

LINK YOUR THINKING WITH ZETTELKASTEN AND OBSIDIAN

ZK Reduces Friction

Reduces planning and decision making required in advance

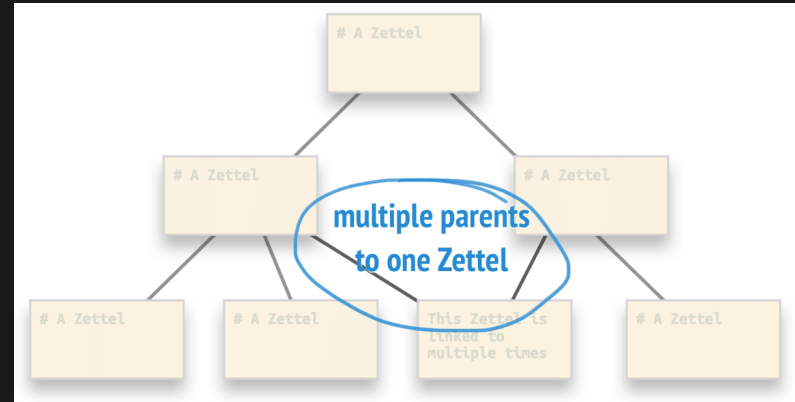
No more "brainstorming"

Notes can be taken simultaneously with research

No need to decide how to organize

Natural system for incorporation

No more blank-page syndrome



ZK Reduces Wasted Effort

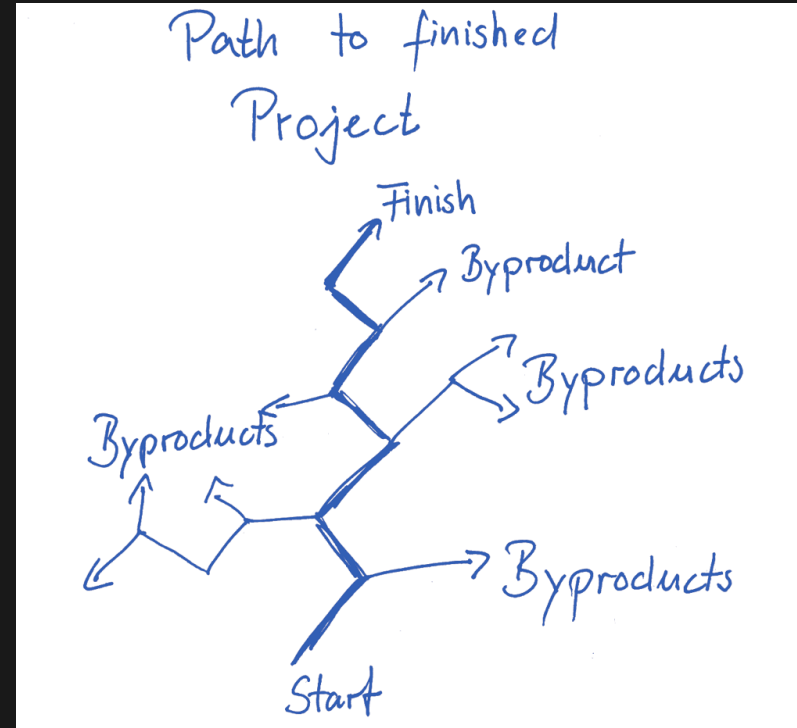
System improves as notes are added

Pre-developed network of ideas indicate content rich topics

Less likely to have to change direction

Connecting notes prevents ideas from disappearing into abyss

Sources ready for citation or further reference

