence around your idea so that people can not be confused about how it might relate to something else. The third thing on this list of samples is the idea of verbal punctuation.

这就是给你的想法围上篱笆, 这样大家就不会搞混它和其他东西的关系。这个例子清单上的第三项, 是「言语标点」的概念。

7:44

And the idea here is that, because people will occasionally fog out and need to get back on the bus, you need to provide some landmark places where you're announcing that it's a good time to get back on. So I might, in this talk, say something about this being my outline. The first thing we're going to do is talk about how to start. Then we're going to deal with these four samples, and among these four samples, I've talked about the first idea-- that's cycling. The second idea, building-- and now, the third idea is verbal punctuation.

这里的想法是，因为人们偶尔会走神，需要重新跟上节奏，你得提供一些路标性的位置，宣告现在是重新跟上的好时机。所以在这场演讲中，我可能会说点什么，比如这是我的提纲。我们要做的第一件事是谈如何开场。然后我们要讲这四个例子，而在这四个例子中，我已经讲了第一个想法——那就是循环。第二个想法，围篱笆——现在，第三个想法是言语标点。

言语标点 (verbal punctuation)：用提纲、编号、枚举制造演讲中的「接缝」，给走神的听众提供「重新上车」的路标。与第9段的20%走神率论点直接衔接。

8:22

So I'm enumerating and providing numbers. I'm giving you a sense that there's a seam in the talk, and you can get back on.

所以我在做枚举，在给出编号。我在让你们感觉到演讲中有一个接缝，你可以在这儿重新跟上。

enumerating /ɪˈnuːməreɪtɪŋ/ v.
枚举，逐一列举 (enumerate)

seam /si:m/ n.
接缝；喻演讲中的段落衔接点

8:33

So now, we're on a roll, and since we're on a roll, can you guess what fourth idea might be here-- an idea that helps people get back on the bus?

现在我们讲得顺了，既然讲顺了，你们能猜到第四个想法可能是什么吗——一个能帮人重新跟上节奏的想法？

on a roll *phr.*
连连顺利，渐入佳境

8:48

AUDIENCE: Ask a question. PATRICK WINSTON: Yes? AUDIENCE: Ask a question. [INAUDIBLE] PATRICK WINSTON: Ask a question, yes. Thank you. So ask a question.

听众：提问。PATRICK WINSTON：什么？听众：提问。[听不清]
PATRICK WINSTON：提个问题，好，请讲。谢谢。所以，要提问。

9:05

And so I will ask a question— how much dead air can there be? How long can I pause? I counted seven seconds. It seemed like an eternity to me to wait and not say anything for seven seconds, but that's the standard amount of time you can wait for an answer. And of course, the question has to be carefully chosen. It can't be too obvious because then people will be embarrassed to say it, but the answers can't be too hard because then nobody will have anything to say. So here are some sample heuristics you can put in your armamentarium and build up your repertoire of ideas about presentation.

那么我就提个问题——冷场可以持续多久？我可以停顿多长时间？我数了一下，七秒。对我来说，等上七秒钟一句话不说简直像永恒那么长，但这就是标准的时长，你可以这样等一个答案。当然，问题必须精心挑选。它不能太显而易见，否则大家会不好意思说出来；但答案也不能太难，否则就没人有话可说了。所以这里有一些示例性的技巧，你可以把它们放进你的武器库，逐步积累起你自己关于演讲的想法储备。

提问后可等待的标准冷场时长是7秒——讲者主观上如同永恒，但值得坚持。问题难度须精心设计：太浅显没人好意思答，太难则无人能答。

dead air *phr.*

(广播/演讲中的) 冷场，无声时段

eternity /ɪˈtɜːnəti/ *n.*

永恒；漫长得难熬的时间
(seem like an eternity)

03 选对讲座的时间与场地

9:43

And now, if this persuades you that there is something to know, that there is knowledge, then I've already succeeded because what I want to convince you of, is if you watch the speakers you admire and feel are effective, and ask yourselves why they're successful, then you can build up your own personal repertoire and develop your own personal style. And that's my fundamental objective, and the rest of this talk is about some of the things that are in my armamentarium that I think are effective. So next thing on our agenda, as we start to discuss these other things, is a discussion of time and place.

那么现在，如果这让你相信这里面确实有东西可学、确实存在某种知识，那我就已经成功了。因为我想让你们相信的是：如果你们去观察那些你欣赏、觉得很有效果的演讲者，并问问自己他们为什么成功，那么你们就能积累起属于自己的技巧储备，发展出自己的个人风格。这就是我最根本的目标。这次演讲余下的部分，讲的是我武器库里的一些东西，那些我认为行之有效的东西。那么，接下来议程上的下一项，在我们开始讨论其他这些内容时，是关于时间和地点的讨论。

方法论核心：观察你欣赏的演讲者，追问他们为何成功，从而积累个人技巧库、形成个人风格。这呼应第1段的公式——演讲优劣主要由可学习的知识决定，而非天赋。

10:25

So what do you think is a good time to have a lecture? 11 AM? Yeah.

那么你们觉得，什么时间适合开讲座？上午11点？是的。

10:38

And the reason is most people at MIT are awake by then, and hardly anyone has gone back to sleep. It's not right after a meal. People aren't fatigued from this or that. It's a great time to have a lecture. So that brings me, next, to the question of what about the place? And the most important thing about the place is that it be well lit.

原因是，到那个时候麻省理工大多数人都醒了，而且几乎没人又睡回去。那时候也不是刚吃完饭。人们不会因为这样那样的原因感到疲倦。那是开讲座的绝佳时间。这就把我带到了下一个问题：地点又该如何？关于地点，最重要的一点是光线要充足。

上午11点是讲座最佳时段的理由：多数人已醒且未回笼觉、不在饭后困倦期。时间选择被列为与内容同等重要的变量。

11:09

This room is well lit. Problem with other kinds of rooms is that we humans, whenever the lights go down, or whenever the room is dimly lighted, it signals that we should go to sleep. So whenever I go somewhere to give a talk, even today, the first thing I do when I speak to the audio-visual people is say, keep the lights full up. Oh, they might reply, people will see the slides better if we turn the lights off, and then I reply, it's extremely hard to see slides through closed eyelids.

这个房间光线就很充足。其他类型房间的问题在于，我们人类只要灯光一暗下来，或者只要房间光线昏暗，就等于是提示我们该睡觉了。所以每次我去某个地方演讲，哪怕是今天，我跟音响灯光的工作人员说的第一件事就是：把灯全部打开。哦，他们可能会回答说，把灯关掉大家能把幻灯片看得更清楚，然后我就回答说，隔着闭上的眼皮看幻灯片，那可太难了。

坚持灯光全开：昏暗环境是人类入睡的生理信号。「隔着闭上的眼皮很难看清幻灯片」——一句话反驳「关灯看片更清楚」的行业惯例，也是幽默反驳的典范句。

11:50

What else can you say about the place? Well, the place should be cased, and I mean that in a colloquial sense, of like if you're robbing a bank, you would go to the bank some occasions before to see what it's like, so there are no surprises when you do your robbery. So whenever I go somewhere to speak, the first thing I ask my host to do is to take me to the place where I'll be speaking so that if there are any weirdnesses, I'll be able to deal with it. Sometimes, it might require some intervention.

关于场地还有什么可说的呢？嗯，场地应该事先踩点，我说的是那种口语意义上的踩点，就像你要抢银行，你会提前几次去那家银行看看它是什么样子，这样等你真动手的时候就不会有意外。所以每次我去某地演讲，我请东道主做的第一件事就是带我去我要演讲的地方，这样如果有什么古怪的情况，我就能应付得了。有时候，这可能需要做点调整。

case是俚语「踩点」：像抢银行前先勘察一样，提前查看演讲场地以消除意外。温斯顿到任何地方演讲的第一件事都是要求先看场地。

cased /keɪst/ *v.*

（俚）踩点，事先勘察（case the joint 原指抢劫前踩点）

colloquial /kəˈlɒkwɪəl/ *adj.*

口语的，俗语的

weirdnesses /ˈwiːdnəsɪz/ *n.*

古怪之处，异常情况

12:29

Sometimes, it just might require me to understand what the challenges are. So when I came here this morning, I did what I typically do. I imagined that all the seats were filled with disinterested farm animals, and that way, I knew that, no matter how bad it was, it wouldn't be as bad as that. So finally, it should be reasonably— it should be reasonably populated.

有时候，可能只需要我了解一下有哪些难点。所以今天早上我来到这里的时候，我做了我通常会做的事。我想象所有的座位上都坐满了毫无兴趣的农场动物，这样一来，我就知道，不管情况多糟，也不会比那更糟了。最后，场地应该相当——应该有相当多的人。

「想象座位上坐满毫无兴趣的农场动物」是一种心理预演减压法：预设最坏情境后，现实无论如何都不会更糟。

disinterested /dɪsˈɪntərəstɪd/ *adj.*

此处指「不感兴趣的」；注意规范义为「公正无私的」，常被混用

04 黑板与道具为何有效

13:03

It should be the case that— if there were 10 people in this hall, everyone would be wondering, what's going on that's so much more interesting that nobody's here. So you want to get a right sized place that's— doesn't have to be packed, but it has to be more than half full. So those are some thoughts about a time and place. Next thing I want to talk about is a subject of boards and props and slides.

情况应该是这样——如果这个大厅里只有10个人，每个人都会纳闷，到底有什么别的事更有意思，怎么没人来啊。所以你要找一个大小合适的场地——不一定要挤得满满当当，但至少得坐满一半以上。以上就是关于时间和地点的一些想法。接下来我想谈的是黑板、道具和幻灯片的问题。

13:38

Well, these are the tools of the trade. I believe that this is the right tool for speaking when your purpose is informing. The slides are good when your purpose is exposing, but this is what I use when I'm informing, teaching, lecturing, and there's several reasons why I use it. For one thing, when you use the board, you have a graphic quality.

嗯，这些都是这一行的工具。我认为，当你的目的是传授信息时，这（黑板）才是演讲的正确工具。当你的目的是展示时，幻灯片是好东西，但当我要传授信息、教学、讲课时，我用的是这个，我用它有几个原因。首先，当你用黑板时，你就有了图形化的表现力。

14:10

It's the case that, when you have a board, then you can easily exploit the fact that you can use graphics in your presentation. So that's the graphic quality that I like, and the next thing I like is the speed property.

事实是，当你有一块黑板时，你就能轻松地利用这一点：在讲解中使用图形。这就是我喜欢的图形表现力，接下来我喜欢的是它的速度特性。

场地要「至少半满」：若大厅只有10人，听众会怀疑讲座价值（「别的什么事更有意思？」）——场地过大等于自我贬值，这是社会证明效应的应用。

全讲的关键工具区分：目的是informing（传授、教学）用黑板；目的是exposing（展示、汇报）用幻灯片。后文所有工具建议都建立在这一区分上。

tools of the trade *phr.*

干某一行的工具，吃饭的家伙

14:30

The speed with which you write on the blackboard is approximately the speed at which people can absorb ideas. If you go flipping through a bunch of slides, nobody can go that fast.

你在黑板上书写的速度，大致就是人们能吸收想法的速度。如果你一张接一张地翻幻灯片，没人能跟得上那个速度。

14:44

Finally, one great property of a board is that it can be a target.

最后，黑板还有一个很棒的特性，就是它可以充当一个指向目标。

14:53

Many people who are novices at speaking find themselves suddenly aware of their hands. It's as if their hands were private parts that shouldn't be exposed in public, so right away, they go into the pockets, and this is considered insulting in some parts of the world. Or alternatively, maybe the hands will go in back like this. I was once in a convent in Serbia, and my host— as soon as we entered, a nun came up to us and offered us a refreshment. And I was about to say, no, thank you, and he said, eat that stuff or die.

