

Codifying the hacker film : elements of a genre.
From The Conversation to Mr. Robot

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May 6, 2022

Introduction

Established in this paper are fundamental elements of the hacker film.

By 1995, most of the generic hacker film fundamentals had been established with few additions afterwards (mostly adaptations to new technologies, rather than drastic changes).

However one major - formal - evolution recorded post 2000 was a turn towards realistic computer hacking depictions, replacing the, previously taken for granted, 3D abstract animations characteristic of the older generation of films.

Among novelties :

Hackers introduced LGBT, queer or LGBT-adjacent themes (Cereal Killer's androgyny, Kate's tomboy appearance, Razor and Blade...) and gave video games a secondary role.

Mr. Robot, in turn, made LGBT themes not only explicit but central, as well as other elements such as drugs.

One prominent addition of *Mr. Robot* is heavy pathologization of the hacker subject (which, while not entirely new, reaches extremes here).

It is likely that, in the future, the classic phreak scenes may completely disappear, if not already (likely morphing into e.g. "network engineer" specialists roles, instead).

Hacker base scenes have one standard version (the initial reveal), and at least two ulterior versions : the relocation (usually forced), and the unveiling of alternative spots or satellites.

As society progresses, (in particular towards gender equality), female hackers will become normalized, instead of being "revealed" in a special introductory scene. It might morph, likewise, into a new category of minority hackers, e.g. : queer hackers, black hackers, etc.

Crisis scenes happen intermittently, on both sides : on the side of the hacker it is often linked with paranoia, or justified precautions; while on the other side of the barricades, i.e. corporate hired security engineers and managers, it generically takes on the form of heated post-hack debriefing sessions.

In terms of endings, Coppola's work is by far the more daring : it ends on a blues note, in a place undefined between negative, pessimistic, resigned, or fortified. *Mr. Robot*, endlessly interesting as it may be, opts for the faux-radical, hundred times done-and-over again "maybe it was a dream". *Hackers* ends on a positive, joyful, euphoric note (the young hackers won, are madly in love, meanwhile the old rotten white hats and black hats go to prison).

Gibson's episodes for The X-Files have endings that cannot entirely be called happy : Esther has lost her body but seems to have joined her lover on-line (according to her wish). Phoebe had very good reasons to act as she did (her despair with a testosterone laden corporate environment).

Sneakers belongs to the most important films in the 'hacker' genre, reflecting many topics authentically - hacking with a purpose vs. for money, academic cryptography vs. engineering applications, phreak culture (e.g. blind features are not some creative fantasy but a direct reference to historical figures), etc.





A famous and beloved sociologist once said that science, in their case sociology, could be used in two ways : 1 as means of liberation, 2 a petty manual on how to get ahead in the world. Hopefully, those interested in these topics for reasons other than as art history essays, will find in the following analysis more than just instructions on how to get a security job at Google...

This introduction is followed by a codification system and an iconography.

The Conversation

minutes	events, notes	
0-10	Crew introduction scene - Harry, Stanley, and Paul (ex-cop?)	α
14	Hacker base reveal scene	Δ
15	Concept of elite ("among those pre-eminent in the field expected to attend")	1337
36	Amoral white hat talk/pitch : "it has nothing to do with me... not part of what I do"	phil.
20; 28	Railway scenes	\downarrow
41	Convention for security, surveillance	CON
46-1h 20	Female hacker, social engineer (Meredith)	F
off s., 48	Attempted recruiting of Stanley (by competition) - successful "it's not ethical"	!
55	Jacker party scene (con. after-party)	\ominus
55	Concept of elite ("Harry, the best, bar none" followed by long dialogue, list of exploits)	1337
1h 5	Amoral white hat talk/pitch : "what they do with the tapes is their own business"	phil.
1h 50	Crisis scene (paranoia, destruction : apartment)	ζ