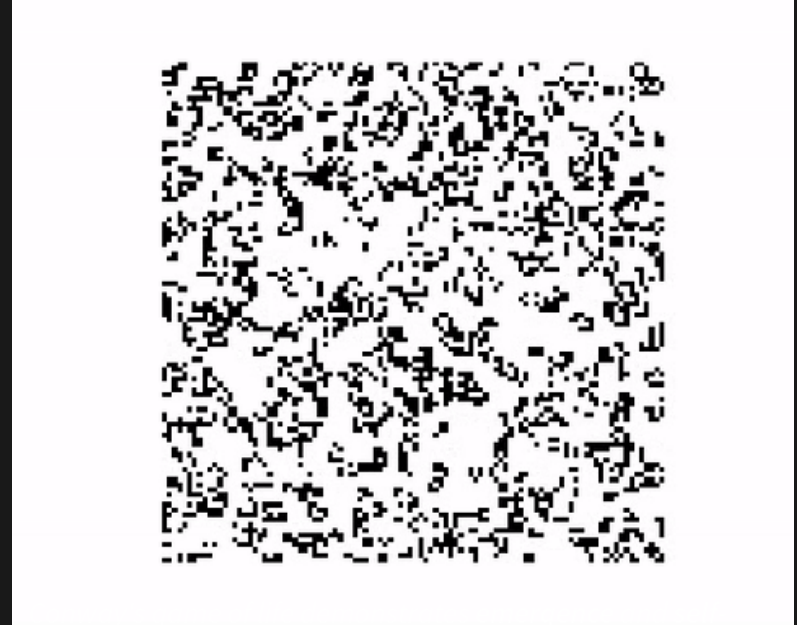


ZK Facilitates Natural Complexity through Composed Simplicity

Atomic notes are like shipping containers for ideas

Formalizing context of notes makes more robust foundation

Simple notes lead to emergent complexity



organization with cellular automaton

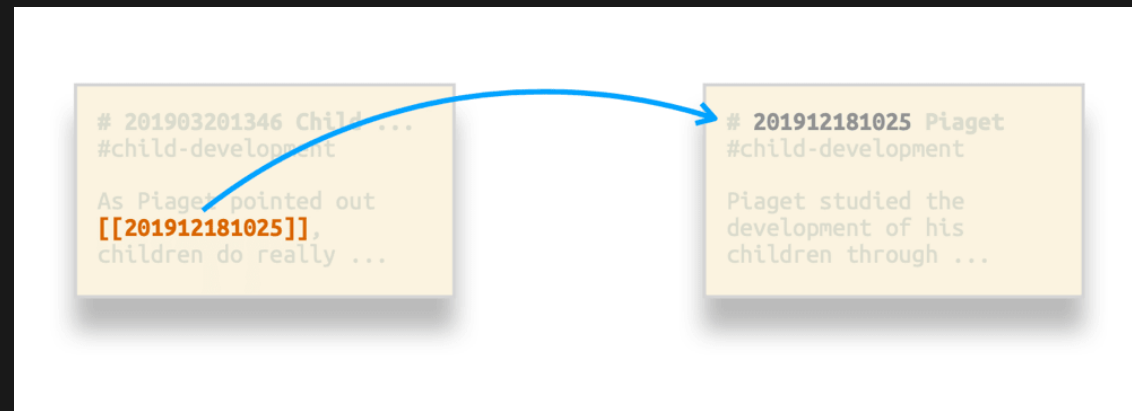
ZK Facilitates Clarity of Reasoning Through Idea Chains

Sequence of reasoning can be developed one note at a time

Emphasis on connection

Composing sequences linearly to develop a manuscript draft indicates gaps in reasoning

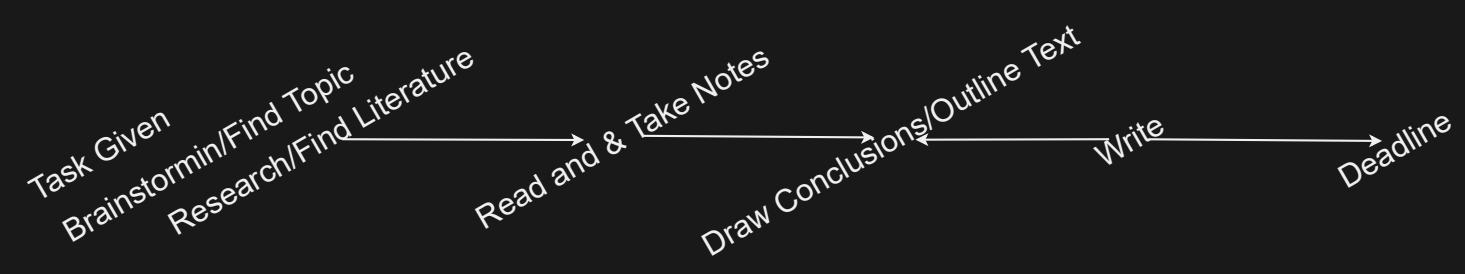
Elaborating ideas in specific context supports more well developed topics



