gm 👋 *(← when you see this in Web3, it simply means "Good Morning" and can be said any time of day. It's a common friendly greeting in Twitter and Discord servers, which is where most of the Web3 action is happening these days. I'll soon create an Appendix here for common Web3 memes, since memes are actually quite important for understanding Web3/crypto culture)*

My name is Will ( ), I invest in entrepreneurs ( ), write/podcast about Web3 ( ), and I am eagerly looking forward to the day when links to describe anyone's identity and work point to Web3 things rather than Web2 things. :)

This isn't too far off, actually. We - the Web3 community - are making progress. I'm "wclittle.eth" as my Ethereum Name Service (ENS) domain, I'm "wclittle.sol" as my Solana domain, I grabbed wclittle.xyz (which will be a Web3 thing someday), and I'll likely be "wclittle" as other name services spin up within other blockchain ecosystems. The overall Web3 space is very, very new.

(Pro tip: when you see someone's ".eth" domain you can learn more about them by appending ".xyz" to it and visiting that URL in a web browser. For example, my eth.xyz site is https://wclittle.eth.xyz)

(As another quick aside, I'm impressed with Mirror.xyz. I could port all my articles there, store them on Arweave, sell them as NFTs, and participate in Mirror's DAO. But, well, there's only so much time in a day :) Plus, Satchel is a Labs project I'm working on with my group (Prota Ventures), and we'll be web3-ifying it very soon.)

Anyway, this is all a rambling preamble to the point of this document: i.e. a place where I'm going to write about Web3 in real-time as I'm learning about "all the things". I've been in this space for 6+ years, wrote my first article on Web3 in August 2017, and I'm still in many ways just scratching the surface. All my Web3 articles and podcasts cover a TON of material, but I need a place where I could point my friends, family, colleagues, and newsletter subscribers to.

This is that place; and I welcome you to share the link with anyone you'd like.

Eventually this will be hosted on a proper ".xyz" domain somewhere (i.e. a common Web3 TLD), but for now, a simple gDoc will do. I've enabled suggestions/comments for anyone to ask questions or help fix typos :). Feel free to do so. 🙏

The irony of posting this via a Web2 company's product isn't lost on me. Still, if anything this is a humble reminder that the Web2->Web3 transition will take some time, and Web3 still has a long way to go to create writing/collaboration tools as robust as gDocs. (Consider this a call-to-action, Web3 entrepreneurs!)

So - with that - let's dive right in: 👇

Introduction

This book is being written in real-time and I welcome comments/suggestions. I'll leave these features on as long as I can (please use 'em cordially/respectfully).

Writing a "book" on Web3 is a bit of a fool's errand. The space is evolving so rapidly that as soon as we were to take a snapshot of what's written here, it would be out of date. In fact, I can guarantee that things I've written below are not as optimized as they could be, but I'll do my best to keep things updated. Please feel free to join me by suggesting/commenting directly in the text.

Now, part of the "fun" of writing a book on Web3 is deciding how on earth to architect it. The space is so broad and multidisciplinary that even the outline decisions will be highly controversial. Still, I've decided to start with 8 chapters based on my "bottoms-up" engineering-brain that likes to develop ontologies in which to hang new pieces of information.

For me, that ontology for Web3 is the following:

1. **Distributed Ledger Technology** (DLTs, notably *Blockchains*, but there are others)

2. **Tokens** (fungible, non-fungible, and various types)
3. **Self-Sovereign Identity & Data Ownership** (no more easily hackable silos everywhere)
4. **DeFi** (Decentralized Finance)
5. **DAOs** (Decentralized Autonomous Organizations)
6. **The Semantic Web** (structured data for machines to do useful things for us)
7. **Metaverses** (most notably the decentralized ones)
8. **The Self-Hosted movement** (DIY hardware, software, and networks)

These are, therefore, the first eight chapters of this book after a quick attempt to define Web3.

The ninth chapter (and potentially beyond), however, is/are going to be devoted to a "top-down" approach to solving problems with Web3. That chapter (or set chapters) will be to help future Web3 entrepreneurs and product designers think of new ways to apply all the various aspects introduced in the first eight chapters.