Sneakers

0-5	[flashback] Hacking with a purpose, represented by Cosmo and Marty pre-bust (illegal hacking)	*
5	Bust scene : Cosmo	
5	Hacker food : pizza ("pepperoni")	
5-15	Crew introduction scene - Bish, Crease (ex-CIA), Whistler, Mother...	α
6	Conspiracy theories : Mother (Nicaragua earthquake)	\approx
5-9	[flashforward] Hacking for a job, i.e. white hat, represented by Marty post-bust and crew (legal hacking)	
10	Hacker base reveal scene [white hat agency]	Δ
12	Phreak introduction scene [Whistler] "had a little trouble with the phone company"	
14	Attempted recruiting scene (by 'nsa') - successful	!
20	Female hacker introduction/reveal scene : the 6th, mysterious member of the group is a woman, the only one, liz/elizabeth: a piano teacher with some background, likely advanced in mathematics. she describes the hacker group as a 'boy's club', with probably a secret hand shake	F
21	Janek, mathematician cryptographer	math
30	Social engineering [reception] "we're late!" (as always, a good mean of persuasion, according to the movies at least)	SocEn
36	Hacker party scene	\ominus
37	Conspiracy theories : Mother (aliens)	\approx
41	"Crowd searching", pooling human resources on a common problem (Setec Astronomy/black box)	\bigcirc
46	Scada	\perp
50	"The nsa doesn't kill people." (Crease)	
54	Deep throat style scene ("what i have to tell you, i cannot do here")	
57	Attempted recruiting scene (by Russia, asylum offer likely to be quid pro quo) - unsuccessful [leaves the car]	!
1h	Black hat hacking, represented by Cosmo post-prison (claims Mob associations)	
1h 5	Big plan : "... crash the whole damn system. Destroy all records of ownership."	ω
1h 10	Hacker base relocation scene ("unload the truck")	$\Delta \rightarrow$
	Alternative hacker base : Liz' place	$\Delta\Delta$
	Bounce call through 9 relays	
1h 20	"Trashing" scene	U
1h 18-25	Biometrics	
overarching	Marxism-Leninism, communism : Black Panthers, abolition of property (mentions, favorable)	pol.











Hackers

0-15	Crew introduction : Zero Cool/Dade, Kate, Phreak, Cereal Killer...	α
0	Bust-court scene : Dade	■
5-8	Hacking with a purpose scene [hate tv show]	★
5	Social engineering scene [security guard]	SocEn
10	Female hacker introduction [kate]	F
14	Phreak introduction scene [Phreak]	👁
15	Hacker base reveal scene [club Cyberdelia]	△
16	Video games (Wipeout)	
22	Club Cyberdelia again, more insights Hacker lit.	△
28	White hat, defense :	■
30	Alternative hacker base [Nikon]	△△
35	Crisis scene : white hat debriefing session	■ ⚡
36; 48	Plague turns out to be black hat	■
32; 37	Bust scene - Joey	■
40	Attempted recruiting scene (by plague) "I'd like to make a treaty with you", "can we be allies?" - unsuccessful "nah, i don't work well with others"	✖
51	Hacker duel scene (" <i>Decisions are final by a vote...</i> ")	†
52; 1h 24	Alternative hacking place : public phones	△△
57	White hat : amoral power talk, pitch (" <i>governments and corporations need people like you and me</i> ")	■ phil.
1h	Bust scene - Phreak	■
1h 5	Recruiting scene (by Plague, again) threats against family - successful	■ y
1h 8	Alternative hacker base [kate's room]	△△
1h 9	Hacker party scene Hacker food : pizza (delivery)	☹
1h 11	Concept of elite (Dade) "biggest crash in history", "front page", "thought you was black"	1337
1h 12	Trashing scene	U
1h 17	Subway scene	↓
1h 18	Concept of elite (Razor and Blade) "they're flakes", "they're elites"	1337
1h 20	Pooling of resources " <i>You need an army</i> " (e.g. Ddos)	○
1h 32	The successful hack scene Busted : crew/group, minus one	■
1h 35	Broadcast video of information leak (television)	media
overarching	Androgyny / gender queerness (Cereal Killer, Kate...), Razor and Blade, Phreak?	LGBT

