Computer Hackers and Software Owners: The Ensuing Moral Controversy

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ABSTRACT—Global connections of computers otherwise known as the internet is a fast growing technology that seems to bring no limit into the world wide interactions via the computers. As the internet grows, a lot of moral and ethical issues crop up that calls for urgency in proffering solutions in order to curb their present and future implications in human life. One of the moral and ethical issues that affect global computer connections today is the issue of computer hacking. Software developers claim ownership of their programs due to economic reasons and emotional attachments. They seek legal protections in order to establish their claims. Also, computer hackers do break-in persistently into other people's software in order to gain unauthorised access. In this paper, ethical standards (philosophical and legal perspective) about this popular moral controversy between computer hackers and software owners are discussed based on evidences from literature. Computer hacking was reviewed from the utilitarian perspective, intellectual property rights were also discussed as it affects computer software, software owners were also considered in the realms of justice and fairness, implications of computer hacking to the society were as well highlighted, and finally the moral virtues of software owners were analysed. It was however revealed that hacker break-ins are unethical and have no moral basis in as much as appropriate intellectual property right is sought and well implemented. At the same time, software owners' proprietary should be checked to the barest minimum level. This will stop inhibiting technological advances among programmers and help promotes wide use of software by other professionals and general members of the society.

Index Term—Computer Hacking, Ethical Issues, Intellectual Property Right, Moral Controversy, Software, Software Owners, Utilitarian Perspective

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1 INTRODUCTION

The trend in globalisation of computer connections has promoted the viability of software market which in turn had encouraged the development of both system software and application software for sale. Moreover as computers are now crucial part of the society, computer professionals are obliged to fulfil some social functions in the society. Towards fulfilling these social functions, the computer professionals make different software available in the market. As the software market grows, different problems emanate relating to ethical issues in computing. Due to this fact, there had been several debates in the intellectual and legal world on ethical standards and moral values that could be globally acceptable. Such codes of conduct are expected to suit the interest of software owners and the demand of other members of the public. As mentioned earlier the ethical issues in computing are diversified, but for the purpose of this research, only the moral and ethical controversy between computer hackers and software owners will be discussed.

According to Stallman [5], in the early days of programming, computer programmers develop software for the fun of it, and for the sake of

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scientific and technological growth, so they make their stuff readily available for others to build on. Nowadays software owners consider first the profit they will make and legal means of making sure it is realised, not giving thought to what benefits the software will do to humanity. At the same time there are cases of computer hackers who seek and gain unauthorised access to software developed by others for personal occupations without the consent of their owners. Fearweather and Rogerson [1] affirmed that hackers' activities also continue to increase as the world deepens into global cultural homogenisation in technology. This moral and ethical issue is reviewed from philosophical and legal views. The hacker attitude is first explored from the utilitarian perspective.

2 COMPUTER HACKERS IN THE UTILITARIAN PERSPECTIVE

Computer hackers are individuals involved in the act of break-ins into other people's computer systems. In Spafford [4], the break-ins can be in form of theft (computer burglars) or through launching vandal ware (internet worm programs and virus software). For the purpose of this research only the former (computer burglars) will be discussed. This involves using illegal programs to gain unauthorised access into other people's software (or data) in order to use it for an occupation. This may include illegal access to data, to the actual coding which is sometimes dubbed and reproduced for sale.

Velasquez [6] claimed that the utilitarian theory affirms that an action is right only if the consequences of such action maximises benefits and minimises cost. That is, the resultant utility brings about happiness for the majority in the society thereby making larger member of the society happy. Therefore actions of computer hackers will be morally right if resultant utility has benefit that outweighs cost regardless of the dissatisfaction and economic loss of software owners.

It does not matter to the utilitarian whether software owners are denied of their economic right and satisfaction in as much as the hackers' deals make larger member of the society happy. Therefore from the utilitarian perspective, individual's freedom is jeopardised. This may result in the production of no-good materials, and poor interpersonal relationship within the society.