ZK Naturally Aligns With Best Learning Practice

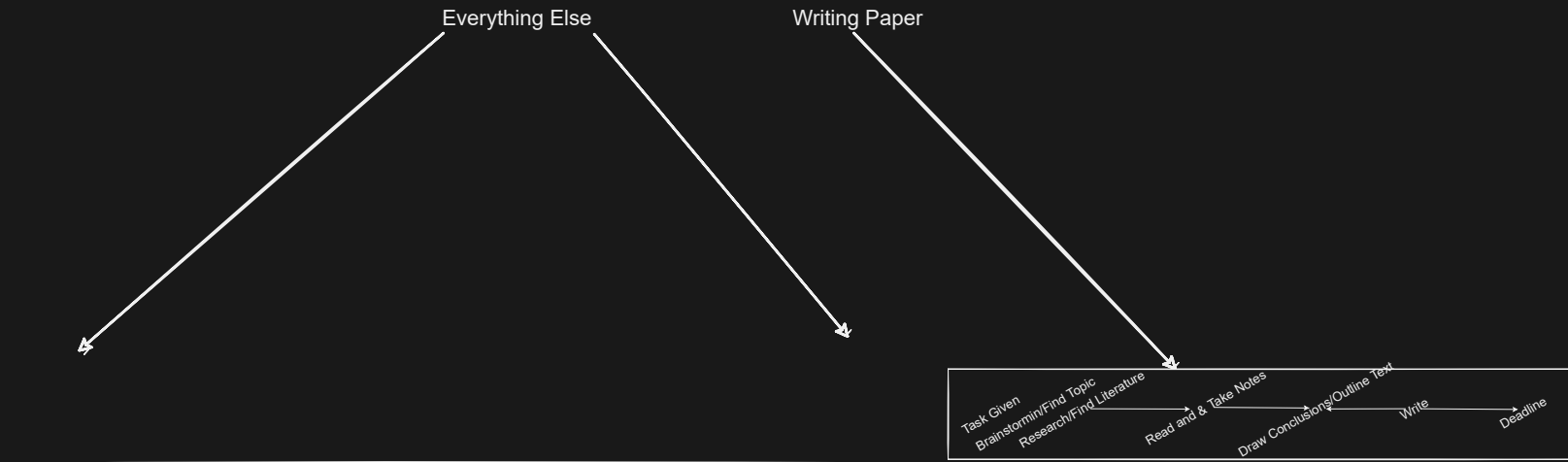
What Works	What Doesn't
Spacing	Cramming
Interleaving	One Thing at a Time
Connecting	Compartmentalization
Self-testing	Underlining/Highlighting/ Copying
Elaboration	Re-Reading

The Problem With Research



- Compartmentalizes each step
- Unmanageable complexity
- Frequent context switching
- Information lost in the abyss

Research is Non-Linear by Nature



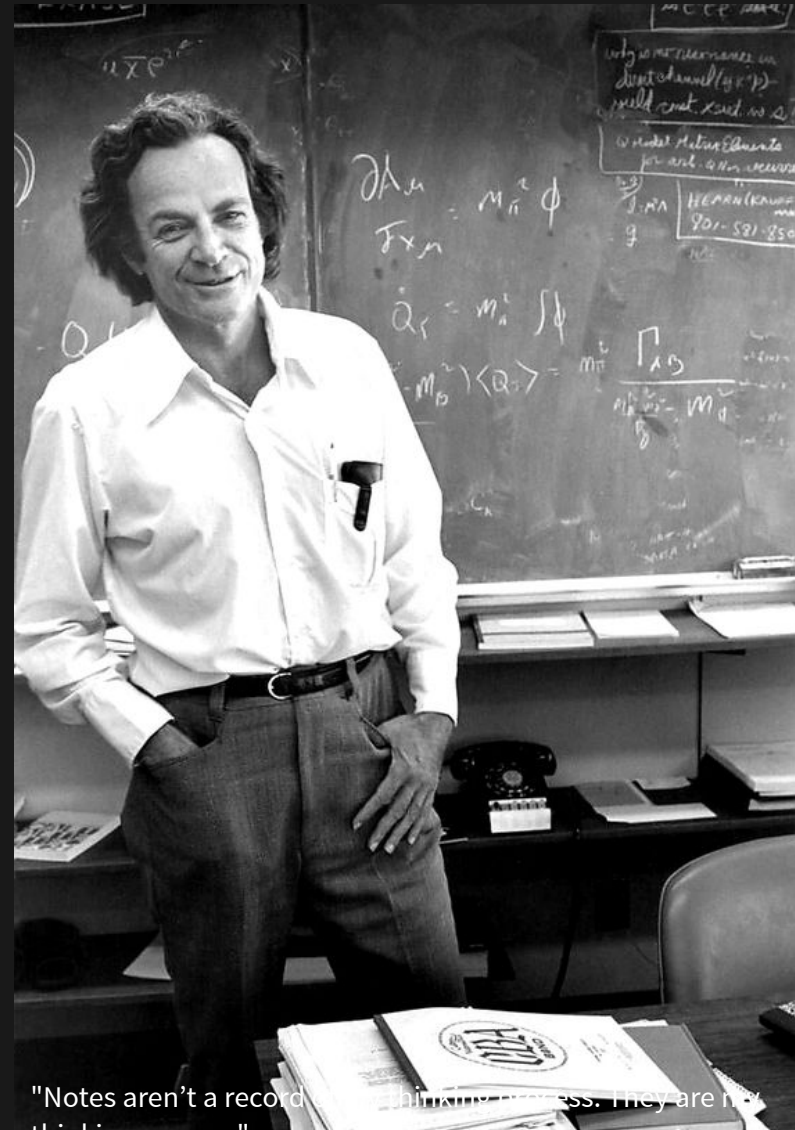
- Favors bottom-up approach
- Ideas should be developed and integrated as you go
- Benefits from flexibility
- Information lost in the abyss