Finally, I'll likely spin up appendices to list out various groupings of things (dApps, blockchain networks, ecosystems, terminology, memes, etc…) as I go along.

What is Web3?

If you ask 100 people in Web3 to define Web3, you will get 100 different answers. This is part of the beauty (and frustration/confusion) of the space and community right now. 😊

On a whole, Web 3 is about building a better Internet.

Web1 was all about setting up decentralized communication protocols (TCP/IP, HTTP, SMTP, POP3, etc..) that eventually allowed the creation of web browsers that interpreted HTML, CSS - and eventually JavaScript - into experiences we are familiar with today. In the first season of the Web, people generally just put information online for others to read.

Web2 started when server-side, database-driven, programmatic creation of HTML allowed "platforms" to be developed. These platforms housed identity and personal info (name/email/phone/photos/etc…) in their databases and created the ability to "sign-in" to a web application, add content, and thus enabling the "social" web to be born. Fast forward a couple decades, and now a small number of centralized organizations are the wealthiest companies in the world. They control most of our data. This has led to all kinds of security and privacy concerns, not to mention mental health issues stemming from our algorithmic overlords.

Web3 in many ways is getting us back to the principles of open protocols and decentralization. Importantly, the advent of Distributed Ledger Technology - specifically blockchains - now enables the creation of digital tokens to represent money (or other forms of assets) AND the storage of data (text, photos, videos, etc…).The implications of these are tremendous, most notably by finally allowing humans, organizations, and machines to have self-sovereign control of their identity and data.

Thus, the future of the Web is decentralized protocols, not centralized platforms. Protocols will enable us to choose how to smartly interact with organizations, brands, and people online.

Also see:

- Web3: in a nutshell by Eshita.
- Defining the web3 stack by Nader Dabit
- Why Web3 matters for human flourishing by Will Little (selfish plug) :)

Distributed Ledger Technology

Blockchains are the most notable DLTs, but there are others such as hashgraphs, Directed Acyclic Graphs (DAGs), Distributed Hash Tables (DHTs), and Tempo Distributed Ledgers.

While we won't dive into the details of these DLTs, it's important as a Web 3 PM to understand that they exist. Blockchains are, of course, the most common DLT that people work with today.

To start, we'd highly recommend you read the Bitcoin whitepaper to enter the history of DLTs at a critical time (i.e. October 31, 2008, when the whitepaper was published - the network was launched a couple months later on January 3, 2009). A number of key terms/concepts (such as the double-spending problem, Proof-of-Work, digital coins, etc…) are introduced here.

Next, read the Etheruem whitepaper, which surfaces concepts such as Smart Contracts and DAOs. This whitepaper will also fill out your understanding of state transitions in blockchains more completely, and thus help you wrap your head around why Smart Contracts are such a big deal.

Blockchains

I think it's only fair to talk about the most notable blockchains in order of market cap (i.e. value currently locked in their native token).

- **Bitcoin** - the OG blockchain that got this party started. The most common token on Bitcoin is, of course, bitcoin (BTC).
- Ethereum - the most notable blockchain ("Layer 1", or L1) for smart contracts, i.e. where the "state" of the L1 at any given time can be controlled by code. ETH pays for GAS to earn your transaction a spot on a block.
    - Sidechains and Rollups (<-- recommended read if you aren't familiar with the terms) are common in the Ethereum ecosystem, mainly because blocks are relatively slow and expensive.