The X-Files (1998-2000) : selected, key episodes

S5, 'Kill Switch' 10	introducing Invisigoth Esther base of the Lone Gunmen	F, cs-math △
S6, 'Three of a Kind'	crew introduction scene - origins of The Lone Gunmen, publishers 'zine introducing Susanne Modeski conspiracy theories (e.g. "Roswell") convention for sec.. surv.	α F ≈ CON
S7, 'First Person Shooter'	introducing Phoebe, programmer	F

s1e1		
opening	Subway scene	↓
opening	White hat : Allsafe, security company	█
opening	Crisis scene : white hat debriefing session (Angela)	█ ⚡
20	Elite adjacent concepts : techie and its opposite : Colby, "he's not a technie, he's a moron"	1337
30	Unix commands	realism
31	Cis gay boss "coming out" [in late 2010's...]	LGBT
38	Hacker base reveal scene (f- society)	△
34	Attempted recruiting scene (by Mr. Robot) "you should come with me" - successful [subway] [leaves the car]	↓ !
	Crew preview scene	α
39; 43	Female hacker, introduction : Darlene	F
38	Another female hacker, preview : Trenton	F
39	Entry requirements :	
45	Big plan : erase debts by targeting data centers (of 1 company which owns "70% of consumer credit", implied E Corp)	ω
ending	Crisis scene : white hat debriefing session (Angela), with E Corp	█ ⚡
ending	Hacker base empty	△ →
s1e2		
e1/open.	Attempted recruiting scene (by E Corp) - unsuccessful "I think I'm happy where I am"	✖
9	Crisis scene (paranoia, destruction : electronics)	⚡
13	Fsociety video related to data leak, "We do not compromise" (Colby) (Internet)	media
	Data leak "corporate secrets" by fsociety	
17	Female hacker, introduction continued : Darlene	F
20-22..	Crew introduction scene "right on, man" - Trenton, Romero, Mobley...	α
21	Next hack - Steel Mountain, "off-site and data storage facility for every corporation in the S&P"	ω
22	Morals : "the world is a dangerous place, not because of those who do evil, but because of those who look on and do nothing"	phil.
23	Dark army [first mention(?)], "redundant backups" in China, "they got no code, they hack for anyone"	█ █
32	Lockpicking : "every hacker's favorite sport", "the perfect system to crack"	▷
41	Alternative hacking place : the library [Cisco : Dark army contact]	△△
s1e3		
26	Bisexual CTO, club	LGBT
27	Cis gay boss, dinner	LGBT
30	Leak details "Washington Township scandal" (television)	media
s1e4		
opening; 6	"Crowd searching", pooling human resources on a problem (discussion of Steel Mountain hack)	○
8	Scada	⊥
9	Dark army "The world's most dangerous hacker crew" (per Romero)	█ █
15	Genre self-reference : "Hollywood Bullshit... never have I seen a singing virus" (Hackers extracts, take-down?)	○
37	I kissed a girl at the club, once-scene (Angela, Shayla)	LGBT
39	Cisco introduction, more Dark army details: "the guys I work for, they ain't motivated by Kumbaya shit"	█ █