Writing is Everything

Complex fields require externalizations of thought process

Well designed note-taking goes beyond record keeping becoming a scaffolding for thought.

Effective system creates a structured process for finding associations between ideas and chaining sequences of thought into new insight.



"Notes aren't a record of the thinking process. They are the thinking process"

-Richard Feynman

Niklas Luhmann's Zettelkasten

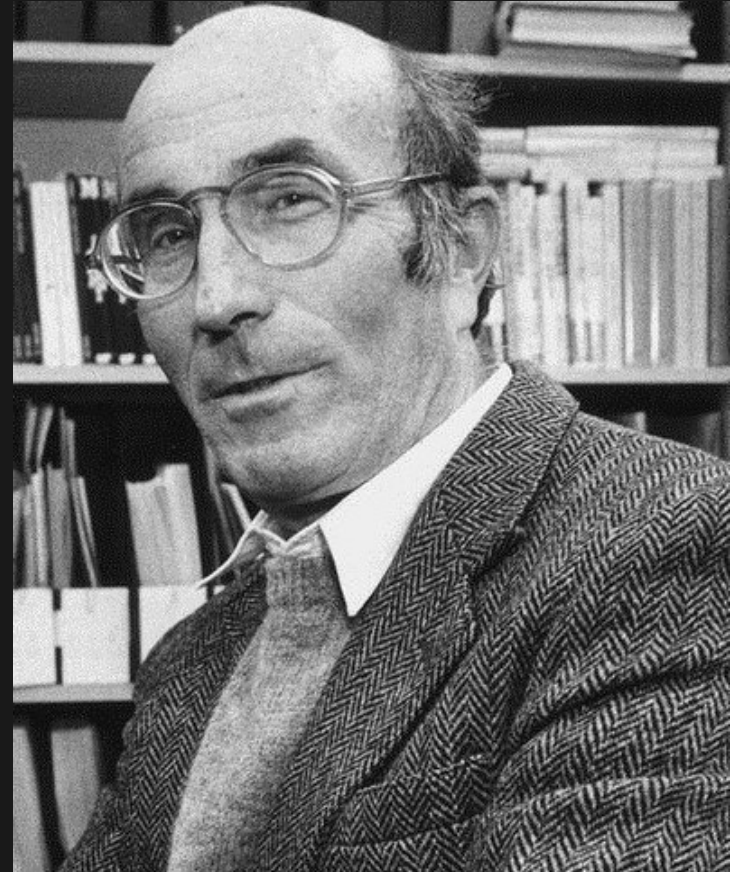
Luhmann used the Zettelkasten to build a prolific career as a Sociology professor

Over 30 years he managed to:

- Publish 50 books
- Wrote over 600 articles
- Several works published posthumously, leaving 150 manuscripts when he died

Luhmann built a note-taking system based on slips of paper to develop his "Theory of Society" over his career

Named the system "**Zettelkasten**" which translates to "slip-box"



"I only do what is easy. I only write when I immediately know how to do it. If I falter for a moment, I put the matter aside and do something else"

-Niklas Luhmann

Zettelkasten Provides a System for

thinking

A Zettelkasten is a personal tool for thinking and writing. It has hypertextual features to make a web of thought possible. The difference to other systems is that you create a web of thoughts instead of notes of arbitrary size and form, and emphasize connection, not a collection.