很多演讲新手会突然意识到自己的手该往哪儿放。就好像手是不该在公共场合露出来的私密部位一样，于是他们立刻把手插进口袋，而这在世界上有些地方被认为是失礼的。或者，也许他们会像这样把手背到身后。我有一次在塞尔维亚的一所修道院里，我的东道主——我们刚一进门，一位修女就走过来给我们端上点心。我正要说不用了，谢谢，他就说，把那东西吃了，不然你就死定了。

黑板的速度特性：手写速度≈人脑吸收想法的速度。快速翻页的幻灯片超出了听众的处理带宽——这是「少用PPT」的认知科学依据。

演讲新手常不知手往哪放：插兜在某些文化中失礼，背手亦然。塞尔维亚修道院轶事引出下一段的解释——这些禁忌可能源于「藏武器」的联想。

convent /'kɑ:nvənt/ *n.*

女修道院

refreshment /rɪ'freʃmənt/ *n.*

茶点，点心饮料

15:38

It's a question of local custom and politeness. But then before anything happened there, the nun pulled my hands out like this because it was extraordinarily insulting in that culture to have your hands behind your back. So why is that? Well, it's usually supposed that's that it has to do with whether you're concealing a weapon. So if your hands are in your pockets or behind your back, then it looks like you might have a weapon, and that's what I mean by the virtue— one of these virtues of the board.

concealing /kən'si:lɪŋ/ v.

隐藏，藏匿 (conceal a weapon 藏武器)

virtue /'vɜ:tʃu:/ n.

优点，长处 (the virtues of the board)

这是当地风俗和礼节的问题。但还没等那边有什么动静，那位修女就把我的手像这样拉了出来，因为在那种文化里，把手背在身后是极其失礼的。那么这是为什么呢？嗯，通常认为这和你是不是藏着武器有关。所以如果你的手插在口袋里或者背在身后，看起来你就可能藏着武器，这就是我说的黑板的好处之一。

16:13

Now, you have something to do with your hands. You can point out the stuff. I was once watching Seymour Papert give a lecture, and I thought it was terrific. So I went a second time— first time to absorb the content, second time to note style. And what I discovered is that Papert was constantly pointing at the board. And then I thought about it a little while, and I noted that none of the stuff he was pointing to had anything to do with what he was saying. Nevertheless, it was an effective technique.

西摩·派珀特 (Seymour Papert): MIT数学家、教育家，Logo语言与建构主义学习理论的创始人。温斯顿观察发现：派珀特指黑板的动作与讲话内容无关，却依然有效——黑板给手提供了「指向目标」。

这样一来，你的手就有事可做了。你可以指着上面的东西。我有一次去听 Seymour Papert 讲课，我觉得讲得非常棒。于是我又去听了第二次——第一次是吸收内容，第二次是留意风格。我发现的是，Papert 一直在指黑板。后来我想了一会儿，注意到他所指的那些内容，跟他当时讲的话毫无关系。尽管如此，这仍然是个有效的技巧。

16:49

So that's just a little bit about the virtue of blackboards. Now, I want to talk about props. The custodians of knowledge about props are the playwrights. Many decades ago, I saw a play by Henrik Ibsen. It was Hedda Gabler. I remember vaguely that it was about a woman in an unhappy marriage, and her husband was in competition for an academic job with somebody else. And he was going to lose partly because he was boring, and partly because the competitor had just written a magnificent book. By the way, this is back in the days before there were copying machines and computers.

以上就是关于黑板好处的一点内容。现在，我想聊聊道具。关于道具的知识，掌握得最好的是剧作家。几十年前，我看过一部易卜生（Henrik Ibsen）的戏。是《海达·高布乐》（Hedda Gabler）。我依稀记得它讲的是一个婚姻不幸的女人，她丈夫在和另一个人竞争一个学术职位。而他快要输了，一部分是因为他这个人很无趣，一部分是因为竞争对手刚写出了一本了不起的书。顺便说一句，那还是没有复印机和电脑的年代。

17:30

Anyhow, as the play opens, there's a potbellied stove, and in the beginning of the play, the potbelly stove, with its open door, just has some slightly glowing embers. But the potbellied stove is always there, and as tension mounts in the play, and you see this manuscript, this prop that Ibsen so artfully used, you just know that something's going to happen, because as the play goes on, the fire gets bigger and hotter and finally all consuming, and you just know that manuscript is going to go into that fire.

不管怎样，戏一开场，台上有一个大肚火炉，在戏的开头，这个大肚火炉炉门敞开着，里面只有一点微微发红的余烬。但这个大肚火炉一直摆在那儿，随着剧中张力不断升高，你又看到那份手稿——易卜生如此巧妙运用的这个道具——你就知道肯定要出事了，因为随着剧情推进，炉火越烧越大、越烧越旺，最后吞噬一切，你就知道那份手稿一定会被扔进火里。

亨里克·易卜生（Henrik Ibsen）：挪威剧作家，被称为「现代戏剧之父」。《海达·高布乐》（1890）中烧毁手稿是全剧关键情节。温斯顿称剧作家是「道具知识的守护者」。

custodians /kʌˈstʊdiənz/ *n.*

保管人，守护者（custodian of knowledge）

playwrights /ˈpleɪraɪts/ *n.*

剧作家

道具的铺垫艺术：大肚火炉从微弱余烬烧到吞噬一切，观众早已「知道手稿会进火里」——张力来自道具的持续在场与渐变，类似「契诃夫之枪」原则。

potbellied stove *phr.*

大肚火炉（potbellied 大腹便便的）

embers /ˈembərz/ *n.*

余烬，将熄的炭火

tension mounts *phr.*

张力/紧张感升高（mount 作不及物动词=逐渐增加）

artfully /ˈɑːrtfəli/ *adv.*

巧妙地，匠心独运地

all consuming *adj.*

吞噬一切的；（喻）占据全部身心的

manuscript /ˈmænjʊskript/ *n.*

手稿，书稿

18:21

This memorable thing is what I remember about the play. So playwrights have got this all figured out, but on the other hand, they're not the only people who can use props. Here's an example of the use of a prop, also due to Seymour Papert. He was talking about how it's important to look at the problem in the right way, and here's an example that not only teaches that, but makes it possible for you to embarrass your friends in mechanical engineering. So here's what you do. Take a bicycle wheel, and you start it spinning.

这个令人难忘的场面，就是我对这部戏所记得的东西。所以剧作家们早就把这一套琢磨透了，但另一方面，会用道具的并不只有他们。这里有一个使用道具的例子，同样来自 Seymour Papert。他当时在讲，用正确的方式看待问题有多重要，而这个例子不仅能说明这一点，还能让你在机械工程专业的朋友面前让他们下不来台。下面是具体做法。拿一个自行车轮子，让它转起来。

18:58

And then you put some torque on the axle, or equivalently, you blow on the edge. And the issue is, does it go that way, or does it go that way? Now, the mechanical engineers will immediately say, oh, yes, I see— right hand screw wheel. And they'll put their fingers in this position, but forget exactly how to align their fingers with the various aspects of the problem. And so it's usually the case that they get it right with about a 50% probability. So their very fancy education gets them up to the point where they're equivalent to flipping a coin.

然后你在轮轴上施加一个力矩，或者等价地，你朝轮缘吹一口气。问题是，它会往这边倒，还是往那边倒？这时候，机械工程师会立刻说，哦，对，我明白了——右手螺旋定则。然后他们会把手指摆成这个姿势，但会忘记到底该怎么把手指和问题中的各个量对应起来。所以通常的情况是，他们答对的概率大约是 50%。也就是说，他们受过的高深教育，最后把他们提升到了跟抛硬币差不多的水平。

数十年后温斯顿对这部戏只记得道具与手稿——引出后文第54段「道具是最容易被记住的东西」的论断。自行车轮演示同样来自派珀特，主题是「用正确方式看问题」。

陀螺进动问题：机械工程师搬出右手螺旋定则却总忘记手指如何对应各物理量，答对率约50%——「高深教育把他们提升到抛硬币的水平」。讽刺的靶子是套公式而非真正理解。

torque /tɔːrk/ *n.*

(物理) 力矩，扭矩

axle /ˈæksəl/ *n.*

轮轴，车轴

flipping a coin *phr.*

抛硬币；喻纯凭运气二选一

19:43

But it doesn't have to be that way because you can think about the problem a little differently. So here's what you do. You take some duct tape, and you put it around the part of the wheel like that. And now, you start to think about, not the whole wheel, but just a little piece that's underneath the duct tape. So here, that piece comes rolling over the top, and at this point, you blow on it with a puff of air. Forgetting about the rest of the wheel, what happens to that little piece that's under the duct tape?

但其实不必如此，因为你可以换个角度想这个问题。做法是这样的。你拿一段胶带，像这样贴在轮子的某一段上。现在，你不去想整个轮子，只想胶带底下那一小块。那么，这一小块从顶上滚过来，就在这个时刻，你朝它吹一口气。先不管轮子的其余部分，胶带底下那一小块会发生什么？

胶带道具的作用：把「整个轮子」的抽象问题化归为「胶带下一小块受力」的直观问题。换一种问题表征，答案立刻显然——这正是派珀特「用正确方式看问题」的实物演示。

duct tape /'dʌkt teɪp/ *n.*

强力布基胶带（美国家庭万用胶带）

20:13

It must want to go that way because you banged on it like that. It's already going down like that. And what about the next piece? Same thing. Next piece? Same thing. So the only thing that can happen is that the wheel goes over like that. And so now, you'll never wonder again because you're thinking about the problem in the right way, and it's demonstrated by the use of a prop. You can try this after we're done.

它一定会往那个方向走，因为你就是那样推了它一下。它已经在朝那个方向走了。那下一小块呢？一样。再下一块呢？一样。所以唯一可能发生的事，就是轮子这样倒过去。这样一来，你以后就再也不会犯迷糊了，因为你是用正确的方式思考这个问题，而这一点是通过道具演示出来的。等我们讲完你们可以试试。

20:44

Another example I like to remember is one from when I was taking 8.01. Alan Lazarus was the instructor at the time, and he was talking about the conservation of energy, kinetic and potential. And there was a long wire in a ceiling in 26-100 attached to a much bigger steel ball, but one— not one like this. And Lazarus took the ball up against the wall like this. He put his head flat against the wall to steady himself, and then he let go, and the pendulum takes many seconds to go over and back, and then gently kisses Lazarus's nose.

我喜欢回想的另一个例子，是我当年上 8.01 课的时候。当时的授课老师是 Alan Lazarus，他在讲能量守恒，动能和势能。26-100 教室的天花板上垂着一根很长的钢丝，下面挂着一个大得多的钢球，不是——不是像这个这么小的。Lazarus 把球像这样举到墙边。他把头紧贴着墙稳住自己，然后松手，钟摆要摆好几秒才荡过去再荡回来，然后轻轻地吻上 Lazarus 的鼻子。

8.01是MIT经典力学入门课的课号；26-100是MIT最大的阶梯教室。钢球摆演示能量守恒：摆回高度绝不超过释放高度，所以贴墙松手是安全的——前提是「只松手，不推」。

pendulum /ˈpendzələm/ *n.*
摆，钟摆

kinetic /kɪˈnetɪk/ *adj.*
运动的 (kinetic energy 动能)

21:31

And so you have many seconds to think, this guy really believes in the conservation of energy.

所以你有好几秒钟可以想：这家伙是真的相信能量守恒。

21:43

Do not try this at home. The problem is that, the first time you do this, you may not just let go. There's a natural human tendency to push.

别在家里尝试。问题在于，你第一次做这个的时候，可能没法只是松手。人有一种本能的冲动，想推一把。

「别在家尝试」的物理原因：第一次做的人会本能地推球一把，这给了球额外能量，摆回时高度将超过释放点——直接命中脸部。

22:01

So that's a little bit on a subject of props.