3 COMPUTER SOFTWARE AND RIGHTS TO PROPERTY

Before discussing computer software and rights to properties, there is need to first understand the meaning of software, and concept of rights. Johnson [3] defines software as a set of logical instructions or programs the computer execute to accomplish a given task. He stressed further that, software can exist in the form of an algorithm (pseudo codes or underlying idea of the program), source code (the actual computer instructions written in a particular programming language) and object code (translated version of source code into machine language).

While Velasquez [6] defines right is an individual's entitlement to something which can make him act in some ways or have others act in certain ways towards him. He affirmed further that right can as well be "a moral right" (universal to the entire human race) or "a legal right" (based on particular code of conduct). Software developers claim ownership of their programs from the perspective of moral right and legal right.

According to Stallman [5] programmers who claim ownership of their programs justify their claims based on the emotional argument (a matter of effort put in) and the economic argument (making a living). This is a moral right which is universal to the entire human race. They back up this claim with labour principles. Software developers put forward the argument from the perspective of labour principles in order to justify claiming ownership of their software [2], [3]. He stressed further that they back up

their claim specifically with the Locke's theory which states that individual has property right in something when he mixes his labour with it. Meaning that software developers have laboured, and their labour have produced something else which was not in existence before, therefore they have proprietary (moral) right to their software.

Meanwhile, Johnson [3] assert that the labour principle is applicable primarily to raw materials which are natural resources commonly owned and accessible to all, not to intellectual property. Software development is a pure academic exercise and the software is an intellectual property, so labour principle is not applicable to it. Having failed from the perspective of labour principles because software is merely intellectual property, programmers now seek legal protections so as to further establish their rights to own programs created. The kind of legal protection they can seek is a factor of the form or the state of the software, that is, algorithm, source code or object code as mentioned above. There are presently three types of legal right-to-property laws that software owners can seek: Copyright Protection, Trade Secrecy Protection and Patent Protection [3].

Copyright law confers upon the programmer the solely right to reproduce the copyrighted work, to prepare directive works based on it and to distribute copies by sale or by lease. It also prohibits unauthorised copying (for whatever reasons) and unauthorised distribution of copies. However copyright law spared that the algorithms (basic idea of the program) should be made available to the public. That is, this law only grants protection on the author's expression of an idea not the underlying idea itself. This leniency in the law is meant to encourage people to work and build on their fellow's ideas, and to promote scientific and technological growth in the society.

Patent Protection gives software owners the benefit of monopoly of use for some years (to grant them opportunity to profit from their

products) after which the software (the three forms of it) is brought into the public realm where others can see and benefit from it. This gives opportunity for others to customize the programs and for fellow programmers to learn from such programs without duplication of effort (programmers not having to start afresh at all times).However there are restrictions on what can be patented. On a general note regarding intellectual property right in the world of professionalism, basic ideas and concepts, mathematical formula, scientific principles and phenomena of nature are not patentable [2], [3]. Through this, technological and scientific progress is encouraged in the society. Going by this patent law, only systems programs can be patented since they are non-mathematical (for example Operating Systems and hardware drivers), and also some application programs that fall in such category.

Trade Secrecy Protection entails keeping secret the information about one's business in order to be at advantage over competitors. Treating computer programs as trade secret keeps algorithm, source codes and object codes from public realm. This law is a bit difficult to apply to software that are meant for public consumption because it will put the society at disadvantage by preventing others from producing new invention from our programs in non-competitive and non-exploitative ways. Selling a program require giving access to it and giving some information about it (at least the algorithms). Therefore trade secrecy may not really be applicable to application programs meant to be circulated in the public. It is only relevant to few programs (dedicated software) created for private use in order to give their owners advantage in businesses.

Summarily, copyright law only make the algorithm available to the public and patent law (applicable only to non-mathematical and non-scientific software) makes the entire software available for free distribution in the three forms after a specified period of monopoly of use by the owner. Finally, the trade secrecy protection is

not applicable to software meant for public consumptions. To this end, software owners seek the copyright law or the patent law to maintain the proprietary of their software.