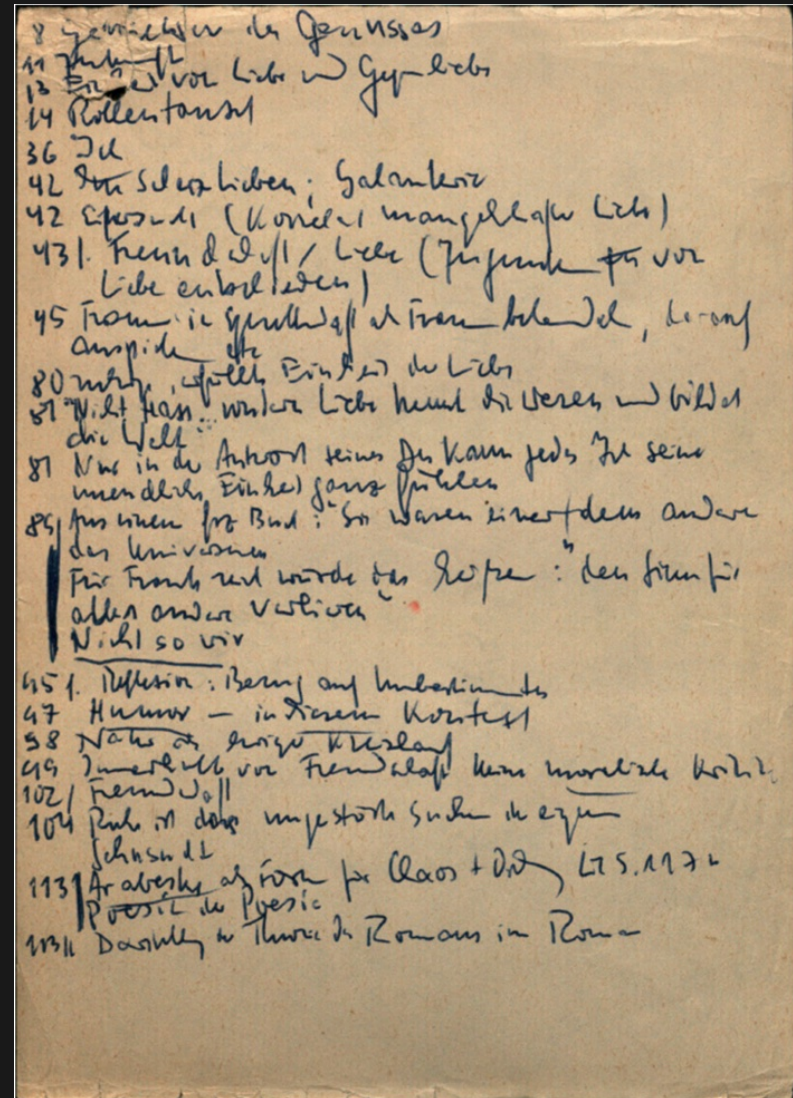
Workflow driven by fleeting and permanent notes

Literature Notes Will typically be Bulk of Research

Sources with large number of notes designated their own location

Ideas added with page number

Stored in slip-box for future reference



Digital Literature Note

Obsidian Literature Note

Book Template

Fleeting Notes => Zettels Indexed on Page

Added: 202205091009

Name: The Data Science Design Manual

Tags: #book

Topics: Data Science

Author: Steven Skiena

Publisher: Springer

Year: 2017

Edition: 1st

► What kind of book is this? ...

► What is this book about? ...

► What are the major topics and how are they organized, related, and/or independent? ...

Chapter 1: What is Data Science?

Topic:

[202206121102-practical data science emphasizes getting the basics right and actionable insights](#)

[202206120752-mathematical intuition is critical for data science](#)

[202206111633-think like a computer scientist act like a statistician understand like a domain expert](#)

[202206131033-data science is a field emerging from long established disciplines drive by changes in technology](#)

[202206131406-data science methods strongly influenced by CS methods need to be applied in a messy world like real science](#)

[202206141427-DS requires context and asking good questions of the dataset](#)

[202206141848-broad thinking is needed to find answers in unexpected data sets](#)

[202206141913-baseball has many characteristics of a good dataset for DS](#)

[202206141946-a statistical proxy is needed when specifically related measure or dataset is unobtainable](#)

[202206141944-using IMDB records to examine questions small and large scale questions related to movies](#) **todo**

• **10 - 11** Google Ngrams for language data

• **11** aggregates of time series can be used to analyze historical trends

• **11 - 14** NY Taxicab data

• **12** large datasets can be used to answer questions on various scales

[202206151429-data can be structured or unstructured](#)

[202206151435-data can be quantitative or qualitative](#)

TOD: Expand **Ordered Nominal**, **ratio scale**, **interval scale**

[202206151437-big data vs. small data](#)

[202206161636-the right data is better than more data](#)

[202206161754-supervised learning most common challenge in DS classification or regression](#)

• **17 - 18** Quant-Shop challenges

• **18** - Kaggle contest interviews

• **19** genius vs. wisdom in data science

► **1.7 War Stories** ...