以上就是关于道具这个话题的一点内容。

22:24

It's interesting. Whenever surveys are taken, students always say more chalk, less PowerPoint. And why would that be? Props are also very effective. Why would that be? I'll give you my lunatic fringe view on this. It has to do with what I would call empathetic mirroring. When you're sitting up there watching me write on the board, all those little mirror neurons in your head, I believe, become actuated, and you can feel yourself writing on the blackboard. And even more so, when I talk about this steel ball going that way and this way, you can feel the ball as if you were me, and you can't do that with a slide.

这挺有意思的。每次做调查，学生们总是说：多用粉笔，少用 PowerPoint。为什么会这样呢？道具也非常有效。这又是为什么呢？我来说说我在这件事上的疯狂观点。这和我称之为「共情式镜像」的东西有关。当你坐在下面看着我在黑板上写字时，我相信，你脑子里那些镜像神经元被激活了，你能感觉到自己在黑板上写字。更是如此，当我讲这个钢球这样荡过去、又这样荡回来时，你能感受到那个球，就好像你就是我一样，而幻灯片做不到这一点。

镜像神经元：1990年代意大利里佐拉蒂团队发现，观察他人动作时，大脑激活与自己执行该动作相同的区域。温斯顿以此解释

「共情式镜像」：看人写黑板、摆钢球时观众仿佛亲身参与，幻灯片无法触发这种体验。他自称这是 lunatic fringe view（边缘意见），提示这是个人假说而非定论。

lunatic fringe *phr.*

极端边缘派；此处自嘲「我的疯狂个人观点」

empathetic /ˌempəˈθetɪk/ *adj.*

共情的，感同身受的

(empathetic mirroring 共情式镜像)

mirror neurons *phr.*

镜像神经元：观察他人动作时被激活的脑细胞

actuated /ˈæktʃueɪtɪd/ *v.*

被激活，被启动 (actuate)

05 幻灯片的常见罪状

23:26

You can't do it with a picture. You need to see it in the physical world. That's why I think that— oh, yes, of course, it's— there are speed questions involved, too, that have to be separated out. But I think the empathetic mirroring is why props and the use of a blackboard are so effective. Well, let's see— oh, yes, there is one more thing by way of the tools, and that has to do with the use of slides. I repeat, I think they're for exposing ideas, not for teaching ideas, but that's what we do in a job talk or conference talk— expose ideas.

重申核心区分：幻灯片用于展示（expose）想法，不用于教授（teach）想法。求职演讲、会议报告属于展示——因此下文的幻灯片规则针对的正是这类场合。

靠一张图片也做不到。你需要在物理世界里亲眼看到它。这就是我认为——哦，当然，这里面也涉及速度的问题，那得另外拿出来说。但我认为，共情式镜像正是道具和黑板如此有效的原因。那么，我们看看——哦对了，关于工具还有一件事，那就是幻灯片的使用。我再说一遍，我认为幻灯片是用来展示想法的，不是用来教授想法的，但在求职演讲或会议演讲中，我们做的正是——展示想法。

24:12

We don't teach them. So let me tell you a little bit about my views on that.

我们不是在教。所以让我讲讲我在这方面的一些看法。

24:20

I remember, once, I was in Terminal A at Logan Airport. I'd just come back from a really miserable conference, and the flight was really horrible. It was one of those that feels like an unbalanced washing machine. And for the only time in my life, I decided to stop on my way to my car and have a cup of coffee and relax a little bit. And as I was there for a few minutes, someone came up to me and said, are you Professor Winston? I think so, I said. I don't know. I guess I was trying to be funny. In any event, he said, I'm on my way to Europe to give a job talk.

我记得有一次，我在洛根机场的 A 航站楼。我刚参加完一个特别糟糕的会议回来，那趟航班也糟透了。就是那种感觉像坐在不平衡的洗衣机里的航班。这辈子仅有的一次，我决定在走向停车场的路上停下来，喝杯咖啡，稍微放松一下。我在那儿待了几分钟，有人走过来对我说，您是 Winston 教授吗？我说，我想是吧。我也不知道。我猜我是想开个玩笑。总之，他说，我正要去欧洲做一场求职演讲。

25:04

Would you mind critiquing my slides? Not at all, I said. You have too many, and they have too many words. How did you know, he said, thinking perhaps I had seen a talk of his before. I hadn't. My reply was, because it's always true. There are always too many slides, always too many words. So let me show you some extreme examples of how not to use slides.

您介意帮我点评一下我的幻灯片吗？一点也不介意，我说。你的片子太多了，而且每张上的字也太多了。他说，您怎么知道的？大概以为我以前听过他的演讲。我并没有。我的回答是，因为这话永远是对的。片子永远太多，字永远太多。那么让我给你们看几个极端的反面例子，看看幻灯片该怎么用。

「片子永远太多、字永远太多」——不看内容即可断言，因为这是普遍规律。机场偶遇的陌生人以为温斯顿看过他的演讲，其实只是统计规律在起作用。

critiquing /kriˈtiːkɪŋ/ v.

点评，评析（critique 比 criticize 中性，指专业性评审）

25:34

Well, for this demonstration, I need to be way over here and when I get over here, then I can start to say things like, one of the things you shouldn't do is read your transparencies. People in your audience know how to read, and reading will just annoy them. Also, you should be sure that you have only a few words on each transparency, and that the words are easy to read. And I hope I'm driving you crazy because I'm committing all kinds of crimes, the first of which is that there are too many words on the slide.

好，为了这个演示，我需要站到很远的这边来，等我站到这儿了，我就可以开始说这样的话：你不该做的事情之一，就是照着投影片念。台下的观众都识字，念给他们听只会惹恼他们。另外，你要确保每张投影片上只有很少的几个字，而且这些字要容易看清。我希望我正把你们逼疯，因为我正在犯各种各样的错误，第一条就是这张片子上的字太多了。

transparencies /trænsˈpærənsiz/ n.

投影片（旧时投影仪用的透明胶片，今泛指幻灯片）

26:12

Second of which is, I'm way over there, and the slide's way over there. So you get into this tennis match feeling of shifting back and forth between the slide and the speaker. You want the slides to be condiments to what you're saying, not the main event or the opposite way around. So how can we fix this? Step number one is to get rid of the background junk. That's always distraction. Step number two is to get rid of the words. When I reduced the words to these, then everything I read a previous time, I'm not licensed to say, because it's not on the slide.

第二条是，我在那么远的这边，而片子在那么远的那边。于是你们就陷入了那种看网球比赛的感觉，脑袋在幻灯片和演讲者之间来回摆动。你希望幻灯片是你所讲内容的配菜，而不是主角，反过来也不行。那我们怎么解决这个问题呢？第一步，去掉背景里那些杂七杂八的东西。那些永远都是干扰。第二步，把文字去掉。当我把文字精简成这样之后，之前我念过的那些内容，我就没资格再说了，因为幻灯片上没有。

幻灯片应是讲话的「配菜」

(condiments) 而非主菜。讲者与幕布距离过远，会让听众陷入「看网球赛」式的来回扫视。修正步骤一：删背景装饰；步骤二：删文字——「片上没有的话我就没资格念」。

condiments /'kɑ:ndɪmənts/ *n.*

调味品，佐料；喻「配角、点缀」

licensed /'laɪsənst/ *adj.*

获得许可的；此处幽默用法「我就没资格说了」

26:53

I'm not reading my slides anymore, but I'm saying what was written on the slides in a previous example. So what else can we do to simplify this? Well, we can get rid of the logos. We don't need them. Simplification. What else can we do? Get rid of the title. Now, I want to talk to you about some rules for slide preparation. I'm telling you the title. It doesn't have to be up there. By reducing the number of words on the slide, I'm allowing you to pay more attention to me and less to what's written on the slide.

我不再是在念幻灯片了，但我说的还是前一个例子里幻灯片上写的东西。那我们还能怎么进一步简化呢？嗯，我们可以把logo去掉。我们不需要它们。简化。还能做什么？把标题去掉。现在，我想跟大家聊聊幻灯片制作的一些规则。标题我口头告诉你们就行了。不一定非要写在上面。通过减少幻灯片上的字数，我让你们能更多地关注我，而不是幻灯片上写的东西。

27:32

I mentioned it before— we— have only one language processor, and we can either use it to read stuff or to listen to the speaker. And so if we have too many words on the slide, it forces people in the audience to read this stuff and not listen. A student of mine did an experiment a few years ago. He taught some students some web-based programming ideas. Half the information was on slides, he said the other half, and then for a control group, he reversed it. And the question was, what did the subjects— that is to say, freshmen at his fraternity— what did the subjects remember best, what he said, or what they read on the slide?

我之前提过——我们只有一个语言处理器，我们要么用它来读东西，要么用它来听讲者说话。所以如果幻灯片上字太多，就会迫使听众去读这些东西，而不是听。我的一个学生几年前做过一个实验。他给一些学生讲了一些基于网络的编程概念。一半的信息放在幻灯片上，另一半由他口头讲，然后作为对照组，他把两者对调。问题是，这些被试——也就是他兄弟会里的大一新生——这些被试记得最牢的是什麼，是他说的，还是他们在幻灯片上读到的？

学生实验（含对照组设计）：一半信息放幻灯片、一半口述，再对调。结果：被试记住的是幻灯片上的内容，字多的片会让听众完全忽略讲者——甚至有被试抱怨「真希望你别说那么多话，太分心了」。

control group *phr.*

（实验设计中的）对照组

fraternity /frə'tɜːməti/ *n.*

（美国大学）兄弟会

28:21

And the answer is, what they read on the slide. When their slides have a lot of material on it, they don't pay attention to the speaker. In fact, in the after action report, one of the subjects said, I wish you hadn't talked so much. It was distracting.

答案是，他们在幻灯片上读到的。当幻灯片上内容很多时，他们就不会注意讲者了。事实上，在事后的复盘报告里，有个被试说，真希望你别说那么多话。太让人分心了。

after action report *phr.*

事后复盘报告（源自军事术语）

28:41

Well, the last item is eliminate clutter. Here's some clutter. No reason even for those bullets. So the too many words problem is a consequence of a crime Microsoft has committed by allowing you to use fonts that are too small. So you should all have a sample slide like this that you can use to determine what the minimum font size is that's easily legible. [INAUDIBLE], what do you think of those? AUDIENCE: Which size is right? PATRICK WINSTON: What's that? AUDIENCE: Did you ask me what size is right?

clutter /'klʌtər/ *n.*

杂乱堆积的东西；（版面）杂乱元素

legible /'ledʒəbəl/ *adj.*

（字迹）清晰可读的

好，最后一项是消除杂乱。这就是一些杂乱。连那些项目符号都没必要。字太多这个问题，其实是微软犯下的一宗罪的后果——它允许你使用太小的字号。所以你们都应该有一张这样的样例幻灯片，用来确定什么是清晰易读的最小字号。[听不清]，你觉得这些字号怎么样？观众：哪个字号合适？帕特里克·温斯顿：你说什么？观众：你是在问我哪个字号合适吗？

29:19

PATRICK WINSTON: Yeah, minimum, maybe. AUDIENCE: 40 or 50. PATRICK WINSTON: Yeah, he says 40 or 50. I think that's about right. 35 is beginning to get too small, not necessarily because you can't read it, but because you're probably using it to get too many words on the slide. What other crimes do we have? Well, we have the laser pointer crime. And for that— in the old days, when we didn't have laser pointers, we used wooden ones, and people would go waving these things around. And pretty soon it became almost like a baton twirling contest, so here's what I recommended in the old days for dealing with this kind of pointer.