	s1e5 [Steel Mountain hack]	
6 (maj. ep)	Social engineering, e.g. tour guide Dark army refuses to cooperate (e.g. 25, 30:library)	SocEn 
	s1e6	
opening 6; 14 7; 36	Attempted recruiting scene (by Vera) threat to partner - successful "I want ... your power" Industrial control system / ICS btscanner, bluesniff...	 ⊥ realism
	s1e7 [group back]	
38	Trenton vs. Darlene and anarchism : "you didn't care if pushing the button would bring an economic revolution", "you want momentary anarchy", "those reasons depress me"	pol.
39	Darlene : together, we did "something impossible if we were alone", "not to mention, at the right point in history, with the right resources."	phil.
bonus scene	"you're unprofessional", "we're anarchists"	pol.
	s1e8 [Steel Mountain hack 2, Dark army]	
22 28	Whiterose, time hacker : " <i>you hack people, I hack time</i> " Fsociety video (Gideon) (Internet i.e. youtube)	LGBT media
	s1e9	
end (b. 10)	Attempted recruiting Angela (by Colby/E Corp) " <i>change things ... from within</i> " - successful	
	s1e10	
opening 14 16 32;42	Premise : "credit card systems ... down" " <i>A simple program... a worm that can make data unreadable. Malware that took Darlene maybe 2 hours to code.</i> " (more details end 9 : encrypt, destroy key) Fsociety video "your financial data has been destroyed" Hacker party scene, "end of the world party" (Petri dish)	ω ★ media 
	s2e1-2	
(from...) (from...)	Hacker base relocation / new hack place (E Corp staff) Lesbian cop	△ → LGBT
	s2e3	
11	Black hacker killed [this may or may not be part of a pattern, in the future]	
	s2e4	
opening	torrent	realism
	s2e6	
20	femtocell (openwrt) i.e. "home-brewed mobile tower"	realism
	s2e7	
end	Busted : protagonist (hindsight)	
	s2e8	
opening opening 30 35	Alternative hack place : coffee shop [anything with good Internet...] Fsociety video, making of. " <i>E Corp, Google, AT&T, Uber, Apple, Verizon, Facebook, all 23 of these listed companies have been complicit</i> " Base abandon "wipe down" Bust : Mobley - unsuccessful " <i>I want a lawyer</i> ", " <i>Let him go</i> "	△△ media △ → 
	s2e9	
end	Bust-court scene : protagonist	
	s2e10	
14 end	Base raid Bust : Cisco and Darlene - partially unsuccessful	△  
	s2e11	
20 35	Recruiting of Angela (by Whiterose) - implied successful (cf. e12, s3) Number sequences/sets (e.g. Erdos-Woods)	! math
	s2e12	
9 21; 34	Bust : Darlene "I invoke my ... privilege against self-incrimination and ... decline to answer"; "but there's this thing called the Patriot act", "you don't have any rights". Attempted recruiting of Darlene (by FBI) : evidence, detailed map - successful (cf. season 3)	 !

	s3e1	
19; 21 20 22	Premise : "Internet's been down for days" ("I know a place that has access"); chaos (energy) Alternative hack place : "The only hacker space with a dedicated fiber connection" Hacker duel scene (CTF)	△△ †
	s3e2	
17	New fsociety video	media
	s3e4	
26	More p2p (torrent)	realism
	s3e5-6	
	Recruiting of Angela (by Whiterose/Dark army), revealed	!
	s3e7	
end	(minority) Female hacker killed [this may or may not be part of a pattern, in the future] announced in s2e12	F
	s3e9	
	Darlene and lesbian cop	LGBT
	s3e10	
opening	FBI agent recruited (by Dark army), revealed	!
	s4	
	Big plan : " <i>The greatest redistribution of wealth in history.</i> " through crypto airport	ω ↓
overarching overarching	realistic computer hacking; drugs; psych.; cryptography; cryptocurrency hacking with a purpose (incl. what ought to be called "white knight" hacking, pre-Mr Robot) including "wealth redistribution", debt canceling/erasure, "revolution". Whiterose also hacks with a purpose (arguably)	★
overarching overarching	gay/femme/trans. villain trope homosexuality, bisexuality, queer (boss : Gideon, CTO : Tyrell, sister : Darlene, cop, and probably Shayla and near-everyone)	LGBT LGBT
overarching	rainbow capitalism : cis gay boss, lesbian cop girlfriend, bi sociopath-sadist tech executive I-swing-both-ways-including-morally, "Madam executioner" lawyer, Prada Angela "I kissed a girl once" etc. etc. etc..	
overarching	anarchism (except Trenton)	pol.