► **1.8 References** ...

► **1.9 Exercises** ...

Chapter 2 : Mathematical Preliminaries

Topic:

[202206221553p-Data Science Math Prereqs#Math Forms the Foundation of Data Science](#)

2.1 Probability

[202206221553p-Data Science Math Prereqs#Probability](#)

2.1.1 Probability vs. Statistics

[202206241833-probability theory of future likelihood_stats applied to frequency of past events](#)

ELABORATE:[202206241850-probability invented by Pascal and Fermat assessing fair payout of unfinished game of chance](#)

2.1.2 Compound Events and Independence

[202206261106-compound events use set operations to combine events and find complex probability](#)

[202206270825-independent events prob easier to calculate but not informative for prediction and inference](#)

2.1.3 Conditional Probability

[202206271239-conditional probability needed to find likelihood of an event as a function of another event](#)

2.1.4 Probability Distributions

[202206271334](#)-a probability density function represents the probability of all random variable values in a sample space
[202206271758](#)-A histogram is a statistical corollary to a PDF and from the frequency of observed events

[202206271820](#)- CDF are alternative representation of random variable ~~prob~~ containing same info as PDF

33-34 Apple's disingenuous use of CDF over PDF because it looks better

2.2 Descriptive Statistics

[202206280953](#)-descriptive statistics reduce large data sets into summary statistics that provide more insight about the distribution than looking at it all at once

2.2.1 Centrality Measures

[202206281014](#)-central tendency like mean median and mode describe center of distribution around which data is spread

2.2.2 Variability Measures

[202206281308](#)-variability measures describe how far the data is spread around the center

2.2.3 Interpreting Variance

Zettel Notes

Each Zettel Represents one "atomic idea"

Titles should be descriptive

Under what context would I want to stumble upon this note again?

Card represents adaptation of idea in own language framed in way to relate to the rest of work

Ideas can be extended by adding more cards

Reference material should be noted on card

Non-direct links noted on both cards



Zettel Note Anatomy

Anatomy of a Zettel

Unique Identifier

Body / Content

Footer / References

Zettel Note Example 1

202206271239-conditional probability needed to find likelihood of an event as a function of another event

aliases: []

Status: #idea

Tags: conditional probability, bayes theorem, classification

The *conditional probability* defines the likelihood of the of one event as a function of another event.^{*1}

This becomes useful for predictive purposes when there is a dependence or a correlation between events, with certainty of the event in question increasing as the dependence with the variable it is being conditioned on increases.^{*2}

For two events A and B the conditional probability of A give B is^{*1}

$$P(A | B) = \frac{P(A \cap B)}{P(B)}$$

This is particularly useful in *classification* where the task can often be reduced to finding the conditional *probability* of an observation belonging to class where we know a *correlated* variable is true or false.^{*4}

The dependency however makes the calculations more difficult, while independent probabilities are trivially straightforward.^{*3}

Bayes theorem is commonly used to compute conditional probabilities. It reverse the direction of the dependence, which often makes the task easier since it may be easier to observe events in the opposite directions^{*5}

^{*1} The Data Science Design Manual 1st pg 31

^{*2} 202206271217-correlations are critical to predictive modeling and inference

^{*3} 202206270825- independent events prob easier to calculate but not informative for prediction and inference

^{*4}202206271315-classification can often be reduced to finding conditional probability

^{*5} 202206271327-bayes theorem simplifies conditional probability by reversing the dependence



▼ Linked mentions

2

▼ 202206270825- independent events prob easier to calculate but not informative for prediction and inference

1

[*4]: [[202206271239-conditional probability needed to find likelihood of an event as a function of another event]]

▼ Skiena-The Data Science Design Manual 1st

1

[[202206271239-conditional probability needed to find likelihood of an event as a function of another event]]

► Unlinked mentions

Zettel Note Example 2

Unique Identifier

201910091801 Struggling when you acquire a skill could be important to become great in your field
#expertise #innovation

Tags

Being good at something is not enough to be an innovator:

- Savants excel at their skill without innovating. [[201910091746]] So merely being good at something is not enough to innovate and be creative.
- Self-taught jazz musicians sound more interesting than their peers from jazz music school. [[201910091737]]. "More interesting" can entail being more creative, too; Epstein writes about a lot of great musicians being self-taught. [chapter 3][#epstein2019range]

Links

[#epstein2019range]: David Epstein (2019): *_Range. why generalists triumph in a specialized world_*, New York: Riverhead Books.

