The Paradox of Choice
Thriving in an industry with too many possibilities
WHO AM I

Azeria (@Fox0x01 on Twitter)
Creator of Azeria-Labs
Independent Security Researcher & Penetration Tester
Trainer: Reverse Engineering and ARM Exploit Development

blackhat Trainings & Briefings Review Board
Crew Member of BlackHoodie Reverse Engineering Bootcamp

Interested in:
Reverse Engineering, Assembly, Binary Exploitation,
Mitigation Bypasses, Graphic Design for lulz, Psychology
What this Keynote is Not about

OMG!
Same security issues we had ten years ago!!!

0-day in random web app

*Brag* *brag*
*Rant* *rant*
What this Keynote is about
Reverse Engineering
Penetration Testing
Cryptography
Social Engineering
Application Security
Exploit Development
Car Hacking

Vulnerability Management
Embedded Systems
Vulnerability Research
Mobile Security
Bug Hunting
Threat Intelligence
Medical Device Security
OSINT
Malware Analysis
Android
iOS
ICS/SCADA Forensics

AZERIA
Outline

• Dealing with choice overload
• How to structure decision making
• How to master a skill and become an efficient learner
• How to embrace Deep Work
• Deep Work habits
• Apps
PARADOX OF CHOICE

“Learning to choose is hard.
Learning to choose well is harder.
And learning to choose well in a world of unlimited possibilities is harder still, perhaps too hard.” – Robert Greene.
Lesson 1: The more options you have, the harder it gets to decide, and to decide well.
Lesson 2: The more options you have, the less happy you will be with your choice, no matter what you decide on.
Maximizers ...

... don’t just want their needs satisfied

... need to look at all options

... want to make the best choice possible

....... with the best outcome possible

... overload themselves with options
Maximizers ...

... end up frustrated by the complexity

... end up not choosing at all

... or regret their choices and think about opportunity costs
The Paradox

Good mood => better thinking => better decisions

Too many choices => negative emotions => poor decisions
Satisficer

Criteria / requirements

Possibilities connections
Satisficer

Possibilities connections

Criteria / requirements

F

Option A

AZERIA
Satisficer

Possibilities connections

Criteria / requirements

Option B

Option A
Satisficer

Possibilities connections

Criteria / requirements
Satisficer

GOOD ENOUGH
Maximizer or Satisficer?

Maximizer VS Satisficer
Peak End Effect by Daniel Kahneman.

What we remember about our past experiences:

How the experience felt when ... 
... at their peak (best or worse) 
... it ended 
... regardless of whether the experience is pleasant or unpleasant.

NOT based on sum/average of every moment of the experience.
How we choose
Unstructured attempt of learning something new:

- Wrong order (skipping basics)
- Poor resources
- No clear end learning goal

Leads to thinking this topic is “not for me” or “I’m just not smart enough for this topic”
How to Choose

**STEP 1**
Set your learning goals
Set main goal, e.g. Reverse Engineering
Break down the skills you need

**STEP 2**
Evaluate the importance of each goal
Prioritize each goal
Start with the basics

**STEP 3**
Array the options
Find learning resources
Cover each learning goal
How to Choose

**Step 4**
Evaluate Resources
Evaluate how likely each of the resources is to help you meet your learning goals
Weed out redundant resources

**Step 5**
Pick the winning options
Choose the right resource for each learning goal
Piece it together if necessary
Mastery
The Genius

Researchers have long since denied that natural talent is a big factor of success.

The Expert

What separates experts from everyone else is deliberate practice.

K. Anders Ericsson on deliberate practice:

"we deny that these differences are immutable, that is, due to innate talent. Only a few exceptions, most notably height, are genetically prescribed. Instead, we argue that the differences between expert performers and normal adults reflect a life-long period of deliberate effort to improve performance in a specific domain."

-- Paper "The Role of Deliberate Practice in the Acquisition of Expert Performance" (1993)
APPRENTICESHIP

Learn a wide range of skills that relate to your goal.
Focus on gaining proficiency on a skill-by-skill basis.
Be patient.
Value learning over money and status

Keep expanding your horizons

Revert to a feeling of inferiority

Trust the process, avoid the easy path

Move toward resistance and pain

Embrace failure as a critical part of learning

Master the ‘what’ and the ‘how’ of everything you do

Advance through trial and error
APPRENTICESHIP
Learn a wide range of skills that relate to your goal.
Focus on gaining proficiency on a skill-by-skill basis.
Be patient.

CREATIVE/ACTION
Make additional connections, get bigger picture.
Develop your unique style, tools, techniques.
Experiment and combine your skills.
**APPRENTICESHIP**
Learn a wide range of skills that relate to your goal. Focus on gaining proficiency on a skill-by-skill basis. Be patient.

