Computers under attacks !

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Abstract. The war metaphor seems to establish itself as soon as we deal with computer viruses. The concept of war is a central topic of political philosophy. The relationships between "hackers" and "crackers" and information technology world are based on power relations, whose issues are politic, economic and epistemological. We wonder whether the computer disease phenomenon is a modern representation of the war and the relationships of power, as it is suggested in Foucault from Les Mots et Les Choses. So, it is legitimate to compare the aspects of this war with the classical analyses of war, which in the literature are founded by the classical Greco-Roman philosophers, or the modern ones such as Machiavelli or Clausewitz.

1 Introduction

The war metaphor seems to establish itself as soon as we deal with computer viruses. First of all the lexicon shows it : we talk of "viral attack", "target", "trojan horse", "worms" or yet of "malware" which is a blend word obtained by contracting "malicious" and "software". Similarly, we find phrase like "programs with an offensive nature" in Filiol's book [4] to characterize viruses. The concept of war is a central topic of political philosophy. The relationships between "hackers" and "crackers" and information technology world are based on power relations, whose issues are politic, economic and epistemological. We can ask whether the computer disease phenomenon is a modern representation of the war and the relationships of power, as it is suggested in Foucault [5] from Les Mots et Les Choses. So, it is legitimate to compare the aspects of this war with the classical analyses of war, which in the literature are founded by the classical Greco-Roman philosophers, or the modern ones such as Machiavelli or Clausewitz. Thus, we compare firstly the different offensive and defensive strategies of computer viruses with military strategy as anyone encounters in classical treatise on the "art of war". Secondly, we study the phenomenon of computer viruses from the political and

ethic point of view: does the struggle between hackers and users correspond to the known categories of the moral of war, which was described in the Deuteronomy? Is a new type of political relations emerging from this fight? Lastly, if we consider that viruses represent a new modern vision of warfare, the problematic, which dominates this phenomenon, is to know whether the hackers, which create viruses, express a kind of libertarian claims inside a system (which implies that they become heroic or romantic players and explains the fascination with them); or they represent a threat of a new totalitarianism, unpredictable and threatening the freedom of each individual user, which is facing to arbitrary (Arendt [2]).

2 Typology of computer attacks: the war strategies

The aim is to classify the different strategies used by viruses to attack a system, and to compare them with the classical strategy described in Machiavelli [8, 7, 9] and Clausewitz [13]. In the following discussion, viruses are identified as armed forces in motion.

2.1 Invasion

The objective of some category of viruses is to occupy a system, like a territory invasion, but without the will to destroy the system. Take for example the worm "I love you", which aims to spread itself through mail server in 1999 and infects 45 billions of computers, illustrates the case of a pacific invasion.

2.2 Conquest

The target of some attacks are what we should name by analogy "the government" or yet "the elites" of a given territory. This kind aggression is severe and for example the virus CIH can destroy computer motherboard. The cost of this attack is of approximately 250 billions of euros for South Korea. A complete analogy would be the one of a computer attack which takes control of a system.

2.3 "Rape" strategy

In some case, a virus is an identity that enslaves an host to carry out replicating operations that brings new mutant copies into being, which are then free to go off and enslave further hosts, and so on. These reproduction methods recall the rape campaign. Here again, the CIH virus is a typical example of this strategy, which infects executable files.

2.4 Espionage

A strategy that treatises on art of war advice, is to use spies to know a foe or to determine the strength of a potential target. Machiavelli is quite explicit on this subject. The espionage activity is a part of computer infections, and is performed by "spyware". For example the family CoolWebSearch of spywares are employed to obtain personal data.

2.5 Hidden moves

By hidden moves, we mean all the techniques, which consist in protecting a virus by hiding itself from anti-virus software. There are various methods and we can mention like polymorphic or metamorphic such as Zmist virus.

2.6 Fortress

The trusted computing platform (TCP) is like a fortress and it is claimed that TCP is the defence against virus and worm attacks. This sort of sentence recalls the Montaigne's text [10] on the siege of Pavie. The mistake of the enemy of Anne de Montmorency was to thought that their fortress was inviolable. The reason of this mistake was military and moral. Indeed, first a fortress is never unassailable unless we demonstrate it, and second it is sin of pride to believe that we are unassailable.