4 SOFTWARE OWNERS IN THE REALMS OF JUSTICE AND FAIRNESS

It is very difficult to preach to anybody to work for the sake of others without making personal gains in this present materialistic world. However software owners should be moderate in the acquisition of wealth because trading is a social function meant to serve other people in the society. Seeking Trade secrecy protection on one's software meant for private use is quite in line with the concept of moral rights. As for software meant for public consumption, when software owners seek copyright law, the software is sold only with the algorithms (underlying ideas). Whoever buys the software has no access to the source and object codes. Also, when patent protection is sought, the software is sold as black box until after a specified period before it is made available to the public in totality. According to Johnson [3], patent law lasts for about 17 years. As a result, in Stallman [5], software owners advocate either proprietary software is maintained or no software is developed. Thus they believe that once they develop software, they must claim ownership of it to make their desired gains. Hence, Stallman [5] stressed further that software owners will always obstruct and restrict the use of their software which can debar progress in the society, and can as well be wasteful due to cost of development. To this end a lot of people in the society are remain grateful to those who allow trial versions of their software to be downloaded via the internet.

Another obvious resultant effect of software propriety and selling software as a black box is the inability to adapt or customise programs by the customers. Customers who might have struggled to purchase copy of the software are unable to adapt the programs to suit their needs.

Painfully, the ease in software modifications or customisations is actually the advantage of software engineering to older technologies. The available software in the market is sold as black box in case of patent protection and only the algorithms is made available in case of copyright law. The source code is kept secret, only the owner can modify (imagine for how many people and within what time range) and nobody can learn from it. A lot of programmers and general users had experienced frustration of using programs whose deficiencies they cannot fix after purchasing them. This can be seriously psychological having bought a system you cannot adapt to suit your needs.

Furthermore, restricting the use of software developed prevents further advances in intellectual field and inhibits the evolutionary trend of software development. Before the advent of software ownership claim as mentioned earlier programmers had opportunity to learn from each other's software (imbibing the scientific spirit), improving on the software and coming up with new features. But now it is a matter of start from scratch (unnecessary repetitions).

So far with the actions of software owners, it is equally necessary to consider the damages of hackers towards them. In viewing Justice as Fairness according to Rawls in [6], principle of equal liberty grants every citizen liberty that must not be invaded by others. He stressed further that software owners are wronged by the break-ins of computer hackers. He also continued that principle of fair equality of opportunities where everybody has access to be trained and qualified for desirable jobs does not allow the actions of computer hackers.

5 IMPLICATIONS OF COMPUTER HACKING TO THE SOCIETY

Hackers often argue their behaviour is ethical based on their so called "hacker ethics" which states that information should be free and there should be no restrictions or boundaries to

accessing information [4]. This hacker opinion, regards intellectual property right and information security as highly uncalled for or unnecessary. However, if all information were to be property of everyone, the society will rather be in chaos. Impliedly anybody can alter another person's information. Hackers refer to their activity as attempts to share and circulate information within the society [4]. On the other hand, as mentioned above patent protection and copyright law can only be sought on non-mathematical and non-scientific software. In as much as software owners abide by this leniency in the law, computer hackers do not have any moral right to break-in into protected software. Hackers activities 'may' be justifiable if and only if software owners are found wanting in the implementation of the copyright or the patent law.

Furthermore, on no ground are the hackers allowed to gain access into software with Trade secrecy protection, such as database management system of an insurance institution, patient medical records in hospitals, and so on. The consequences will be invasion of privacy and lack of control of information for accuracy. It is completely wrong of computer hackers to break-in into other people's systems to steal information for whatever reason, in as much as it is wrong to break-in into a house and collect the occupants' properties. This will be tantamount to computer burglar. Painfully, it has become rampant in the society in recent times to the extent of attempts to gain illegal access to private email boxes on the internet. However, there are exceptional cases where hacking is done just for the fun of it, not necessarily for reuse of the software or to acquire programming skills.