最小字号建议40~50磅。35磅的真正问题不是看不清，而是小字号会诱使你塞进太多文字——限制字号实为限制字数的手段。

baton twirling *phr.*

指挥棒花式旋转表演（baton /bə'tɔ:n/ 指挥棒）

帕特里克·温斯顿：对，最小的，大概是多少。观众：40或者50。帕特里克·温斯顿：对，他说40或者50。我觉得差不多是这样。35就开始偏小了，倒不一定是因为你看不清，而是因为你多半会用它来在幻灯片上塞太多字。我们还有哪些罪状？嗯，还有激光笔这宗罪。说到这个——在过去，我们还没有激光笔的时候，我们用木头教鞭，然后人们就会挥来挥去。很快这就几乎变成了一场指挥棒花式表演比赛，所以在那个年代，我是这么建议对付这种教鞭的。

30:08

This is an example of use of a prop.

这就是使用道具的一个例子。

30:14

Jim Glass up there saw this talk about 20 years ago, and said, oh, yeah, I remember that talk. That's the one where you broke the pointer. It's amazing how props tend to be the things that are remembered. Well, now, we don't have physical pointers anymore. We've got laser pointers. It's a wonder more people aren't driven into epileptic fits over this sort of stuff. Well, here's what tends to happen. Look at that. It's a lovely recursive picture, and I can become part of it by putting that laser beam right on the back of my head up there.

上面那位吉姆·格拉斯大约二十年前听过这个讲座，他说，哦对，我记得那个讲座。就是你把教鞭掰断的那次。道具往往就是最容易被记住的东西，这很神奇。好了，现在我们没有实体教鞭了。我们有激光笔。真是奇怪，居然没有更多人被这种东西搞到癫痫发作。好，通常会发生的是这样。看那个。这是一张很漂亮的递归图片，而我可以把激光点打在我后脑勺上，从而成为它的一部分。

吉姆·格拉斯 (Jim Glass): MIT 语音与语言处理领域研究员。他对20年前讲座唯一的记忆是「掰断教鞭」——印证道具是演讲中最容易被记住的元素。

epileptic /ˌepɪˈleptɪk/ *adj.*

癫痫的 (epileptic fits 癫痫发作)

recursive /rɪˈkɜːrsɪv/ *adj.*

递归的 (画面套画面即视觉递归)

30:56

Then what do you see? You see the back of my head. I have no eye contact, no engagement, nothing. I was sitting with a student watching a talk one day, and she said, you know what, we could all leave, and he wouldn't know. So what happens when you use a laser pointer? You can't use a laser pointer without turning your head and pointing it at something, and when you do that, you lose contact with the audience. You don't want to do it. So what do you do if you need to identify something in your image, and you don't want to point at it with a laser?

然后你们看到的是什​​么？你们看到的是我的后脑勺。没有眼神交流，没有互动，什么都没有。有一天我和一个学生坐在一起听讲座，她说，你知道吗，我们全都可以走掉，他都不会发现。那么用激光笔的时候会发生什​​么？你没法在不转头、不指向某处的情况下用激光笔，而当你这么做的时候，你就失去了和听众的联系。你不该这么做。那么如果你需要在图里指出某个东西，又不想用激光去指，该怎么办？

激光笔之罪的本质：使用它必然转头背对听众，失去眼神接触与互动。学生的话一针见血：「我们全都走掉他也不会发现。」

31:35

This is what you do. Put a little arrow on there and say, now, look at that guy at the end of arrow number one. You don't need to have laser pointer to do that.

你该这么做。在上面放一个小箭头，然后说，现在看看一号箭头末端那个家伙。你不需要激光笔就能做到。

激光笔的替代方案：在图上预置编号箭头，口头引导「看一号箭头末端」——讲者始终面向听众。

31:48

The too-heavy crime— when people ask me to review a presentation, I ask them to print it out and lay it out on a table. When they do that, it's easy to see whether the talk is too heavy, too much text, not enough air, not enough white space, not enough imagery. This is a good example of such a talk— way too heavy. The presenter has taken advantage of a small font sizes to get as much on the slide as he wanted. Lots of other crimes here, but the too-heavy— the fact that it's too heavy is what I wanted to illustrate.

太满这宗罪——当有人请我审阅一份演讲稿时，我会让他们把它打印出来，摊在桌上。这么一摆，就很容易看出这个讲座是不是太满了：文字太多，不够透气，留白不够，图像不够。这就是一个很好的例子——太满了。演讲者利用小字号，把他想放的内容全塞进了幻灯片。这里还有很多别的罪状，但太满——它太满这一点，才是我想说明的。

「打印摊桌」检查法：把整套幻灯片平铺在桌上，一眼即可看出是否文字过多、缺少留白（air/white space）与图像。

imagery /'ɪmɪdʒəri/ *n.*

图像，意象（总称，不可数）

32:33

So here, by contrast, another talk— one I gave a few years ago. It's not— it wasn't a deeply technical talk, but I show it to you because there's air in it. It's mostly pictures of things. There are three or four slides that have text on them, but when I come to those, I give the audience time to read them. And they're there because they might have some historical significance. The first slide with a lot of text on it is an extraction from the 1957— from the proposal for the 1957 AI conference at Dartmouth.

那么作为对比，这是另一个讲座——几年前我做的一个。它不是——它不是一个技术性很深的讲座，但我拿给你们看，是因为它里面有留白。它主要是各种图片。有三四张幻灯片上有文字，但当我讲到那几张时，我会给听众时间去读。它们之所以在那儿，是因为它们可能有某种历史意义。第一张有大量文字的幻灯片，摘自1957年——摘自1957年达特茅斯人工智能会议的提案。

达特茅斯人工智能会议：1956年夏由麦卡锡等人发起（提案写于1955年，温斯顿口误为1957），「人工智能」一词由此诞生。有历史意义的文字片可以保留，但要给听众时间读完。

33:10

Extraordinarily interesting event, and that historical extraction from the proposal helps drive that point home. What else have we got here? Oh, yeah, your vocabulary word for the day. This is an hapax legomenon. What that means is, this is the kind of slide you can get away with exactly once in your presentation. This is a slide that got some currency some years ago because it shows the complexity of governing in Afghanistan by showing how impossibly complex it is. It's something you in the audience can't understand, and that's the point, but you can't have many of these.

那是一场极其有意思的活动，从提案里摘出的那段历史文字，有助于把那个观点讲透。这里还有什么？哦对，今天的词汇课。这叫 hapax legomenon（孤例词）。意思是，这种幻灯片在你的整场演讲里只能用一次。这张幻灯片几年前有点流行，因为它通过展示治理阿富汗有多么复杂到不可思议，来呈现其复杂性。这是台下的你们理解不了的东西，而这正是重点所在，但你不能有很多张这样的。

hapax legomenon是语文学学术语，指语料库中只出现一次的词，引申为「整场只能用一次」的震撼型复杂幻灯片。阿富汗战略图：2009年美军一张因复杂到荒谬而出名的PowerPoint，时任司令麦克里斯特尔曾调侃「看懂这张图我们就赢了」。

hapax legomenon /'heɪpəks lɪ 'ɡɑːmənoːn/ *n.*

（语文学）孤例词：语料中仅出现一次的词；喻只能用一次的手法

got some currency *phr.*

流行开来，获得传播（currency 此处=通行度、流行度）

33:55

You can have one per work, one per presentation, one per paper, one per book. That's what hapax legomenon is, and this is an example of it. Well, I've shown you some crimes. So you might be asking, do these crimes actually occur? So they do. [LAUGHTER] There's the hands in the pockets crime. There's a crime and time and place selection here. This is how you get to the Bartos Theater. First thing you do is you get on these steps over at the Media Lab, then you cross this large open space, then you turn right down this corridor.

一部作品里可以有一张，一场演讲一张，一篇论文一张，一本书一张。这就是 hapax legomenon 的意思，而这就是一个例子。好，我给你们展示了一些罪状。那你可能会问，这些罪状真的会发生吗？确实会。[笑声] 这是双手插兜这宗罪。这里还有时间和地点选择上的一宗罪。这是你去巴托斯剧场的路。第一步，你走上媒体实验室这边的这些台阶，然后你穿过这一大片开阔场地，接着你右转进入这条走廊。

34:45

[LAUGHTER] At this point, whenever I go in there, I wonder if there are torture implements around the corner. [LAUGHTER] And then when you get in there, you get into this dark, gloomy place. So it's well named when they call it the Bartos Theater because it's a place where you can watch a movie, but it's not a place where you can give a talk. Now, on a subject of does it happen, here's a talk I attended a while back in Stata. Notice that the speaker is far away from the slides. Speaker's using a laser pointer.

[笑声] 每次我走到这儿，我都在想拐角后面是不是摆着刑具。[笑声] 然后你进去之后，就进到了这个又暗又阴沉的地方。所以他们把它叫做巴托斯剧场，这名字起得挺贴切，因为那是个可以看电影的地方，但不是个可以做演讲的地方。现在，关于这种事到底会不会发生，这是我前段时间在斯塔塔中心听的一个讲座。注意讲者离幻灯片很远。讲者在用激光笔。

35:22

And you say to me, well, what's happening here? It's, by the way, the 80th – 80th! slide of the presentation. Notice that it extends with the words, this is the first of 10 conclusions slides. [LAUGHTER] So what's the audience reaction? That's the sponsor of the meeting. [LAUGHTER] He's reading his email. This is the co-sponsor of the meeting. He's examining the lunch menu. [LAUGHTER] What about this person? This person looks like he's paying attention, but just because it's a still picture. If you were to see a video, what you would see is something like this [YAWNS].

然后你会问我，这儿发生了什么？顺便说一句，这是整场演讲的第80张——第80张！幻灯片。注意它上面还写着，这是十张结论幻灯片中的第一张。[笑声] 那么听众的反应如何？那位是这场会议的赞助人。[笑声] 他在看邮件。这位是会议的联合赞助人。他在研究午餐菜单。[笑声] 那这位呢？这位看起来像是在认真听，但那只是因为这是张静态照片。如果你看的是视频，你会看到的是这样的画面[打哈欠]。

反面实录：第80张幻灯片，上面还写着「十张结论片之第一张」；会议赞助人在看邮件、联合赞助人在研究午餐菜单——用现场照片证明前述「罪状」并非虚构。

06 传授信息与激励听众

36:10

[LAUGHTER] So yeah, it does happen. Well, now, that's a quick review of tools. Now, I want to talk about some special cases. We could talk a little bit about the informing or to say another way, doing what I'm doing now. But I'll just say a few words about that. In that kind of presentation, you want to start with a promise like I did for this hour that we're going through now. And then it comes to the question of how do you inspire people? I've given this talk for a long time, and a few years ago, our department chairman said, would you please give this talk to a new faculty, and be sure to emphasize what it takes to inspire students.

37:06

And strangely, I hadn't thought about that question before. So I started a survey. I'd talked to some of my incoming freshmen advisees, and I talked to senior faculty and everything in between about how they've been inspired. What I found from the incoming freshmen is that they were inspired by some high school teacher who told them they could do it. What I found in the senior faculty, they were inspired by someone who helped them see a problem in a new way. And what I saw from everyone is that they were inspired when someone exhibited passion about what they were doing, exhibited passion about what they were doing.

37:52

So that's one way to be inspiring. It's easy for me because I do artificial intelligence. And how can you not be interested in artificial intelligence? [LAUGHTER] I mean, if you're not interested in artificial intelligence, you're probably not interested in interesting things. So when I'm lecturing in my AI class, it's natural for me to talk about what I think is cool and how exciting some new idea is. So that's the kind of expression of passion that makes a difference while informing with respect to this question of inspiring.

38:39

Oh, yeah and of course, during this promise phase, you can also express how cool stuff is. Let me give you an example of a lecture that starts this way. I'm talking about resource allocation. It's the same sort of stuff you would think of when your— it's the same sort of ideas you would need if you're allocating aircraft to a flight schedule or trying to schedule a factory or something like that. But the example is putting colors on the states in the United States without any bordering states having the same color.