1 the hack base

The whole set up in *Sneakers* in general is very inspired by *The Conversation* (or movies like it, if not it) : in terms of hacker bases, both have very similar designs with their concrete beams, overhang lights and overall industrial look.



II. Hack bases. *Conversation* / *Sneakers* comparison

Hackers, the film's conception of the hacker base is more fluid (partly due to the hackers' reliance on public phones) : Club Cyberdelia, Kate's room, and public phones stations, serve as bases among others.

In *Mr. Robot*, the purpose of the hack base (not merely aesthetic, though the colored/ambient lights, along with everything else characteristic of them are a nice touch) is made explicit :

"You remember that hacker group (...) Tracked them all down through emails, [etc.] One guy, and the whole thing comes down. That's what's called central point of failure. (...) Because they refused to meet in person, they compromised each other every time (...)

The rule here is, it's done here and only here. It ends when you walk out that door and begins when you walk in. Our encryption, is the real world.

- How do you talk to each other, then?

- We don't. We come and go. Work on the project when we can." [episode 1]

Previously, before mass production and miniaturization, the cost and/or size of electronics made it so they needed to be stored outside the home (all the more in cities like, e.g., NYC, where conditions being as they are accommodation, for many, is limited).



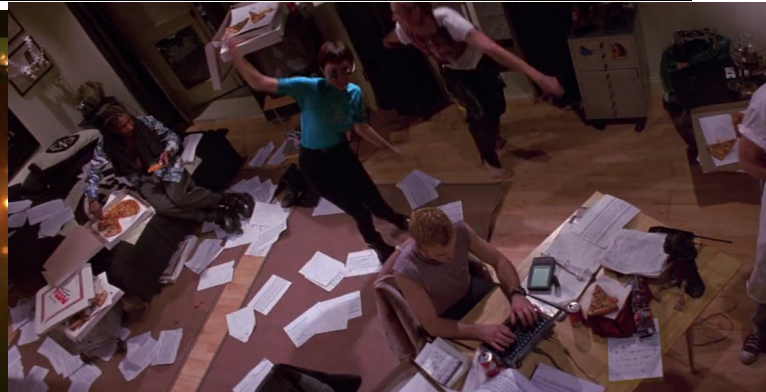
II. *Mr. Robot* season 2 (new) base / *Hackers*, near public phones

2 the hacker party

The Conversation already features the "hacker party", a convention after-party, which is found again, modernized, in *Sneakers* and later with little changes in *Hackers* (pizza and soda instead of platter and punch or wine). A specific form of this recurrent scene is the male-female pair dancing : sometimes romantic, sometimes erotic, but mostly fun (and sometimes "duplicitous", as in *Conversation*, neo noir).

As part of *Hackers*, typical hacker party scenes take place at Club Cyberdelia, and later in Kate's room. The parties however serve different purposes :

- In *Sneakers* it is to celebrate a successful gig.
- In *Hackers* it has for context a hacking marathon.
- In *Mr. Robot*, it cleverly fulfills the utilitarian purpose of erasing evidence also ("a Petri dish").



II. Hacker party (dance scenes). *Conversation* / *Sneakers* / *Hackers* / *Mr. Robot* comparison

3 female hackers

There is no female hacker in *The Conversation*, but only from the point of view of the 3 members of the main crew, gathered around Harris - all men. However Meredith comes close to it on the side of the rival crew, and can probably rightfully be described as a social engineer : she's the one making Harris, always reserved, talk ("the bugger got bugged"), for example; and later, it is implied, she managed to steal the tapes.

Gibson's episode for *The X-Files* has Invisigoth / Esther as the protagonist hacker : at that point the female hacker is not only visible but brash and extroverted.

Mr. Robot's first season's first episode continues this trend.

Darlene in ep. 1

"I wrote that rootkit!"

Mr. Robot about Darlene, ep. 2 (20m)

"She's a complicated woman: most malware hackers are."