        - Top Sidechains
            - Polygon (MATIC)
            - Gnosis Chain (XDAI)
            - Skale (SKL)
        - Top Rollups
            - Optimistic
                - Arbitrum
                - Optimism
            - ZK
                - ZKSync
                - Hermez
                - Loopring
- Binance Chain
    - Since Binance is the largest centralized exchange in the world, they launched their own blockchain to house their BNB token and create their own decentralized exchange. It's important to note that Binance Chain used forks of Tendermint (now called Ignite) and the Cosmos SDK to launch.
- Ripple
    - Ripple paved the way for decentralized global payments in partnership with established financial institutions. While most jurisdictions seem to be playing nice with Ripple around the world, in the USA the SEC has tied up Ripple in litigation (which may be coming to an end soon, with a likely Ripple victory). Stay tuned for more from Ripple with regard to RippleX for developers.
- Terra
    - Terra is all about DeFi and stablecoins. Their UST stablecoin, for example, is one of the most popular (and esteemed) out there.
    - "Terra is a public blockchain protocol deploying a suite of algorithmic decentralized stablecoins which underpin a thriving ecosystem that brings DeFi to the masses."
    - Recommended Reading:
        - https://learn.figment.io/protocols/terra
- Cardano
    - While there is a ton of money locked up in the ADA coin, I don't hear a ton about the products being built on it, nor have I ever met a single developer building on it. Perhaps I need to get out more, or perhaps Cardano is fueled mainly by the marketing efforts of its leader, Charles Hoskinson. Buyer & developer beware. (If you are reading this and are building on Cardano, please let me know, I would be happy to be corrected here. I'd like everyone in Web3 to help build a better Internet).
- Solana
    - Solana (SOL) has a massive developer ecosystem and a thriving set of products being built. Developers I know that are building on it tend to appreciate how easy it is.
    - Recommended Reading
        - What is Solana?
        - https://learn.figment.io/protocols/solana

- Avalanche
    - Avalanche (AVAX) is going for tons of decentralization, extremely fast finality (i.e. knowing your transaction is “done”), and they built their consensus protocol from the ground up. Overall, this is a profoundly impressive ecosystem to watch.
    - Recommended reading:
        - https://learn.figment.io/protocols/avalanche
- Polkadot
    - Similar to Cosmos, Polkadot (DOT) envisions a world where developers can create their own blockchains. With Polkadot, each parachain is secured by the validators for the whole ecosystem
    - Recommended reading:
        - https://learn.figment.io/protocols/polkadot
- Cosmos Hub
    - I’m extremely bullish about Cosmos (i.e. not afraid to say it here to show my bias). :) It’s a bit misleading that Cosmos is this low in the market cap ranking, since it’s underlying software (the Cosmos SDK) powers Binance Chain, Terra, and many others. Still, the main Cosmos Hub (ATOM) supports a wide range of “Zones” (i.e. sidechains) that share security with the main Hub.
    - Recommended reading:
        - https://learn.figment.io/protocols/cosmos
- Near
    - https://learn.figment.io/protocols/near
- (more coming soon)

For more popular-level descriptions of blockchains, YouTube here of course has a wealth of great information and rabbit trails to follow.

Other recommended reading:

- Blockchains are cities (← best analogy I’ve seen out there describing blockchain ecosystems.)
    - “L2 and rollups are the blockchain equivalent of skyscrapers.“
    - “...every new L1 requires another block explorer, another fiat onramp, a native AMM, an NFT marketplace. It’s redundant, but every L1 needs those basics to get off the ground.”

Tokens

Part of the reason why 2017 was such a bubbly market for Web 3 was because everyone was doing Initial Coin Offerings (ICOs). Despite the name, that was the year “tokens” became a more common term in Web 3 along with “coins” *(i.e. a coin is a type of token used as money, but tokens can represent tons of different things - which we’ll talk about below).*

In fact, when discussing what “real world” applications that Etherem could enable, 2017 proved that a global world computer was mostly used to generate and sell tokens. 😊

Most of those tokens were of course “fungible” (i.e. a key term in Web 3, meaning two things - like physical US dollar bills - can be swapped and functionally be the same thing). The technical term for most fungible tokens created on Ethereum is ERC-20 Tokens, which - as the page describes - ”*..can represent virtually anything in Ethereum:*

- *reputation points in an online platform*
- *skills of a character in a game*
- *lottery tickets*
- *financial assets like a share in a company*
- *a fiat currency like USD*
- *an ounce of gold*
- *and more…”*

Some of the key types of ERC-20 tokens out there (and equivalent on other chains besides Ethereum) include platform tokens, security tokens, transactional tokens, utility tokens, and governance tokens (you can follow rabbit trails here to learn more, most people have slightly different ways of describing all the different types of tokens out there).