Citation

Body

References

Zettel Note Example 3

202010271840 Investing for normal people aims towards positiv cashflow

#Cashflow #Liquidity

Investing starts with liquidity: [[202001121202]] You have to have the liquidity to make investment decisions unless you are using other people's money (e.g. using leverage).

But if you have to start with liquidity what is the end of investing? If Cash is the Alpha, Cashflow is the Omega. If you buy real estate, there is no question that positive cashflow is key to a good investment.

The same is true for stocks. Why should we expose ourselves to the uncertainty of the market if we want to support our normal lifestyles.

As an ordinary person, you don't speculate with real estate, but expect it to generate a steady cashflow: You rent it out. There is no reason we shouldn't apply this principle to stocks. Dividend should be necessary.

However, this line of thought should be viewed in the light of the knockout method of investing: [[202001171046]]

Link
contexts

The Zettelkasten Sequence

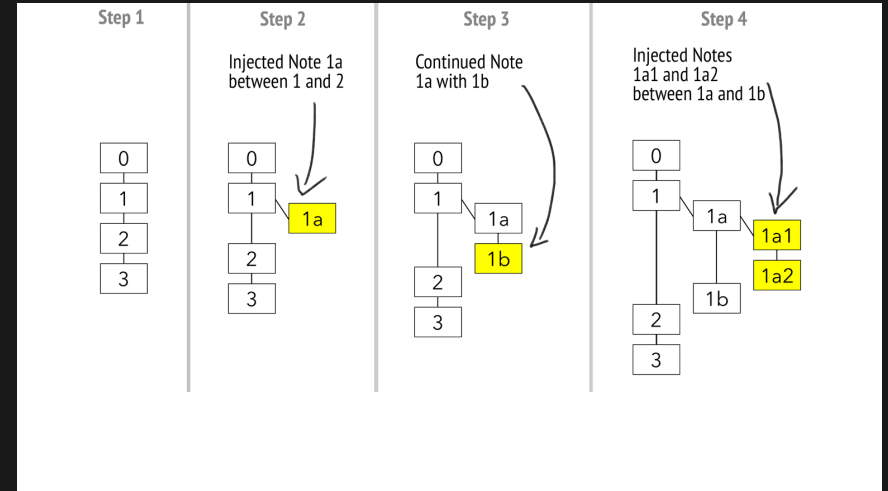
With each Zettel as an atomic idea it is in a state to be connected to other notes

Each note added sequentially

Any idea can be expanded upon by adding another slip with same number and adding and alphanumeric sequence

Chains of directly related cards sequenced behind each other

Links to non-direct cards noted on the both new and old cards



Topics

Clusters of cards form from linkages

These clusters represent topics growing organically

Structure notes provides structure to index into sequence of notes for a topic

Topics indicated by keywords

Rh - Ri	
	Ritualismus in Organisationen 532/5c7a; 44/12d3
	Richterrecht 3414/11b3
	Rhetorik 21/3alp5,l 21/3alpe9pa 7/25q17d7 7/9d
	Richtpunkte 532/4b 6, 6e
	Risikobewußtsein und Bereitschaft 333/10e19d
	Ritus 21/3alp4/A19; 34/4d
	Risiko (Medien) 32/3q13n; 7/25a30
	rites de passage 3411/18f14b
	Risiko, evolutionär 54/14s
	Rigidität 7/52
	Ritual (religiös) 3411/18m6b
	Risiko, Entscheidung als 3/10d
	Risiko, Riskanz allg. 21/3d18c60o9
	Richtigkeit 32/3a9; 7/25f1h18
	Rhythmos 3411/18q3c 52/25k

Digital Structure Note

aliases: []

Status: [#map-of-content](#)

Tags: [probability](#)

Probability

Probability theory formal framework for reasoning about likelihood of event. The framework is built on a vocabulary for reasoning about uncertainty/likelihood.^{"1"}

The vocabulary connects probability to statistics and allows application of the theoretical study of probability to working with uncertainty in real world data.