激励调查的分层结论：新生被「你能行」的鼓励激励，资深教授被「换个角度看问题」激励，而所有人共同的激励源是讲者对所做之事展现的热情（passion）——热情是唯一普适因素。

advisees /ædvaɪ'zi:z/ *n.*

被指导者；（大学）导师名下的学生

resource allocation *phr.*

资源分配（运筹学/计算机科学术语）

39:11

So here it goes. This is what I show at the beginning of the class. This is a way of doing that coloring. And you might say, well, why don't we wait till it finishes? Would you like to do that? No? Well, we're not going to wait till it finishes because the sun will have exploded and consumed the earth before this program finishes. [LAUGHTER] But with a slight adjustment to how the program works, which I tell my students you will understand in the next 50 minutes, this is what you get.

39:49

Isn't that cool? You got to be amazed by stuff that takes a computation from longer than the lifetime of the solar system into a few seconds. So that's what I mean by providing a promise upfront and expressing some passion about what you're talking about. Well, the last item in this little block here is it has to do with what people think that they do it at MIT. You ask faculty what the most important purpose is, and they'll say, well, the most important thing I do is teach people how to think. And then you say oh, that's great.

40:29

How do you teach people how to think? Blank stare. No one can quite respond to that part, that natural next question. So how do you teach people how to think? Well, I believe that we are storytelling animals. And that we start developing our story, understanding and manipulating skills with fairy tales in childhood and continue on through professional schools like law, business, medicine, everything. And we continue doing that throughout life. So if that is what thinking is all about. And we want to teach people how to think, you provide them with the stories they need to know, the questions they need to ask about those stories, mechanisms for analyzing those stories, ways of putting stories together, ways of evaluating how reliable a story is.

美国地图着色演示（约束传播算法）：朴素回溯算法要算到「太阳爆炸吞噬地球」，稍作调整后几秒完成。用天文级夸张制造悬念，示范如何在课程开头「展示这东西有多酷」。

「人是讲故事的动物」是温斯顿的核心学术主张（强故事假说）：从童话到法学院、商学院、医学院，思考的本质是理解与操纵故事。教思考=提供故事、提问方式及分析、组合、评估故事的机制。

07 口试：情境化与练习

41:24

And that's what I think you need to do when you teach people how to think. But that's all about education. And many of you here are not necessarily for that, but rather for this part, for persuading, which breaks down into several categories, oral exams, not shown, shop talks, getting famous. I won't say much about oral exams other than the fact that they used to be a lot scarier than they are today. In the old days, reading the literature in a foreign language was a part of that. And there was a high failure rate.

42:04

And when you look back on those failures, the most usual reason for people failing an oral exam is failure to situate and a failure to practice. By situate, I mean, it's important to talk about your research in context. This is a problem that's being pursued all over the world. There hasn't been any progress before me in the past 30 years. Everyone is looking for a solution because it will have impact on so many other things, such as situating and time and place and feel. And then as far as practice is concerned, yes, practice is important.

42:43

But that doesn't mean showing your slides to the people you share an with. The problem with that is that if people know what you're doing, they will hallucinate that there's material in your presentation that isn't there if it isn't there. A variation on the scene, by the way, is your faculty supervisor is not a very good person to help you debug a talk because they, in fact, know what you're doing. And they will, in fact, hallucinate there's material in your presentation that isn't there. So you need to get together with some friends who don't know what you're doing and have them— well, you start the practice session by saying, if you can't make me cry, I won't value as a friend anymore.

43:27

[LAUGHTER] And then when you get to the faculty on a oral exam, it will be easy. You see, difficulty— the amount of flak you'll get from somebody is proportional to age. The older somebody is, the more they understand where they are in the world. But the young people are trying to show the old people how smart they are, so it's subtly vicious. So whenever you have an opportunity to have an examining committee that's full of people with gray hair, that's what you want. Well, that's just a word or two about something I haven't listed here.

口试失败的两大主因：failure to situate（未把研究置于领域上下文——全世界谁在做、为何重要、影响什么）与failure to practice（练习不足）。

situate /ˈsɪtʃueɪt/ v.

把...置于上下文/背景中（学术写作常用）

练习的关键陷阱：熟悉你工作的人（包括导师）会「脑补」出演讲里并不存在的内容，无法暴露缺陷。正确做法：找不了解你课题的朋友，并宣布「不能把我批哭就不够朋友」。

hallucinate /həˈluːsɪneɪt/ v.

产生幻觉；此处指「脑补出并不存在的内容」

答辩委员会的年龄规律：年长者已确立地位、无需证明自己，故更宽容；年轻人急于向前辈展示聪明，提问「不动声色地凶狠」。所以理想的答辩委员会应「满头白发」。

flak /flæk/ n.

高射炮火；（口）猛烈批评、炮轰

subtly vicious *phr.*

不动声色地凶狠（vicious /ˈvɪʃəs/ 恶毒的）

08 求职演讲：五分钟定生死

44:02

Let's get into the subject of job talks. So I was sitting in a bar many years ago in San Diego. I was a member of the Navy Science Board, and I was sitting with a couple of my colleagues on the board Delores Etter from the University of Colorado. She made me so jealous I could spit because she'd written 21 books, and I'd only written 17. And then the other one was Bill Weldon from the University of Texas. He was an electromagnetism guy, and he knew how to use rail guns to drive steel rods through tank armor.

美国海军科学委员会 (Navy Science Board) 为海军提供科技咨询。德洛丽丝·埃特 (Delores Etter)：电气工程教授，后任海军主管研发的助理部长。轨道炮 (rail gun)：用电磁力发射弹丸、可击穿坦克装甲的武器。

electromagnetism /ɪˌlektroʊˈmæɡnətɪzəm/ *n.*
电磁学

rail guns /ˈreɪl ɡʌnz/ *n.*
电磁轨道炮：用电磁力发射弹丸的武器

tank armor *phr.*
坦克装甲 (armor /ˈɑːrmər/)

44:45

These were interesting people. So I said, what do you look for in a faculty candidate? And within one microsecond, Delores said, they have to show us they've got some kind of vision, quickly followed by Bill who said, they have to show us that they've done something.

45:15

Oh, that sounds good, I said. And then I said to them, how long does a candidate have to establish these two things? What do you think? Well, compare your answer to theirs.

45:33

Five minutes. So if you haven't expressed your vision, if you haven't told people that you've done something in five minutes, you've already lost. So you have to be able to do that. And let me just mention a couple of things in that connection. Here, the vision is in part, a problem that somebody cares about and something new in your approach.

求职演讲的铁律：五分钟内必须让评委看到vision（愿景=别人在乎的问题+你的新路径）和「你做成过什么」，否则已经出局。这是两位资深评委几乎不假思索给出的答案。

46:06

So the problem is understanding the nature of human intelligence. And the approach is asking questions about what makes us different from chimpanzees and Neanderthals. Is it merely a matter of quantity, or we're just a little bit smarter in some continuous way? Or do we have something that's fundamentally different that chimpanzees don't have and Neanderthals either? And the answer is yes, we do have something different. We are symbolic creatures. And because we're symbolic creatures, we can build symbolic descriptions of relations and events.

温斯顿的研究愿景示范：人类区别于黑猩猩和尼安德特人的不是「量的差异」，而是符号能力——能构建符号化描述并串成故事。这也是他晚年Genesis故事理解项目的理论基础。

Neanderthals /niˈændərˌtɔːlz/ *n.*

尼安德特人：约4万年前灭绝的古人类

46:46

We can string them together and make stories. And because we can make stories, that's what makes us different. So that's my stump speech. That's how I start most of my talks on my own personal research. How do you express the notion that you've done something? By listing the steps that need to be taken in order to achieve the solution to that problem. You don't have to have done all of those steps. But you can say here's what needs to be done. An example, here's what needs to be done. We need to specify some behavior.

我们需要明确规定某种行为。

47:23

We need to enumerate the constraints that make it possible to deal with that behavior. We have to implement a system because we're engineers, and we don't think that we've understood something unless we can build it. And we've built such a system, and we're about to demonstrate it to you today. That would be an example of enumerating a series of steps needed to realize the vision. So then blah, blah, blah, blah, blah, blah, blah, blah. And then you conclude by-- you conclude by enumerating your contributions.

「证明做过事」=列举实现愿景所需的步骤，不必全部完成。「造不出来就不算理解」是工程师信条，与物理学家费曼名言「凡我不能创造的，我就不理解」同调。

constraints /kənˈstreɪnts/ *n.*

约束条件，限制

我们需要列举出使处理这种行为成为可能的各种约束条件。我们必须实现一个系统，因为我们是工程师，而如果不能把它造出来，我们就不认为自己真正理解了它。我们已经постро建好了这样一个系统，今天就要给大家演示。这就是列举实现愿景所需一系列步骤的一个例子。然后就是这样那样、如此这般地讲下去。最后你要以列举你的贡献来收尾。

09 温斯顿之星：让成果被记住

48:01

It's kind of mirror of these steps. And it helps to establish that you've done something. So that's a kind of general purpose framework for doing a technical talk. Now, only a few more things left to do today. Getting famous is the next item on our agenda because once you've got the job, you need to think a little bit about how you're going to be recognized for what you do. So oh, first of all, why should you care about getting famous? I thought about this in connection with a fundraising event I attended once, a fundraising event for raising money to save Venice from going under water and having all of its art destroyed.

这跟前面那些步骤是一种镜像关系。这有助于确立你确实做成了某件事。这就是做技术演讲的一个通用框架。💡💡，今天只剩下几件事要讲了。接下来议程上的一项是如何成名，因为一旦你拿到了工作，你就得稍微考虑一下怎样让自己的工作得到认可。那么，首先，你为什么要在意成名这件事？我是在参加一次募捐活动时想到这个问题的，那是一次为筹款而办的活动，目的是拯救威尼斯，别让它沉入水下、让所有艺术品毁于一旦。

48:53

Anyway, I was sitting here, and JC was sitting here. That was Julia, the late Julia Child.

总之，我坐在这边，JC 坐在那边。那就是茱莉亚，已故的茱莉亚·查尔德。

茱莉亚·查尔德（Julia Child, 1912–2004）：美国传奇厨师、电视节目主持人，以《掌握法国菜的艺术》把法餐带入美国普通家庭，是美国大众文化偶像。

49:08

And as the evening wore on, more and more people would come up and ask Julia to autograph something or express a feeling that she had changed their life. And it just happened over and over again. So eventually, I turned to Julia, and I said, Ms. Child, is it fun to be famous? And she thought about it for a second. And she said, you get used to it. [LAUGHTER] But you know what occurred to me? You never get used to being ignored. So it's— here's a way to think about it. Your ideas are like your children.

随着夜色渐深，越来越多的人走上前来请茱莉亚签名，或者表达她改变了自己人生的感受。这样的事一次又一次地发生。所以最后我转向茱莉亚，说：查尔德女士，出名有意思吗？她想了一秒钟。然后她说，你会习惯的。（笑声）但你知道我当时想到了什么吗？你永远不会习惯被忽视。所以——可以这样来看这件事。你的想法就像你的孩子。

49:47

And you don't want them to go into the world in rags. So what you want to do is to be sure that you have these techniques, these mechanisms, these thoughts about how to present ideas that you have so that they're recognized for the value that is in them. So that's why it's a legitimate thing to concern yourself with packaging. Now, how do you get remembered? Well, there's something I like to call Winston's star. And every one of the items I'm about to articulate starts with an S. So if you want your presentation ideas to be remembered, one of the things you need to do is to make sure that you have some kind of symbol associated with your work.