3 Viral attacks, for which objectives ?

We distinguish three main types of aim from which computer attacks are justified. They indicate the hacker wish, which is now identified to the Prince.

3.1 Libertarian attacks

This kind of attack is the one who promotes the hacker as a heroic or romantic person. There are several movies, which illustrate this. (See for example, the soteriological character of Neo in Matrix.) It is also worth to mention the etymology of the word "hacker", which means someone "who cut or sever with repeated irregular blow". The hacker claims the possibility by creating a virus to leave the system and to fight against it. In some sense, this supports a link between the political and the computer world, making a modern metaphor of totalitarian system. To illustrate this point, it is sufficient to think to the struggle against the giant Microsoft.

3.2 “the will to power”

The second aim falls into the class of hackers for which their actions is a way to affirm their power. The hacker Sven Jaschan is a teenager who said ” after his arrest ”It was just great how Netsky began to spread, and I was the hero of my class”. We end by citing again Montaigne ” il y a plus d’allgresse assaillir qu’ dfendre ” (I 47). (A translation ”There is more exhilaration to assail than to defend”.)

3.3 Attacks in the name of political values

We distinguish between two kinds of activity. The first kind is a military issue. It seems that any war, or should, begin with a viral attack in order to cut communication links between the different army forces. Moreover, espionage is now a matter of computer virology. The second kind, less dramatic, is related to economic market. Indeed, spywares are a weapon to steal data from some concurrent firms. In both cases, the notion of war with a just cause (Jus ad bellum) is present and legitimates such behaviours.

4 A new political economy ?

Information is a major issue for the different kind of power (at the political, economic and epistemological level). It corresponds to a scale modification in the relationship between men, and also to a scale modification in the temporality of the war itself. We should wonder whether this is a change in the nature pf politic relations, or if it is just a re-scaling of them.

4.1 A war modern with a different scale

Computer war is a war of a new kind by the numerical scale change. First, the hacker is alone most of the time unlike traditional conflicts, which involve army forces. (From an historical point of view, the numerical superiority was one of the key factors of victory.) Second, a single hacker has the ability to strike billions of computer users with a virus. The balance of power relation is quite paradoxal: the aggressor is alone against a potentially infinite number of users.

Moreover, there are three other characteristics of a viral war, which it is worth listing. (1) The hacker stays anonymous and the victims of a worm stay also anonymous. (2) A computer virus is still a ”clean war”.

(But the near future could contradict this, think of a car virus !). The last point (3) is that the defence is not a real time player of this war at present. Unlike a general who moves his forces during a battle with respect to the move of his opponent, the anti-virus softwares, which are the current defences, are passive. The reason is that most of them are searching for known virus signatures. So, a new virus is invisible for this kind of defence.

4.2 Temporality changes

Treatises about political and war art, like the one of Machiavelli, insist in the relation between time and power. A conquest is a success if it lasts. In Le Prince, Machiavelli states the main difficulty is never the military conquest. The most difficult part is to keep a conquest. From this, we could think of a classification of malwares based on their life duration inside a computer system. Moreover, the war temporality is changed: a viral attack may last a few seconds or minutes. Again, from an historical perspective, the concept of war is based on a long term. Because of this new temporal dimension, computer wars are new. Lastly, the defence is currently a post-reaction against viruses and does not anticipate attacks. We see that a viral war is a war of a new kind with respect to the above discussion.

5 Knowledge and Power?

We suggest considering schemas of analyse that Michel Foucault proposed to define an approach of viral computer war like a modern expression of the political relations. The relationship between hackers and users/government is based on knowledge and power. Today, we are at the beginning of this struggle and the issue is an epistemological one because computer attack is one of the structural parts of computer science. Indeed, Cohen [3] and Adleman [1] works, which coined the word "virus", showed that pioneer works of Turing [11, 12] and Kleene [6] implies the construction of viruses as a consequence of the recursion theorem. Finally, M. A. Ludwig says "I am convinced that computer viruses are not evil and that programmers have a right to create them, possess them and experiment with themtruth seekers and wise men have been persecuted by powerful idiots in every age". The mean of computer viruses is inextricably political, since they play a key role in struggles and power relations. Moreover, computer viruses imply issues that concern economical, geopolitical and strategic questions.

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