**CREATIVE/ACTIVE**
Make additional connections, get bigger picture. Develop your unique style, tools, techniques. Experiment and combine your skills.

**MASTERY**
Practice your craft! ... put in many hours of ... deliberate practice.
STAGE 1: Excitement, fear, impatience, confusion

STAGE 2: Apprenticeship. Learn components

STAGE 3: Creative / Active; bigger picture; your style;

STAGE 4: Deliberate practice; build connections

STAGE 5: Mastery Innovation

Be a satisficer! Set learning goals, pick the right resources.

Don't take shortcuts! Don't skip the basics. Be detail-oriented.

Experiment! Combine your skills!

Learn wide range of skills related to your goal.

Don't confuse practice with deliberate practice! Deep work > Shallow work

Put in the hours! Practice your skills until you are fluent.
The Power of Deep Work
Motivation and Distractions

Stage 1: Action
Stage 2: Inspiration
Stage 3: Motivation

[Diagram with stages connected by arrows and icons]
“The best moments usually occur when a person’s body or mind is stretched limits in a voluntary effort to accomplish something difficult and worthwhile”

-- Mihaly Csikszentmihalyi
Flow – 25 Minutes rule

Just checking this notification real quick...
The diagram illustrates the Law of Productivity:

High-Quality Work Produced = (Time Spent) x (Intensity of Focus)

Key Points:
- Focus declines with fatigue.
- Deep Focus -- Maximum Productivity.
- Flow is achieved during periods of High-Quality Work.

Time Breakpoints:
- 25 min
- 50 min
- 75 min
- 100 min
- 125 min

Breaks are recommended at 75 min and 100 min to prevent fatigue and maintain focus.
SHALLOW WORK

Don’t confuse productivity with busyness.

“Shallow Work: Non-cognitively demanding, logistical-style tasks, often performed while distracted.

These efforts tend not to create much new value in the world and are easy to replicate.” -- Cal Newport
Deep Work

“Professional activities performed in a state of distraction-free concentration that push your cognitive ability to their limit.

These efforts create new value, improve your skills, and are hard to replicate.

Deep work is hard and shallow work is easier and in the absence of clear goals for your job, the visible busyness that surrounds shallow work becomes self-preserving.”

— Cal Newport
Deliberate Practice

Purposeful, systematic, stretches your mind to its limits. Requires focused attention and is performed with the goal of improving performance.

Practice

Mindless repetition of the same task. The more we repeat a task, the more mindless it becomes. Mindless activity is the enemy of deliberate practice.
REPEAT
Pick a new project that forces you to learn new concepts and techniques.

TRY
Dive into it with deep work and deliberate practice. Fully focus on your task.

FAIL
Through failure you know you’ve stretched your limits. See it as something positive.

LEARN
Learn from your failures. See it as a valuable learning experience.
Music Playlists

- Create a playlist with music you enjoy, but don’t get too excited about.
- Classical music: Spotify playlist “Peaceful Piano” or “Deep Focus”, Ludovico Einaudi
- My current favorites (electronic):
  - Sublab
  - Azaleh
The Power of Habit
Habit Strategy

Monastic:
Maximizing deep efforts. Isolate yourself for long periods of time without distractions; no shallow work allowed.

Journalistic:
Fit deep work whenever you can into your schedule. Not recommended for beginners; you need to get used to deep work first.

Bimodal:
Dedicate a few days (e.g., weekends) per week for deep work only, at least one day per week.

Rhythmic:
Create a daily habit of 3-4 hours every day to perform deep work on your project.
**Rhythmic**
Habit: 4 hours / day
Done in: 7 days

Pick a skill you are curious about and stick to it for 30 hours.

**Journalistic**
Habit: e.g. 1-4x/week -- 4-16 hours / week
Done in: 2-7 weeks

**Bimodal**
Habit: Weekend -- 8 hours / week
Done in: 3-4 weeks

**30 Hour Experiment**

Divide components into seven 4-hour sessions.
MY PRODUCTIVITY APPS

PLANNING: TRELLO
MY PRODUCTIVITY APPS

PLANNING: TRELLO
My Productivity Apps
Focus: Forest

You have stayed focused for 186 mins today.

60:00

Start
MY PRODUCTIVITY APPS

FOCUS: FOREST
My Productivity Apps

Screen Time

2m
ENJOY THE JOURNEY

If you're not happy with your life on your journey to your end goal, you're most likely not going to be happy even after you reach it.

You don't play a video game that you hate just because you think it's going to be fun once you finally beat it. The best part of the game is the journey.

Don't waste your time playing a game that makes you miserable just because you heard all the hype around it. There's a lot of other games out there. Find the game that is meant for you, and have fun playing.

That's the whole purpose of playing the game, that's the whole purpose of this journey. - NIGAHIGA

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