Il. Liz (w/ synthetizers); Darlene; Kate; Invisigoth

4 attempted recruiting

A regular scene is what we have called and codified as "attempted recruiting" : a frequent event, which comes in varieties, too :

It appears in *The Conversation* when Harris meets Stanley again, at the convention, who now wears a uniform signaling an affiliation with the competitor's company.

Harris to Stanley

"I don't want you telling him about any of my things, it's not ethical!"

In *Sneakers*, knowledge of a past crime is leveraged to recruit the protagonist, who at first categorically then briefly resists the advances of the 'NSA' (it is later revealed to be more complicated).

- ”- No way. (...) - Do it yourself.
- We can't.
- Why not?
- By law, we're not allowed or equipped to do this kind of operation.
- Then get the FBI. (...)
- The FBI can't work for us without approval from a congressional committee. We don't have the time.
- So, why me?
- Frankly, because ... it's kind of illegal.”

5 crowd searching, pooling human resources on a common problem

In *Sneakers* a very prominent example of "crowd sourcing" happens when the group solve the mystery around Setec : Bish, Liz solve the linguistic puzzle with word game pieces, while Whistler is aided in his electronic explorations.

In *Mr. Robot*, discussion of Steel Mountain offers another explicit "crowd searching" scene, including e.g. Scada mentions.

From that perspective, still, the company hack at the end of *Sneakers*, (1h 20m), parallels that of the Steel Mountain case at the center of *Mr. Robot's* season 1.

When attempting to put the group back together, (end season 1), Darlene makes explicit the strength of such hacker groups : they can, together accomplish things that, alone, they would be powerless to.

6 mathematics

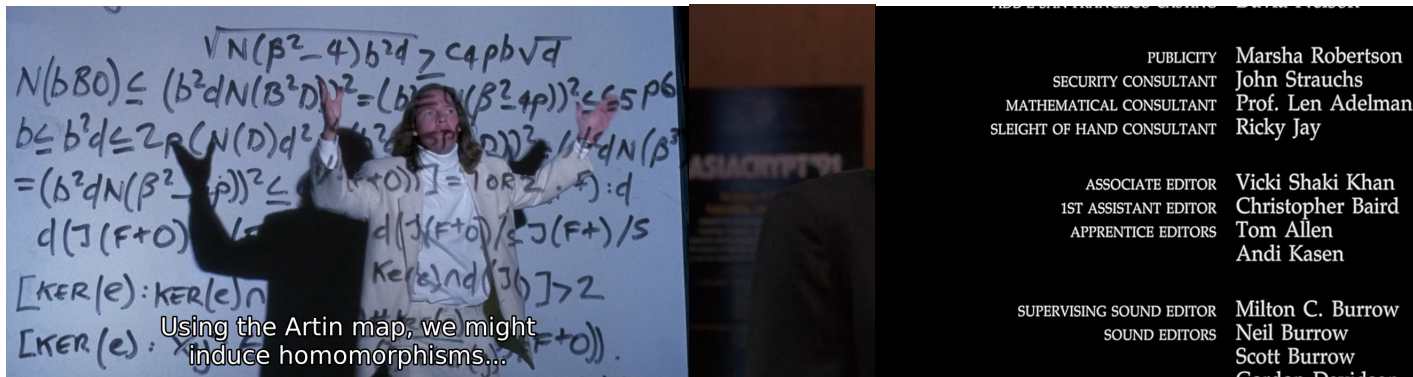
Hackers -although some of them come from extreme academic backgrounds- are representatives of a self taught, don't ask for permission/don't care about hierarchy type of attitude. Counter-balance to them are mathematicians, in particular, who often appear alongside them though not always in the movies. For example, in *Sneakers*.

Sneakers' main mathematician, Janek, "specializes in large number theory, prime numbers, factoring." per a description given of him; This prompts the comment, ergo "cryptography".

It would too long to list all of the mathematics elements in *Sneakers*, some of them : Artin map (a reference to Emil, or his son Michael), homomorphism (Hollywood movies really like homomorphisms, it sounds complicated), ker (we are aware of ker as the kernel, but it also may, depending on context, have another meaning) ...