Towards proffering a solution to this "impending social chaos" of computer break-ins, Spafford [4] proposed an ethical model of deontological assessment which entails evaluating the due process of an action no matter what the outcome and effect of that action is. As such the rights of software owners will not be jeopardised with regards to the utilitarian

perspectives and also going by the hackers' excuses that they attempt to share and circulate information. This simply implies ends do not justify the means. He further stressed that judging the hacker break-in by its result can be superficial because nobody knows what the full scope of the result will be. For instance, assume someone broke-in and hacked (copied and deleted) a substantial aspect of the database of an insurance institution, even if there are backup storage to recover the information lost, nobody knows to what extent this information theft will cost the institution. Similarly attempts to break-in into other people's software already protected by the law can be regarded as punishable offence. Computer hackers need to demonstrate ethics of care, taking into consideration affections for humanity. If the society is well structured retributive justice could be melted on computer hackers whose break-ins are unethical and compensatory justice to software owners that are equitably wronged. Valensquez [6] defines retributive justice as the justice of blaming or punishing people for doing wrong which was not committed in ignorance or inability, and compensatory Justice as the justice of restoring what someone lost when he was wronged by someone else.

6 ANALYSING THE MORAL VIRTUES OF SOFTWARE OWNERS

Virtue is particular about excellent moral character, while moral character is considered in terms of virtue or vices [6]. Hence virtue involves ability to reason and act humanly controlling emotions, desires and actions. It is the opposite of vices, and it is the human disposition that is praised when a person achieves the good that human practices aim at.

From the analysis in previous sections software owners manufactured their programs based on the demand of information technology in the society. One can still say that part of their aim must have been to improve the society or the entire human world with their acquired knowledge and skills. However they went

further to restrict its use due to emotional attachments and for economic gains. This is more or less a contradiction. It does not really make sense encouraging technological innovation at the expense of willingness to cooperate for the public use. For Instance buyers of the software are made to sign software license agreement of not sharing its copy with others. In actual fact these licences have no moral basis. Programmers should work for the spirit of discovery rather than mere working to get rich. Working for the joy of discovery will still make the software owners well remunerated, having a lot of fame, and as well bring a lot of advances to the society.

Individuals within the society will still pay to get a copy of the software, and it becomes free to them once it is purchased. These buyers should be able to install it on their systems, even if it is more than one. For instance, an institution that bought a copy of the software should be able to install it on as much of their systems as they feel. However, they are not expected to dub and reproduce for sale. Likewise individuals should have access to the entire coding (source and object) plus the algorithms in order to allow for customisation of the software. Other sources of remuneration for software owners can still include hardware manufacturers who are willing to donate towards software development that will promote the use of hardware on sale, there could still be opportunities for contracts from private institutions, grants from the government, or voluntary funding by institutions such as **Free Software Foundation**, and so on.

It will be alright for software owners to earn a living like other professionals and not wanting to make a fortune at all cost in their profession. As such they will be able to promote technological growth. They should feel happy and be contented by the fame they will acquire through inventions which is something money cannot buy. Although discouraging method of software proprietary may result in fewer number of software being developed but there will be more in circulation and this will likely facilitate improved software productivity and wider use of programs.

7 CONCLUSIONS

From the analysis above program creators do not really have cogent reasons (apart from the emotional and economic reasons) to claim ownership of software. If software development is perceived as an invention like sciences then there is no moral necessity to grant them property right in the program they create. Therefore selling software as black box should be very much discouraged. Although what operates in the law is to permit patent and copyright law on software created, at least the algorithms should be made available from the onset of program circulation. This calls for a modification in the patent protection, such that only the object and source codes are concealed for the period of patency. In order to let this view hold, government should fund software development and encourage research works in software engineering through incentives, enlightenments and praise. Non-governmental organisations and institutions too can help. This will enhance societal development in technological arts and sciences. Software hoarding retrogress welfare of the society and disband spirit of cooperation.

On the other hand, hackers have no moral basis to seek and gain unauthorised access into software that has legal protection. As such cases involving hacking should be handled on legal grounds. However, if hacking is done to alert software owners about lose security of their software without any ulterior motives to modify, reveal, or reuse any data, then this can be morally justified and rewarding.

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