你不希望他们衣衫褴褛地走进这个世界。所以你要做的，就是确保自己掌握这些技巧、这些方法、这些关于如何呈现自己想法的思考，好让它们内在的价值能被人认可。所以关注“包装”是一件完全正当的事。那么，你怎样才能被人记住呢？嗯，有个东西我喜欢称之为“温斯顿之星”。我接下来要讲的每一项都以字母 S 开头。所以如果你想让自己演讲中的想法被记住，你需要做的一件事就是确保有某种符号与你的工作相关联。

「出名你会习惯，被忽视你永远不会习惯」——这是关注「包装」的正当性论证：想法如同孩子，不该衣衫褴褛地走进世界。包装不是虚荣，而是对想法价值的负责。

autograph /'ɔ:təgræf/ v./n.
(名人) 签名；给...签名

wore on *phr.*
(时间) 缓缓流逝 (as the evening wore on 随着夜色渐深)

温斯顿之星 (Winston's star) :
让工作被记住的五要素，全部以 S 开头——Symbol (符号)、Slogan (口号)、Surprise (惊喜)、Salient idea (突出想法)、Story (故事)。以下用他自己的博士论文逐一示范。

in rags *phr.*
衣衫褴褛 (rags 破布、破衣)

50:34

So this arch example is actually from my PhD thesis many, many years ago. And in the course of my work at that time, this work on arch learning became mildly famous, and I didn't know why. It was only many years later that I realized that work accidentally had all of the elements on this star. So the first element is that there was a kind of symbol. It's the arch itself.

这个“拱门”的例子其实出自我很多很多年前的博士论文。在我当时的研究过程中，这项关于拱门学习的工作稍稍出了点名，而我并不知道原因。直到很多年以后我才意识到，那项工作碰巧具备了这颗星上的所有要素。第一个要素是有一种符号。那就是拱门本身。

51:05

Next thing you need is some kind of slogan, a kind of phrase that provides a handle on the work. And in this case, the phrase was one shot learning. And it was one shot because the program I wrote learned something definite from every example that was presented to us. So in going from a model based on this configuration to something that isn't an arch base on that configuration, the program learned that it has to be on top, one shot learning. So that's a symbol, slogan. And now we need a surprise.

接下来你需要的是某种口号，一个能让人抓住这项工作的短语。在这个例子里，这个短语就是“一次性学习”（one shot learning）。之所以叫“一次性”，是因为我写的那个程序从呈现给我们的每一个例子中都学到了某种确定的东西。所以从基于这个构型的模型，到基于那个构型的“不是拱门”的例子，程序学到了那块必须放在顶上——这就是一次性学习。所以，这是符号和口号。现在我们需要一个惊喜。

one-shot learning（一次性学习）

出自温斯顿1970年的博士论文

「拱门学习」程序：从每个例子中学到一条确定知识。这个词至今仍是机器学习领域的标准术语——口号的生命力可见一斑。

slogan /'sləʊɡən/ *n.*

口号，标语；此处指凝练工作的「记忆抓手」

a handle on *phr.*

抓手，把握某事物的切入点
(get/provide a handle on)

51:51

Yeah, the surprise is you don't need a million examples of something to learn. You can do it with one example if you're smart enough to make use of that example appropriately. So that was the surprise. You can learn something definite from each example. Next item was a salient idea.

是的，惊喜就是：你并不需要一百万个例子才能学会某样东西。如果你足够聪明、能恰当地利用那个例子，一个例子就够了。这就是那个惊喜。你可以从每一个例子中学到某种确定的东西。下一项是一个突出的想法。

52:13

Now, when I say salient idea, I don't mean important. What I mean is an idea that sticks out. Some theses, funnily enough, have too many good ideas, and you don't know what it's all about because which one is it? So you need an idea that sticks out. And the idea that stuck out here was the notion of a near miss.

我说“突出的想法”时，指的不是“重要”。我的意思是一个能凸显出来的想法。有些论文，说来好笑，好想法太多了，你反而搞不清它到底讲的是什么，因为究竟是哪一个呢？所以你需要一个凸显出来的想法。这里凸显出来的想法，就是“差一点的反例”（near miss）这个概念。

salient≠important: 「突出」指能从整体中凸显出来。反直觉之处：有些论文好想法太多，反而让人抓不住它到底讲什么——想法需要一个能「立起来」的招牌。

salient /'seɪliənt/ *adj.*

突出的，显著的（讲者特别强调 ≠important，而是「凸显出来」）

sticks out *phr.*

凸出，显眼（stick out）

10 如何收尾：贡献与告别

52:39

You see, this is not an arch, but it doesn't miss by much. So it's a near miss. And finally, you need to tell the story of how you did it, how it works, why it's important. So that's a bit on how to not so much get famous, but how to ensure that your work is recognized. Well, we're almost finished because now we're down to this last item, which is how to stop. And when we come to that, there's a question of all right, well, what is the final slide?

你看，这不是拱门，但它差得并不远。所以它是一个“差一点的反例”。最后，你需要讲一个故事：你是怎么做出来的、它是怎么运作的、它为什么重要。这就是关于如何——与其说是成名，不如说是如何确保你的工作被认可——的一点心得。好，我们快讲完了，因为现在只剩最后一项：如何结束。讲到这里就有个问题：好吧，最后一张幻灯片该是什么？

near miss（差一点的反例）：与正例只差一个关键特征的负例，教学价值最高——程序正是靠它学到「那块必须在顶上」。这是概念学习理论中的经典贡献。

near miss *phr.*

差点命中；此处为术语「差一点的反例」，机器学习经典概念

53:22

And what are the final words?

最后要说的话又是什么？

53:30

So for the final slide, let me give you some examples of possibilities. How about this one?

关于最后一张幻灯片，我给大家举几种可能的例子。这一张怎么样？

53:42

Well, you might see that slide and think to yourself, there are 1,000 faculty at MIT. Nice piece of work, but not so much, but it's only a tiny piece of work if you divide by 1,000. So when you show a whole gigantic list of collaborators at the end of a talk, it's a kind of let down because it suggests that nobody knows. Well, did you do anything significant? Now, you've got to recognize your collaborators, right? So where do you do that? Not on the last slide, on the first slide. All this was on the first slide.

结尾放巨幅合作者名单是「扫兴」：暗示成果要除以人数。致谢的正确位置是第一张幻灯片，而非最后一张——最后一张的黄金位置另有用途（见第97段）。

let down *n.*

令人失望的事，扫兴（a letdown）

嗯，你可能看到那张幻灯片会心想：MIT 有一千个教员呢。干得不错，但也就那样，除以一千之后，这只是很小的一份工作。所以当你在演讲结尾放上一整张巨大的合作者名单时，那是一种扫兴，因为它暗示着没人知道——嗯，你到底做出了什么重要的东西？当然，你必须承认你的合作者，对吧？那你在哪儿做这件事呢？不是在最后一张幻灯片，而是在第一张。这些全都放在第一张幻灯片上。

54:21

These are the collaborators, so you don't want to put them at the end. You don't want a slide like this. How about this one? This is the worst possible way to end a talk. [LAUGHTER] Because this slide can be up there for 20 minutes. I've seen it happen. It squanders real estate. It squanders an opportunity to tell people who you are. It's just—

「The End」式空白结尾片是最糟的收尾：它可能在提问环节挂20分钟，白白浪费屏幕「地产」——那是告诉别人「你是谁、你做了什么」的最后机会。

squanders /'skwɑːndərz/ *v.*

挥霍，浪费（squander an opportunity）

这些是合作者，所以你不该把他们放在结尾。你不会想要这样一张幻灯片。那这张呢？这是结束演讲最糟糕的方式。（笑声）因为这张幻灯片可能会在上面挂二十分钟。我亲眼见过这种事。它浪费了屏幕空间。它浪费了一个告诉别人你是谁的机会。这简直就是——

real estate *phr.*

房地产；引申为（屏幕、版面的）宝贵空间

54:51

What about this one?

那这张呢？

54:56

I often see it. I never see anybody write it down. Also, it wastes opportunity. Oh my God, even worse.

我经常见到这种。但我从没见过谁把它抄下来。同样，它也浪费了机会。天哪，这个更糟。

55:14

All of these lines do nothing for you. They waste an opportunity for you to tell people— to leave people with what you— with who you are. Well, what about this? Is this a good one? It might seem so at first, but here's the problem.

这些字对你毫无帮助。它们浪费了一个机会——一个让你告诉别人、让别人最后记住你是谁的机会。那这个呢？这算好的吗？乍一看好像不错，但问题在这里。

55:38

If you say these are my conclusions, these are perfectly legitimate conclusions that nobody cares about. What they care about is what you have done. And that's why your final slide should have this label, contributions. It's a mirror of what I said over there about how job talks ought to be like a sandwich. And the final slide, the one that's up there while people are asking questions and filing out, it ought to be the one that has your contributions on it. Here's an example from my own stump speech.

如果你说“这些是我的结论”，这些结论完全站得住脚，可没人不在乎。大家在乎的是你做了什么。所以你的最后一张幻灯片应该用这个标题：贡献。这跟我刚才在那边说的——求职演讲应该像个三明治——是相互呼应的。而最后那张幻灯片，就是在大家提问、陆续离场时一直留在屏幕上的那张，它应该是写着你的贡献的那一张。这里有个例子，出自我自己的常用演讲。

最后一张片应标「Contributions (贡献)」而非「Conclusions (结论)」：结论可以完全正确却无人不在乎，人们在乎的是你做了什么。这张片在提问和听众离场时始终挂在屏幕上，是曝光时间最长的一张。

stump speech *phr.*

政客巡回反复发表的竞选演说；引申为个人的「保留演讲」

56:09

Yeah, this is what I talk about a lot. Yes, here are the things that I typically demonstrate.

是的，这是我经常讲的内容。是的，这些是我通常会演示的东西。

56:21

And I wait for people to read it. And the final element there is this is what we get out of it, so that's an example of a contribution slide. All right, now, what about the other part? You got your final slide up there. It's a contribution slide. Somehow you have to tell people you're finished. So let's see it, check out a few possibilities. One thing you could do in the final words is you could tell a joke.

然后我会等着大家把它读完。而最后一项是：这是我们从得到的收获，这就是一张贡献幻灯片的例子。好，那么另一部分呢？你已经把最后一张幻灯片放上去了。那是一张贡献幻灯片。可你总得用某种方式告诉大家你讲完了。那我们就来看看几种可能的做法。收尾时你可以做的一件事，就是讲个笑话。

56:59

It's OK. By the time you're done, people have adjusted themselves to your voice parameters. They're ready for a joke. I was sitting in another bar, this time in Austin, Texas with a colleague of mine named Doug Lenat. And Doug's a fantastic speaker. And so I said to Doug, Doug, you're a fantastic speaker, what's your secret? And he said, oh, I always finish with a joke, and that way, people think they've had fun the whole time. [LAUGHTER] So yeah, a joke will work down there. How about this one?

这没问题。等你讲到最后，大家已经适应了你的音调和语速。他们准备好听笑话了。有一次我又坐在一间酒吧里，这回是在德州奥斯汀，和我的一位同事道格·勒纳特（Doug Lenat）在一起。道格是个极出色的演讲者。于是我对道格说：道格，你是个极出色的演讲者，你的秘诀是什么？他说：哦，我总是用一个笑话收尾，这样大家就会觉得自己全程都很开心。（笑声）所以是的，在结尾讲个笑话是管用的。这个怎么样？

道格·勒纳特（Doug Lenat, 1950—2023）：AI学者，常识知识库Cyc项目创始人。「用笑话收尾，大家会觉得全程都很开心」——可视作心理学「峰终定律」（体验由峰值和结尾决定）的民间版本。

57:50

Thank you. I don't recommend it. It's a weak move. You will not go to hell if you conclude your talk by saying thank you, but it's a weak move, and here's why. When you say thank you, even worse, thank you for listening, it suggests that everybody has stayed that long out of politeness and that they had a profound desire to be somewhere else. But they're so polite, they stuck it out. And that's what you're thanking them for. So once wild applause has started, you can mouth a thank you, and there's nothing wrong with that.