Importantly, ERC-721 Tokens - and the equivalent on other chains - are the now-famous Non-Fungible Tokens (**NFTs**). One of the best places to learn more and follow ***tons*** of rabbit trails on NFTs is A16Z’s NFT Cannon page. Because A16Z’s resource on NFT is so exhaustive and fantastic, we’ll refer you there and keep this section short for now (i.e. we don’t need to recreate the wheel).

Self-Sovereign Identity & Data Ownership

In today’s Web 2.0 era and IRL (in real life), we have identities everywhere (i.e. social media sites, governments, banks, clubs, gyms, credit bureaus, health care providers, etc...). Our personally identifiable information (PII) and other data is splattered everywhere, gets hacked often, gets shared with marketers/spammers/etc…, is used to get us addicted to Web 2.0 screen experiences, gets stolen easily for people to impersonate us (identity theft), etc…

To be fair, the creators of Web 1.0 couldn’t really see Web 2.0 coming, so we can’t blame them. In many ways, Web 3.0 is an attempt to go back to our open-protocol roots, add the important aspects of “ownership” and “tokens” to the game, and Self-Sovereign Identity (SSI) is - of course - at the core of this new digital world.

The vision here - outlined in part by this proposed W3C standard for decentralized identifiers (DIDs) - is that everyone (and every *thing* that needs identity) will own their own encrypted data (identity and otherwise), have “verified credentials” against their data, and then permission-in (or

permission-out) brands, governments, health-care institutions, etc… to access appropriate parts of that data.

When this vision comes to fruition, we will no longer need password managers, accounts on zillions of sites and in physical organizations, or extremely hackable “recovery” methods via email or text messages. Instead, we will have our preferred SSI app on our phone, all our data encrypted there (and synced to on-chain “vaults” that we can let computers access while we sleep), and more secure “multi-signature” wallets and social-based recovery methods if we lose our phone or it gets stolen.

For the past ten years, there have been ***many*** groups that have attempted to tackle the SSI issue to bring this overall vision to reality. Currently, notable groups include:

- https://global.id/
- https://www.evernym.com/
- https://tykn.tech/
- https://sovrin.org/
- https://idunion.org/

For further reading in addition to the links above, see:

- Self-Sovereign Identity in a Globalized World: Credentials-Based Identity Systems as a Driver for Economic Inclusion (link)

DeFi

Decentralized Finance (DeFi) is a suite of “on-chain” networks, products, and services that are disrupting the traditional global banking system. This includes helping more people get access to financial instruments to participate more fully in the global economy.

In addition to the concepts already mentioned above, stablecoins are a key “medium of exchange”, “unit of account”, and “store of value” (i.e. three key aspects needed for any broadly-used currency). The problem with coins such as BTC, ETH, etc.. is that their value fluctuates rapidly, which doesn’t make these coins ideal as a medium of exchange.

The list of DeFi projects and tools out there is far too vast to list here, but some notable examples include:

- Uniswap - automated market-making, decentralized crypto trading protocol.
- Aave - open source and non-custodial liquidity protocol for earning interest on deposits and borrowing assets.
- Oasis - Borrow a stablecoin (Dai) against your collateral
- And many, many more listed here by market cap.

DAOs

Decentralized Autonomous Organizations (DAOs) are a new form of human organization similar to old-school “co-ops”, but with the notable difference of on-chain (and therefore radically transparent) treasury management, governance, and membership.

While DAOs have had a rocky start the past decade in Web 3, the last couple of years - and 2021 in particular - have ushered in a new era of more sophisticated, secure, and widely-adopted DAOs across a wide variety of markets/purposes (from gaming to art to protocol development and everything in between).