A nice detail is a poster for a cryptography conference, briefly seen in the interior scenes of Janek's office. "*ASIACRYPT '91 [was] the first international conference on the theory and application of cryptology to be held in the Asian area. It was held ... in Japan*" - according to Proceedings description.

A further indication is "Janek's grant is from the NSA". Mathematics, or cryptography representations should be authentic, Leonard Adleman is listed as domain consultant at least.



II. Sneakers : Janek, office poster / credits

In *The X-Files* Invisigoth, a highly educated, goth styled hacker is the protagonist ("automata theory").

black hat, white hat (important concepts)

A common theme of hacker films reviewed is how little difference there is between black hat and white hat categories - a regular happening being white hats emerging as black hats, thanks to their access privilege to resources.

Both are based on principles - or lack thereof - that can be described as reflecting an amoral, purely utilitarian, convenient apolitical view of the world. Exposing the fundamental link between, so called, black hat and white hat hacking : in both cases it's for money/gain, but one is 'legal'.

- Bish, I can't speak for the other guys, but I'm in it for the money.
- I don't care if you go to jail.
- Me neither. I'm in.
- (...) - It pays \$175,000!
- I'm in." From *Sneakers*

One especially nasty, morally bankrupt, philosophy comes from *Hackers'* Plague (the main villain) who considers himself and other elite hackers, including Dade as modern-day "Samurai" (quote) acting on the behalf of governments and corporations alike. In *Hackers* yet the categories of black hat and white hat remain well defined, even when a white hat moonlights as a black hat.

Mr Robot, in particular via the Dark army, blurs categories, exploring gray areas in more details than its ancestors : in this regard Whiterose represents a particularly interesting case : as someone hacking with a clear purpose, based on a wish to change the world, utilizing any means to fulfill it.

Cosmo (from *Sneakers*) also is an ambiguous figure, adding time factors (pre-/post-bust) to problems of categorization, interpretation.



II. *Sneakers* white hat hacking

Sneakers begins with an illusion : a hacking attempt is revealed just before the end to be a corporate job for a bank – the target, and simultaneously client.

“Gentlemen, your communication lines are vulnerable. Fire exits need to be monitored. Your rent-a-cops are a tad under trained. Outside of that, everything seems to be just fine. You’ll be getting our full report and analysis in a few days.”

A staff of the bank, seemingly surprised but in any case not naive, leads the dialogue :

“- So, people hire you to break into their places to make sure no one can break into their places?
- It’s a living.
- Not a very good one.”

Sneakers, the title of the movie, precisely is defined as ” *specialists recruited to infiltrate high-level security systems...*”, per press kit, and hence is a synonym for hacker of the white nomenclature... [maybe the studio feared there might be copyright issues, or a creative decision, both]

public transportation / transition scenes

The railway scenes of *The Conversation* morph into subway scenes in both *Hackers* and later *Mr. Robot*. Also coinciding with the transition from San Francisco to New York, as prime location of the hacker film.

Note the subway scenes play a central role in *Mr. Robot* : not only does *Mr. Robot* open with a subway passage, it is also the context and location where - later - the protagonist meets 'Mr. Robot', and by extension joins, hacker group, fsociety. Public transportation opens and closes *Mr. Robot*, beginning with the iconic subway scenes, ending more or less with the, also most memorable, airport scene.

At a basic, or symbolic level, public transportation implies change, transition and evolution, leads to -potentially- important places, and with little else to do provokes reflection in the character (and viewer).

Airport locaitons are a part of these transport - transitions scenes though evidently much more exceptional, coinciding also with great decisions (cf. *Mr. Robot* end).

In *Hackers* the subway sequence precedes decisive help from established hacker figures (Razor and Blade, and beyond).