谢谢。我不推荐这么做。这是个软弱的收尾。如果你用「谢谢」来结束演讲，你不会下地狱，但这是个软弱的收尾，原因如下。当你说「谢谢」，更糟的是说「谢谢大家听我讲」，这暗示大家留到最后都是出于礼貌，暗示他们其实心里巴不得去别的地方。但他们太有礼貌了，所以硬撑着听完了。而你正是在为这个感谢他们。所以，一旦热烈的掌声响起来了，你可以用口型说声谢谢，这没什么不妥。

「谢谢」是弱结尾的逻辑：它暗示听众全程出于礼貌硬撑、其实想去别处——你感谢的正是他们的忍耐。变通：掌声响起后用口型说谢谢，无伤大雅。

stuck it out *phr.*

硬撑到底，坚持忍完 (stick it out)

mouth /maʊð/ *v.*

不出声地用口型说 (mouth a thank you)；注意动词读浊音/ð/

wild applause *phr.*

热烈的掌声 (applause /ə'plɔ:z/ 不可数)

58:25

But the last thing you do should not be saying thank you. Now, you say to me, well, doesn't everybody say thank you? Well, what everybody does is not necessarily the right thing. And I like to illustrate how some talks can end without saying thank you. I like to draw from political speeches, but the ones that I've heard recently aren't so good, so-- [LAUGHTER] So I'm going to have to go back a little bit. So here is Governor Christie. He gave the Republican keynote address one year. This is the end of his talk.

但你最后做的那件事，不应该是说谢谢。这时你会问我，可是不是每个人都说谢谢吗？嗯，大家都做的事，未必就是对的事。我想举几个例子，说明有些演讲可以不用「谢谢」来收尾。我喜欢从政治演说里取材，但我最近听到的那些都不怎么样，所以——（笑声）所以我得往回追溯一点。这位是克里斯蒂州长。有一年他做了共和党大会的主旨演讲。这是他演讲的结尾。

keynote address *phr.*

主旨演讲（大会最重要的演讲）

59:05

Let's see what he does. [APPLAUSE] CHRIS CHRISTIE: And together, everybody, together. We will stand up once again for American greatness for our children and grandchildren. God bless you, and God bless America. [APPLAUSE] PATRICK WINSTON: So that's a classic benediction ending. God bless you, God bless America. Now, I don't want to be partisan about this. So I think I'd better switch to the keynote address in the Democratic Convention. It was delivered that year by Bill Clinton, who knows something about how to speak.

我们来看看他是怎么做的。（掌声）克里斯·克里斯蒂：让我们团结一致，各位，团结一致。我们将再一次为美国的伟大挺身而出，为了我们的子孙后代。上帝保佑你们，上帝保佑美国。（掌声）帕特里克·温斯顿：这就是经典的祝祷式结尾。上帝保佑你们，上帝保佑美国。当然，我不想在这件事上偏袒某一党派。所以我想我最好换成民主党大会上的主旨演讲。那一年是由比尔·克林顿发表的，他对怎么演讲还是很有一套的。

59:45 比尔·克林顿（视频片段）

[APPLAUSE] BILL CLINTON: If that is what you want, if that is what you believe, you must vote, and you must re-elect President Barack Obama. God bless you, and God bless America. [APPLAUSE] [LAUGHTER]

（掌声）比尔·克林顿：如果这就是你们想要的，如果这就是你们所相信的，你们就必须去投票，你们就必须让巴拉克·奥巴马总统连任。上帝保佑你们，上帝保佑美国。（掌声）（笑声）

克里斯·克里斯蒂（Chris Christie）：时任新泽西州州长，2012年共和党全国大会主旨演讲人。「God bless you, and God bless America」是美国政治演讲的经典祝祷式结尾（benediction ending）——不说谢谢的收尾范例之一。

benediction /ˌbenɪˈdɪkʃən/ *n.*

祝祷，祝福（宗教仪式结尾的祝福语）

partisan /ˈpɑːrtɪzən/ *adj.*

党派性的，偏袒一方的

60:09 帕特里克·温斯顿

PATRICK WINSTON: Now, watch this. Let's go back a little bit and redo it. What I want you to see is that at one point, he seems to be almost pressing his lips together, forcing himself not to say thank you. Then there's another place where he does a little salute. So watch for those this time around. [APPLAUSE] BILL CLINTON: If that is what you want, if that is what you believe, you must vote, and you must re-elect President Barack Obama. God bless you., and God bless America. [APPLAUSE] PATRICK WINSTON: That's where he's pursing his lips.

帕特里克·温斯顿：现在，看好了。我们往回倒一点，再放一遍。我想让你们注意的是，有那么一瞬间，他好像在抿紧嘴唇，强忍着不说出「谢谢」。然后另有一处，他做了个小小的致意动作。所以这一遍留意这两点。（掌声）比尔·克林顿：如果这就是你们想要的，如果这就是你们所相信的，你们就必须去投票，你们就必须让巴拉克·奥巴马总统连任。上帝保佑你们，上帝保佑美国。（掌声）帕特里克·温斯顿：就是这儿，他在抿嘴唇。

60:42

[LAUGHTER] There's the salute. [LAUGHTER] Yeah, I think that's pretty good. Now, what are we gonna take away from this? Well, I suppose I could conclude this talk by saying God bless you, and God bless the Massachusetts Institute of Technology, but it might not work so well. But what you can get out of this is you don't have to say thank you. There are other things you can do. And it's interesting that over time, people figure this out, and there's some stock ways of ending things. So in the Catholic church, and the good old Latin mass, it ended with *ite missa est*, which translates approximately to OK, the mass is over, you can go home now.

（笑声）这就是那个致意动作。（笑声）是啊，我觉得这挺不错的。那么，我们能从中学到什么？嗯，我想我也可以这样结束今天这场演讲：上帝保佑你们，上帝保佑麻省理工学院——但这效果恐怕不会太好。不过你们能从中得到的启发是：你不非得说「谢谢」不可。还有别的办法可用。有意思的是，随着时间推移，人们都琢磨出了这一点，于是就有了一些固定的收尾方式。比如在天主教会，在那个古老的拉丁弥撒里，结尾是「*ite missa est*」，大致可以翻译成：好了，弥撒结束了，你们可以回家了。

克林顿2012年民主党大会演讲的细节：抿紧嘴唇强忍着不说thank you，改以一个致意手势收尾。温斯顿回放两遍让观众捕捉这一微表情——顶级演讲者是刻意避免弱结尾的。

pursing his lips *phr.*

抿紧嘴唇 (purse /pɜːrs/ 动词=抿)

ite missa est：拉丁弥撒的结束语，约为「去吧，礼成」，「弥撒」(mass) 一词即源于missa。各种仪式都演化出了宣告结束的固定用语——收尾方式是有传统可循的。

stock /stɔːk/ *adj.*

现成的，老一套的 (stock ways/phrases 固定套路)

61:32

[LAUGHTER] And of course, at musical concerts, you know that it's time to clap not at the end of the song, but rather when the conductor goes over and shakes hands with the concert master. Those are conventions that tell you that the event is over. So those are all possibilities for here. But one more possibility, and that is that you can salute the audience. And by that, I mean, you can say something about how much you value your time at a place. So I could say, well, it's been great fun being here.

（笑声）当然，在音乐会上，你知道该鼓掌的时机不是一曲终了的时候，而是指挥走过去和首席小提琴握手的时候。这些都是约定俗成的信号，告诉你活动结束了。所以这些在这里也都是可选项。但还有一种可能，那就是你可以向听众致敬。我的意思是，你可以说说自己有多珍视在这个地方度过的时光。比如我可以说，来这儿真的非常愉快。

音乐会惯例：鼓掌信号不是乐曲终止，而是指挥走向首席小提琴握手。salute the audience（向听众致敬）：讲述你多珍视在此地的时光——温斯顿推荐的收尾方式。

concert master *phr.*

乐团首席（第一小提琴手，代表乐团与指挥握手）

salute /səˈlu:t/ *v./n.*

致敬，致意（salute the audience 向听众致敬）

62:20

It's been fascinating to see what you folks are doing here at MIT. I've been much stimulated and provoked by the kinds of questions you've been asking, it's been really great. And I look forward to coming back on many occasions in the future. So that salutes the audience. You can do that. Well, there it is. You know what? I'm glad you're here. And the reason is by being here, I think you have demonstrated an understanding that how you present and how you package your ideas is an important thing. And I salute you for that.

看到你们在麻省理工做的这些事，真是让人着迷。你们提的那些问题让我深受启发、深受触动，这真的太棒了。我期待今后能有很多机会再回到这里。这就是在向听众致敬。你可以这么做。好了，就是这样。你们知道吗？我很高兴你们来了。原因在于，你们来到这里，就说明你们已经明白了一件事：你如何表达、如何包装自己的想法，是一件很重要的事。为此我向你们致敬。

温斯顿现场示范「致敬式收尾」并以此结束本讲：肯定听众来听讲这一行为本身，说明他们已理解「如何呈现与包装想法很重要」——首尾呼应第0段的开场论点。

provoked /prəˈvʊkt/ *v.*

激发（思考）；此处褒义「深受触动」，非「激怒」

62:58

[LAUGHTER] And I suggest that you come back again and bring your friends. [APPLAUSE]

（笑声）我建议你们下次再来，还把朋友一起带来。（掌声）

第二部分 核心句型 · 值得模仿的表达

1. ... will be determined largely by A, B, and C, in that order

"Your success in life will be determined largely by your ability to speak, your ability to write, and the quality of your ideas, in that order"

列举多个因素并用 in that order 强调重要性排序，比单纯罗列更有观点。适合开场抛出核心论断，仿写时把最想强调的排序含义交给这三个词。

2. What you want to do instead is ...

"What you want to do instead is start with empowerment promise."

先否定常见做法 (I don't recommend it)，再用 instead is + 动词原形给出替代方案。是「破一立」结构的标准衔接句，建议类演讲的高频句式。

3. That's not to be confused with ...

"That's not to be confused with some other things that other people might think is-- this is not an arch"

「不要把它与...混淆」，用于给概念划边界 (build a fence)。学术写作与答辩中区分自己与他人工作的礼貌说法，可仿写为 My approach is not to be confused with X。

4. The problem with that is that ...

"The problem with that is that if people know what you're doing, they will hallucinate that there's material in your presentation that isn't there"

指出某方案缺陷的标准引导句，双重 that 结构 (with that is that...)。先承认做法常见，再点破隐患，语气克制而有力。

5. How can you not be ...?

"And how can you not be interested in artificial intelligence?"

反问句式「怎么可能不...?」，用否定反问传达强烈热情与理所当然感。演讲中表达 passion 的地道手段，注意语调重音落在 not 上。

6. You will not go to hell if ..., but it's a weak move

"You will not go to hell if you conclude your talk by saying thank you, but it's a weak move"

夸张让步 (不至于下地狱) + 转折否定评价。先卸下听众防备再给出批评，幽默而不刺人。weak move (昏招) 本身也是值得积累的口语搭配。

7. By X, I mean ...

"By situate, I mean, it's important to talk about your research in context."