The list of notable DAOs is too large to list here. Instead, we’ll link to a few notable lists of DAOs to explore:

- DAO Cannon (link)
- A Deep Dive Into How the Top 10 DAOs Work (link)
- DAO Overview - A List of Ethereum’s Top DAOs and DAO Structures (link)
- Decentralized Autonomous Organizations (DAO) - DeFi Prime (link)

Many DAOs organize themselves on Discord and a growing set of DAO tools such as DAOHaus, Commonwealth, and Coordinape.

The Semantic Web

While many in the Web 3 community may not realize this, The Semantic Web community has been referring to themselves as “Web 3.0” for a long time. Importantly, the term is well-deserved, since their vision is to ensure “a better Internet”, one in which data is structured in a way that machines can ingest and do helpful things for us as a global community.

In short, the Semantic Web’s vision is to help us establish standards for structured data so we can leverage one of the most important aspects of Web 3.0: composability (<-- highly recommended read from A16Z). If we can interoperate between chains and projects, then we can collectively build a better Internet together.

As an example of how Semantic Web principles work themselves into Web 3 projects can be found in Square’s recent tbDEX protocol. In their whitepaper, they smartly leverage semantic principles (do a quick search for “semantic” in the PDF) to ensure that machines can properly read/write data in/out of different parts of their protocol (notably, identity hubs and verified credentials).

As a product manager, especially if you are involved in establishing semantic data standards and protocols (or you work with them in any way), spending time to immerse yourself in the history and community of the Semantic Web is important.

Metaverses

Last - but not least - in our initial overview of the seven key concepts/topics in Web 3, we'll cover metaverses. Similar to Web 3.0 itself, defining "The Metaverse" or "Metaverses" is not an easy thing to do, since there have been aspects of metaverses (e.g. in gaming, AR/VR, etc…) that have already been in existence in a Web 2 (or even Web 1) world.

While obviously Facebook made some noise recently with their metaverse / Meta-name-change announcement, some of the more interesting metaverse projects (e.g. Decentraland and Sandbox), exist in an open and decentralized fashion.

Importantly, metaverses won't just be for gaming. An increasing number of people already spend most of their lives online, and when *(not if)* Web 3 metaverses become mainstream, ownership of virtual land and virtual assets (NFTs such as land, shoes, clothes, tools, etc…) will become an unimaginably huge and creative market for all kinds of human (and not-so-human) experiences.

For further reading, check out:

- The Metaverse, Web3, and the Inevitability of NFTs (link)
- Why a decentralized metaverse is Web 3.0's new frontier (link)
- Web3, Interoperability and the Metaverse (link)
- What Is Web3 and Why Are All the Crypto People Suddenly Talking About It? (link)

The Self-Hosted Movement

Not everyone is comfortable with "the cloud". There is a growing movement of people keen to operate their own infrastructure to make a better Internet (hence why I group it into Web3).

This chapter is a work-in-progress, so for now I'll refer you to some key articles.

- Meet the Self-Hosted Movement
- Meet the Self-Hosters, Taking Back the Internet One Server at a Time

Interestingly, when Jack Dorsey recently criticized "Web3" for being owned by VCs/LPs, he also mentioned again that he is supporting/fueling https://blueskyweb.org/ →

"We're focusing on re-building the social web by connecting disconnected silos and returning control of the social experience to users. Our mission is to develop and drive the adoption of technologies for open and decentralized public conversation."

How to think and build in Web3 vs. Web2

This chapter - a work-in-progress - will be about how to think “top-down” as a product designer in the Web 3 space.

For a technical introduction to this, see:

- Defining the web3 stack by Nader Dabit

Appendix A: Acronyms in Web3

- DLT
  - “Distributed Ledger Technology (DLT) refers to the technological infrastructure and protocols that allows simultaneous access, validation, and record updating in an immutable manner across a network that's spread across multiple entities or locations.” (ref)
- MEV
  - “Maximal (formerly "miner") extractable value (MEV) refers to the maximum value that can be extracted from block production in excess of the standard block reward and gas fees by including, excluding, and changing the order of transactions in a block.” (ref)
- TLV
  - “Total value locked (TVL) is the overall value of crypto assets deposited in a decentralized finance (DeFi) protocol – or in DeFi protocols generally.” (ref)

More chapters and appendices coming soon