Data usually comes from measuring properties of observed events^{"2"}
Combined probability and statistics provides way of reasoning about the likelihood of events and the tools to analyze real world data composing these events.^{"3"}

Experiment

A procedure that yields one outcome from a set of possible outcomes.
Framing rolling two 6-sided dice as an experiment each die will have an outcome from the set of from the set $\{1, 2, 3, 4, 5, 6\}$ with each die's income independent from the other.^[1]
- note the results aren't necessarily independent for every *experiment*

1. [The Data Science Design Manual 1st](#) pg 27 ↩

Sample Space

The Sample Space S rdefines the set of all outcomes that can result from an individual experiment. For an experiment with two siz sided die the set of outcome has 36 distinct components^[1]

$$S = \{(1, 1), (1, 2), (1, 3), (1, 4), (1, 5), (1, 6), \\ (2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (2, 6), \\ (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6), \\ (4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6), \\ (5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (5, 6), \\ (6, 1), (6, 2), (6, 3), (6, 4), (6, 5), (6, 6)\}$$

1. [The Data Science Design Manual 1st](#) pg 27 ↩

Event

An event E is a susbet of outcomes from an experiment that all have the same result from the point of view of what the experiment is testing. ^[1]

More Info

How to Take Smart Notes

<https://www.amazon.com/How-Take-Smart-Notes-Nonfiction/dp/1542866502>

Intro to Zettelkasten

<https://zettelkasten.de/introduction/>

r/Zettelkasten

<https://www.reddit.com/r/Zettelkasten/>

Obsidian

<https://obsidian.md/>

r/ObsidianMD

<https://www.reddit.com/r/ObsidianMD/>

How to Read a Book

[https://www.amazon.com/How-Read-Book-Classic-Intelligent/dp/0671212095/ref=sr_1_1?](https://www.amazon.com/How-Read-Book-Classic-Intelligent/dp/0671212095/ref=sr_1_1?keywords=how+to+read+a+book&qid=1657283729&s=books&sprefix=how+to+read%2Cstripbooks%2C74&sr=1-1)

[keywords=how+to+read+a+book&qid=1657283729&s=books&sprefix=how+to+read%2Cstripbooks%2C74&sr=1-1](https://www.amazon.com/How-Read-Book-Classic-Intelligent/dp/0671212095/ref=sr_1_1?keywords=how+to+read+a+book&qid=1657283729&s=books&sprefix=how+to+read%2Cstripbooks%2C74&sr=1-1)

Make It stick

[https://www.amazon.com/Make-Stick-Science-Successful-Learning/dp/0674729013/ref=asc_df_0674729013/?tag=hyprod-](https://www.amazon.com/Make-Stick-Science-Successful-Learning/dp/0674729013/ref=asc_df_0674729013/?tag=hyprod-20&linkCode=df0&hvadid=312669563714&hvpos=&hvnetw=g&hvrnd=3368619445763397983&hvpon=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9003562&hvtargid=pla-434742935023&psc=1)

[20&linkCode=df0&hvadid=312669563714&hvpos=&hvnetw=g&hvrnd=3368619445763397983&hvpon=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9003562&hvtargid=pla-434742935023&psc=1](https://www.amazon.com/Make-Stick-Science-Successful-Learning/dp/0674729013/ref=asc_df_0674729013/?tag=hyprod-20&linkCode=df0&hvadid=312669563714&hvpos=&hvnetw=g&hvrnd=3368619445763397983&hvpon=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9003562&hvtargid=pla-434742935023&psc=1)

A Mind For Numbers

[https://www.amazon.com/Mind-Numbers-Science-Flunked-Algebra/dp/039916524X/ref=sr_1_1?](https://www.amazon.com/Mind-Numbers-Science-Flunked-Algebra/dp/039916524X/ref=sr_1_1?keywords=a+mind+for+numbers&qid=1657283849&s=books&sprefix=A+mind+f%2Cstripbooks%2C72&sr=1-1)

[keywords=a+mind+for+numbers&qid=1657283849&s=books&sprefix=A+mind+f%2Cstripbooks%2C72&sr=1-1](https://www.amazon.com/Mind-Numbers-Science-Flunked-Algebra/dp/039916524X/ref=sr_1_1?keywords=a+mind+for+numbers&qid=1657283849&s=books&sprefix=A+mind+f%2Cstripbooks%2C72&sr=1-1)