自我定义术语的标准句式：刚抛出一个词，立刻用 By...I mean 解释你的特定含义。演讲和写作中避免歧义的必备工具。

8. If you haven't ... , you've already lost

"If you haven't told people that you've done something in five minutes, you've already lost"

条件从句用现在完成时 + 主句 already lost，制造「为时已晚」的紧迫感。适合强调硬性门槛或截止条件的警示性表达。

第三部分 生词总表 · 复习用

词汇	音标	词性	释义	出现
a handle on	—	phr.	抓手，把握某事物的切入点 (get/provide a handle on)	51:05
actuated	/ˈæktʃueɪtɪd/	v.	被激活，被启动 (actuate)	22:24
advisees	/ədvaɪˈziːz/	n.	被指导者；(大学) 导师名下的学生	37:06
after action report	—	phr.	事后复盘报告 (源自军事术语)	28:21
all consuming	—	adj.	吞噬一切的；(喻) 占据全部身心的	17:30
armamentarium	/ˌɑːrməməntˈteriəm/	n.	全套装备；本指医生的全套药械，喻「技巧武器库」	1:48
artfully	/ˈɑːrtfəli/	adv.	巧妙地，匠心独运地	17:30
autograph	/ˈɔːtəgræf/	v./n.	(名人) 签名；给...签名	49:08
axle	/ˈæksəl/	n.	轮轴，车轴	18:58
baton twirling	—	phr.	指挥棒花式旋转表演 (baton /bəˈtɑːn/ 指挥棒)	29:19
benediction	/ˌbenɪˈdɪkʃən/	n.	祝祷，祝福 (宗教仪式结尾的祝福语)	59:05
cased	/keɪst/	v.	(俚) 踩点，事先勘察 (case the joint 原指抢劫前踩点)	11:50
clutter	/ˈklʌtər/	n.	杂乱堆积的东西；(版面) 杂乱元素	28:41
colloquial	/kəˈləʊkwɪəl/	adj.	口语的，俗语的	11:50
concealing	/kənˈsiːlɪŋ/	v.	隐藏，藏匿 (conceal a weapon 藏武器)	15:38
concert master	—	phr.	乐团首席 (第一小提琴手，代表乐团与指挥握手)	61:32
condiments	/ˈkɑːndɪmənts/	n.	调味品，佐料；喻「配角、点缀」	26:12
constraints	/kənˈstreɪnts/	n.	约束条件，限制	47:23
control group	—	phr.	(实验设计中的) 对照组	27:32
convent	/ˈkɑːnvənt/	n.	女修道院	14:53
court martial	/ˌkɔːrt ˈmɑːrʃəl/	n.	军事法庭；军法审判	0:19
critiquing	/krɪˈtiːkɪŋ/	v.	点评，评析 (critique 比 criticize 中性，指专业性评审)	25:04
custodians	/kʌˈstəʊdiənz/	n.	保管人，守护者 (custodian of knowledge)	16:49
dead air	—	phr.	(广播/演讲中的) 冷场，无声时段	9:05
disinterested	/dɪsˈɪntərəstɪd/	adj.	此处指「不感兴趣的」；注意规范义为「公正无私的」，常被混用	12:29
drives me nuts	—	phr.	使我抓狂 (drive sb. nuts/crazy)	3:27

duct tape	/ˈdʌkt teɪp/	n.	强力布基胶带（美国家庭万用胶带）	19:43
electromagnetism	/ɪˌlektroʊˈmæɡnətɪzəm/	n.	电磁学	44:02
embers	/ˈembərz/	n.	余烬，将熄的炭火	17:30
empathetic	/ˌempəˈθetɪk/	adj.	共情的，感同身受的（empathetic mirroring 共情式镜像）	22:24
empowerment	/ɪmˈpaʊərmənt/	n.	赋能，赋权（empowerment promise 赋能承诺）	4:39
enumerating	/ɪˈnu:məreɪtɪŋ/	v.	枚举，逐一列举（enumerate）	8:22
epileptic	/ˌepɪˈleptɪk/	adj.	癫痫的（epileptic fits 癫痫发作）	30:14
eternity	/ɪˈtɜːrnəti/	n.	永恒；漫长得难熬的时间（seem like an eternity）	9:05
exponential	/ˌekspəˈnenʃəl/	adj.	指数的；指数级增长的（与 linear 线性相对）	6:33
fall flat	—	phr.	（笑话、表演）完全没效果，冷场	4:39
flak	/flæk/	n.	高射炮火；（口）猛烈批评、炮轰	43:27
flipping a coin	—	phr.	抛硬币；喻纯凭运气二选一	18:58
fogged out	—	phr.	（口）走神，脑子放空	5:56
fraternity	/frəˈtɜːrnəti/	n.	（美国大学）兄弟会	27:32
got some currency	—	phr.	流行开来，获得传播（currency 此处=通行度、流行度）	33:10
hallucinate	/həˈluːsɪneɪt/	v.	产生幻觉；此处指「脑补出并不存在的内容」	42:43
hapax legomenon	/ˈheɪpəks lɪˈɡɑːmənɑːn/	n.	（语文学）孤例词：语料中仅出现一次的词；喻只能用一次的手法	33:10
heuristic	/hjʊˈrɪstɪk/	n.	启发式方法，经验法则	1:48
imagery	/ˈɪmɪdʒəri/	n.	图像，意象（总称，不可数）	31:48
in rags	—	phr.	衣衫褴褛（rags 破布、破衣）	49:47
inherent	/ɪnˈhɪərənt/	adj.	固有的，与生俱来的（inherent talent 天赋）	1:01
keynote address	—	phr.	主旨演讲（大会最重要的演讲）	58:25
kinetic	/kɪˈnetɪk/	adj.	运动的（kinetic energy 动能）	20:44
legible	/ˈledʒəbəl/	adj.	（字迹）清晰可读的	28:41
let down	—	n.	令人失望的事，扫兴（a letdown）	53:42
licensed	/ˈlaɪsənst/	adj.	获得许可的；此处幽默用法「我就没资格说了」	26:12
lunatic fringe	—	phr.	极端边缘派；此处自嘲「我的疯狂个人观点」	22:24
manuscript	/ˈmænjuskɪpt/	n.	手稿，书稿	17:30

mirror neurons	—	phr.	镜像神经元：观察他人动作时被激活的脑细胞	22:24
mouth	/maʊð/	v.	不出声地用口型说（mouth a thank you）；注意动词读浊音/ð/	57:50
Neanderthals	/ni'ændər,tɔ:lz/	n.	尼安德特人：约4万年前灭绝的古人类	46:06
near miss	—	phr.	差点命中；此处为术语「差一点的反例」，机器学习经典概念	52:39
novice	/'nɑ:vɪs/	n.	新手，初学者（novice slope 新手滑道）	1:01
on a roll	—	phr.	连连顺利，渐入佳境	8:33
opportune	/,ɔ:pər'tu:n/	adj.	恰好的，时机合适的（the opportune moment）	1:01
partisan	/'pɑ:rtɪzən/	adj.	党派性的，偏袒一方的	59:05
pendulum	/'pendʒələm/	n.	摆，钟摆	20:44
playwrights	/'pleɪraɪts/	n.	剧作家	16:49
potbellied stove	—	phr.	大肚火炉（potbellied 大腹便便的）	17:30
preamble	/'pri:æmbəl/	n.	开场白，序言	4:11
provoked	/prə'vʊkt/	v.	激发（思考）；此处褒义「深受触动」，非「激怒」	62:20
pursing his lips	—	phr.	抿紧嘴唇（purse /pɜ:rs/ 作动词=抿）	60:09
rail guns	/'reɪl ɡʌnz/	n.	电磁轨道炮：用电磁力发射弹丸的武器	44:02
real estate	—	phr.	房地产；引申为（屏幕、版面的）宝贵空间	54:21
recursive	/rɪ'kɜ:rsɪv/	adj.	递归的（画面套画面即视觉递归）	30:14
refreshment	/rɪ'freʃmənt/	n.	茶点，点心饮料	14:53
repertoire	/'repɔ:twɑ:r/	n.	（个人掌握的）全部技能/曲目储备	2:43
resource allocation	—	phr.	资源分配（运筹学/计算机科学术语）	38:39
rule of engagement	—	phr.	交战规则；引申为活动的参与规矩	2:43
salient	/'seɪliənt/	adj.	突出的，显著的（讲者特别强调≠important，而是「凸显出来」）	52:13
salute	/sə'lu:t/	v./n.	致敬，致意（salute the audience 向听众致敬）	61:32
seam	/si:m/	n.	接缝；喻演讲中的段落衔接点	8:22
situate	/'sɪtʃueɪt/	v.	把...置于上下文/背景中（学术写作常用）	42:04
slogan	/'sləʊɡən/	n.	口号，标语；此处指凝练工作的「记忆抓手」	51:05
squanders	/'skwɑ:ndərz/	v.	挥霍，浪费（squander an opportunity）	54:21
sticks out	—	phr.	凸出，显眼（stick out）	52:13
stock	/stɔ:k/	adj.	现成的，老一套的（stock ways/phrases 固定套路）	60:42

stuck it out	—	phr.	硬撑到底，坚持忍完 (stick it out)	57:50
stump speech	—	phr.	政客巡回反复发表的竞选演说；引申为个人的「保留演讲」	55:38
subtly vicious	—	phr.	不动声色地凶狠 (vicious /'viʃəs/ 恶毒的)	43:27
tank armor	—	phr.	坦克装甲 (armor /'ɑ:rmər/)	44:02
tension mounts	—	phr.	张力/紧张感升高 (mount 作不及物动词=逐渐增加)	17:30
tools of the trade	—	phr.	干某一行的工具，吃饭的家伙	13:38
torque	/tɔ:rk/	n.	(物理) 力矩，扭矩	18:58
transparencies	/træns'pærənsɪz/	n.	投影片 (旧时投影仪用的透明胶片，今泛指幻灯片)	25:34
vault	/vɔ:lt/	n.	(体操) 跳马	1:01
virtue	/'vɜ:rtʃu:/	n.	优点，长处 (the virtues of the board)	15:38
weirdnesses	/'wɪrdnəsɪz/	n.	古怪之处，异常情况	11:50
wild applause	—	phr.	热烈的掌声 (applause /ə'plɔ:z/ 不可数)	57:50
wore on	—	phr.	(时间) 缓缓流逝 (as the evening wore on 随着夜色渐深)	49:08

第四部分 理解自测 · 8 题

1. 温斯顿认为决定人生成功的三个因素是什么？排序如何？
2. 为什么不建议用笑话开场，却可以用笑话收尾？
3. 提问后讲者可以等待多久？设计课堂提问要注意什么？
4. 温斯顿列举了黑板相对幻灯片的哪三大优势？
5. 那个「一半信息在幻灯片、一半口述」的学生实验说明了什么？
6. 求职演讲的前五分钟必须完成哪两件事？
7. 「温斯顿之星」的五个S分别是什么？各对应他博士论文的什么元素？
8. 为什么最后一张幻灯片应写 Contributions 而不是 Conclusions？为什么不该以「谢谢」收尾？

参考答案

1. 说话能力、写作能力、想法的质量——按此顺序排列（第0段）。表达能力排在想法质量之前，这正是他开设这门课的理由。
2. 开场时听众还在收拾东西、尚未适应讲者的语音特点，笑话会冷场（第7段）；到结尾时听众已完成适应，笑话有效，还能让人「觉得全程都很开心」（第100段）。
3. 标准等待时长是7秒（第16段）。问题不能太浅显（没人好意思答），也不能太难（无人能答）。
4. ①图形性：可随手画图；②速度：书写速度约等于听众吸收想法的速度；③指向目标：给手一个去处，避免插兜或背手（第24—30段）。他还用「共情式镜像/镜像神经元」假说解释黑板和道具为何有效（第41段）。
5. 被试记住的是幻灯片上的内容而非讲者的话；片上字多时听众根本不听讲，甚至抱怨「希望你别说那么多话」（第49—50段）。原因是人只有一个语言处理器，读与听不能并行。
6. 展示愿景（vision：一个别人在乎的问题+你的新路径）和证明你做成过事情（done something：列举实现愿景所需的步骤）。五分钟内没做到就已出局（第75—80段）。
7. Symbol（符号：拱门）、Slogan（口号：one-shot learning）、Surprise（惊喜：一个例子就能学到确定的东西）、Salient idea（突出想法：near miss差一点的反例）、Story（故事：怎么做的、怎么运作、为何重要）（第84—89段）。
8. 结论可以正确却无人在乎，听众在乎的是你做了什么，而这张片在提问离场时曝光最久（第97段）；说「谢谢」暗示听众是出于礼貌硬撑着听完，是弱结尾——可改用笑话、祈祷式结尾或向听众致敬（第101—108段）。