Note-taking can increase depth and this is you know an important enough uh lesson to be a number of its own

「记笔记可以增加深度」，这是很重要的一课，值得单独拿出来作为一点

I want to show you an example in sudoku and then we will go back to the path drawing puzzles

我想给你们看一个数独的例子，然后我们再回来看前面画线谜题的例子

a lot of players have had different ways of doing sudoku notation but they're sort of three that are most in in common use

很多玩家都有不同的方法来做数独的记号，但这是最常用的三种

uh and many sudoku solvers are using all three of these notations at once

还有许多数独解题者同时使用这三种记法

they're sort of candidate notation meaning this cell must contain one of these numbers

一种是候选记号（Candidate notation），意思是格子中一定是这些数字之一

you know seven two means this cell is either a seven or a two

写成“72”就意味着这个格子里要么是7要么是2

uh Snyder notation is sort of the reverse it's this number goes in one of these cells

而Snyder记号是一种相反的记号，就是这个数字要放到这些格子中的一个位置

like here's a box the two in this box goes in one of these cells

比如有这么个框，2就会放入这个框中的其中一格

and sometimes you sort of draw a two on the border between two boxes it's sometimes called a bivalue

有时你会在两个框交界的地方写个2，这有时被叫做“bivalue”

there's different ways that people do it and annotate it

人们有不同的方法来做这样的记号和注释

and then there are colors which means these two cells are the same number but I don't know which one they are yet

然后还有涂色记号，意味着两个格子数字相同，但还不确定是什么数字

um and this is an example from cracking the cryptic where here Mark Goodlife is filling out this grid

这里这个例子来自Cracking the Cryptic频道，Mark Goodlife正在填这个格子

and hasn't put in a single number yet or he's just put in his first number which is a seven over here uh in this thermometer

还没有填上一个数字，或者说他刚刚填了第一个数字，也就是这个温度计里的7

（译者注：这是个温度计数独，含温度计的格子从头部开始数字增大）

and uh it took him 30 minutes to get this far

他走到当前这个状态花了30分钟

but after he put in that seven he was then able to finish the whole puzzle in less than a minute

但当他填入7后，他就能在一分钟内完成整个谜题

because as soon as you get one number the whole thing collapses um

因为一旦你得到一个数字，整个谜题就会“崩塌”

but this type of puzzle would not be solvable without note taking

但这种类型的谜题如果不做笔记的话是无法解决的

like you can't solve it the way you would in normal sudoku where you're just putting in one number then the next then the next then the next then the next

你不能像普通的数独游戏那样，先填一个数字，然后再一个接一个填

you need to be able to take notes and sort of reduce the possibility space down from this large you know

你需要做笔记，把这么大的可能性空间给所需

so many things could be the answer down to only these things could be the answer

从很多又可以是答案，到只有这些才是答案

and then from there you realize ah this number has to go there

然后你就会意识到，这个数字一定要放在那里

um and so the eureka moments that are possible with note taking are much deeper than those without it

所以，含有记笔记过程的尤里卡时刻，要比那些没有的要深刻得多

let's go back to the witness this is an example from it's very early in the game

让我们回到《见证者》来，这是游戏前期的一个例子

in fact that you see this puzzle and there's multiple start locations multiple places where you could possibly end it

事实上，你看到这个谜题之后会发现，它有多个起点和终点

the goal is basically you have to draw a single line from one of those start locations to an end location that both passes through all these black hexagons

目标是你必须从其中一个起点位置画一条线到终点，同时穿过所有这些黑色的六边形

as well as um well it has to cut the light and dark cells uh so that they don't live in the same connected component

同时还得把含有黑块和白块的格子分隔开来，使得它们在不同的连通分量当中

and there's a long uh you know definition of what that really is but it sort of is like keeping all the light cells on the left and dark cells on the right or vice versa it's similar to that

基本上就是说让所有含黑块的格子在线一边，含有白块的格子在线的另一边

um and if you sort of take this puzzle into MS paint

而如果你把这个谜题截屏放到画图里面看

you could kind of draw in some little bits of deductive analysis of where the path must go

你就可以推理分析出一些小线段来代表路径必须经过的地方

and from here you can actually solve the puzzle pretty easily

而根据这个你可以很容易地解决这个谜题

uh but that's sort of not really the way this puzzle is designed right

但这个谜题设计出来并不是这样的方式，对吗？

it's not a puzzle where you can enter partial bits of progress while playing it

这不是那种你玩的时候一小截一小截线段往里添加的谜题

it's a puzzle game where you sort of start at the beginning and then draw a line out and it goes through everything and exits