II. Conversation / Mr. Robot



II. Hackers' CK, lolipop(?) / Darlene, ice cream

hacking the media

Media and role of the media are most prominent in *Hackers* where broadcast of a leak by the remaining, free member of the group brings about resolution and victory; Meanwhile Internet, television etc. are important elements in *Mr. Robot*.



elite (important concepts)

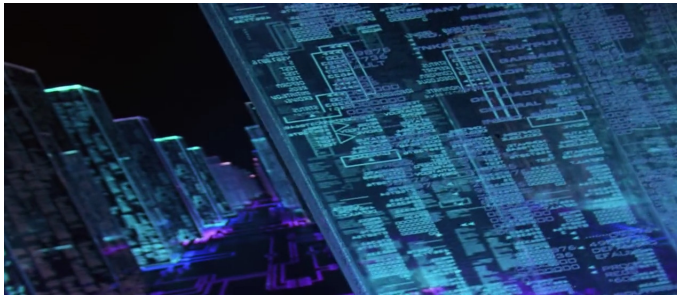
The notion of elite, in the context of the hacker film, is present from the beginning : Harris is considered elite : both by the specialized press, who announce his coming to a convention among "preminent specialists of the field", as well as colleagues and even competitors ("the best").

In *Hackers*, this terminology is used explicitly : "they're elite" Kate says about Razor and Blade, in response to Dade's comment they are "flakes", the opposition notion.

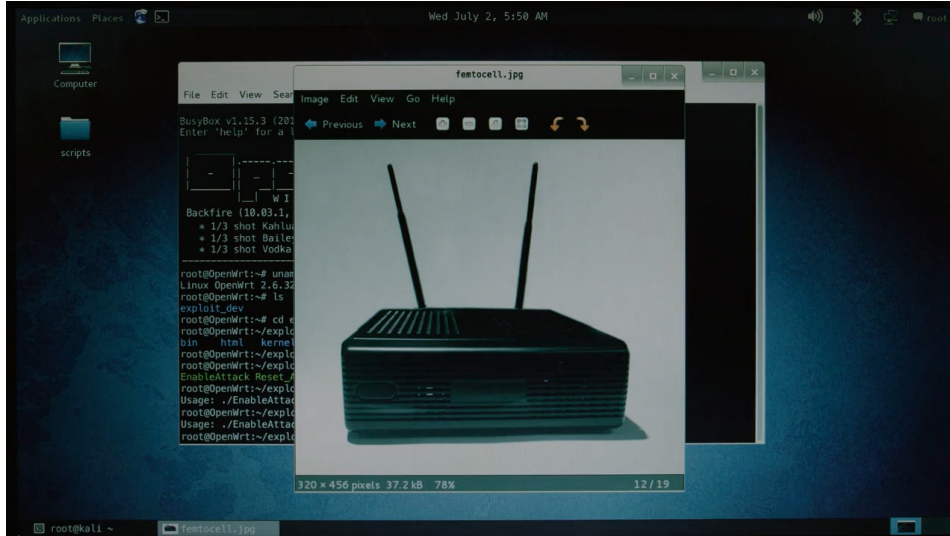
In *Mr. Robot*, the concept of "elite" and "flakey" are echoed by the protagonist, who, in episode 1, distinguishes between adjacent "techie" and "moron".

realism

Depictions of computer hacking move between the abstractionist variant - typical of the 1980-90s and epitomized by otherwise mostly authentic *Hackers* - and realistic ones, a cornerstone being nmap's appearance in *The Matrix*.



II. *Hackers*, 1995, abstract OS w. kernel(?)



II. *Mr. Robot* (2010s)

Blinking lights, flashing images, 3D animations, floating numbers etc. are replaced, in newer works, by actual consoles and - really-existing - operating systems, programming languages, or the like.

generic self-reference

An interesting development is the increased self-referentialness of the genre : newer films and series deal with and incorporate the history and traditions of older ones.

In a notable scene, *Mr. Robot* hackers watch TV, commenting : "I bet you right now some writer's working hard on a TV show that'll mess up this generation's idea of hacker culture."



an animated singing virus.

"I've never seen a singing virus", Romero adds while what looks like extracts from a popular older hacker film is shown (which looks like *Hackers*)...