这是你得从起点开始画一条线、穿过所有东西直到终点的谜题

this isn't necessarily a bad thing but it does limit the complexity of the types of puzzles that you could create in the witness

这不一定是件坏事，但它也的确限制了《见证者》中能创作的谜题的复杂性

like if you go back to this Alcazar puzzle on the right hand side here

就比如我们回到之前那个《Alcazar》的谜题，在右手边这个

you could never make this in the puzzle in the witness because it would just be too frustrating for players

你永远不可能在《见证者》中做这样一个谜题，因为这会让玩家非常懊恼

like they would literally need to print screen it and go into paint because you can't necessarily solve it start to end without making a mistake

你真的可能得截个屏然后放到画图里来看，你不可能从头到尾不犯错画根线就把它解出来了

um it's just sort of too much for the player's working memory to be able to do that in their head right

这对玩家的短期记忆能力来说实在是太多了，不可能就在脑海里完成这个任务

it's too big of a grid for you to be able to head solve

这个网格太大了，不可能在脑海里解出来的

and so, the witness fundamentally limits itself to smaller grids

因此，《见证者》从根本上说限制了自己只能使用较小一点的网格

because it wants to you know have grids that people can head solve

因为它希望它的网格能直接让人在脑海里解出来

rather than grids that people are going to need to take a million notes for

而不是需要人们去做无数的笔记

but that sort of limits how deep and interesting those puzzles can be

但这同时也限制那些谜题的深度和趣味性

now that said taking notes isn't necessarily a good fit for the theme of the witness

虽然这么说，但做笔记本身不一定适合《见证者》的主题

the witness is fundamentally a game about drawing a line from one place to the next

《见证者》从根本上说就是从一点到另一点画线的游戏

and not a game about note-taking when you're solving logic puzzles

而不是要求边解逻辑谜题边做笔记的游戏

um so I think the witnesses approach is correct for what the witness is trying to do

所以我认为《见证者》的方法对于《见证者》本身所要尝试做的事情来说，是正确的

um but I’m just saying it does create some limitation in what types of puzzles can be expressed

但我还是得说它对能够表达的谜题类型产生了一些限制

or you know can be expressed in a way that's convenient for the solver to access

或者说（它限制了）那种能够用让玩家可以方便解出来的方式表达的

without copy pasting the puzzle into MS paint or taking notes on paper or trying to keep way too many things in their head at once

而不需要把谜题粘贴到画图中，或者在纸上做笔记，或者在脑海中记太多东西的谜题

some puzzles are basically designed such that note taking is the solution to the puzzle

而有些谜题基本上就是把记笔记作为谜题的解决步骤

minesweeper is one of them

扫雷就是其中之一

if you try solving minesweeper without noting the mines it's really hard

如果你试着不标记地雷的位置来解开扫雷，那真的很困难

but also even just noting where the numbers are that is the form of progress of the puzzle

但即便只是去留意数字的位置，那也是解谜取得进展的一种形式

like note-taking is progress it feels like progress

记笔记就是一种进展，它感觉上就像取得了进展一样

uh for these types of zebra crossing or Einstein’s riddle type puzzles

对于这种《斑马难题》

where they give you a bunch of uh sort of logical hints and then you have to fill in the grid

里面给你一些逻辑线索，然后你得填上这个表格

like you know who had the milk who had the water you know who was what color etc

比如给你线索说，谁喜欢喝牛奶，谁喜欢喝水，谁的房子是什么颜色等等

those types of puzzles that the note taking is the progress it's what you're doing when you're solving the puzzle

对这种类型的谜题，记笔记就是取得进展，就是你在解谜时做的事情

and this is often true of many types of logic puzzles and paper logic puzzles

很多类型的逻辑谜题和纸质逻辑谜题都是如此

and it is a tradition that isn't used as much in video game puzzles that sort of rely more on statefulness and interaction

而这一传统在电子游戏谜题中并不常有，因为电子游戏谜题更依赖与状态和交互

because that you know this is a natural fit to pen and paper

因为你知道，（做笔记）很自然地使用与纸上游戏

it's less of a natural fit when you're playing a game and moving a character around in three-dimensional space

但当你在三维空间中移动一个角色时，它就不那么自然了

but they do a good job of making note-taking feel like progress

不过（纸上游戏）在让人通过记笔记感到取得进展这方面做得很好

and that's how they're able to access their depth in a way that isn't too annoying

这就是他们如何能够以一种不太令人讨厌的方式拓展它们游戏的深度