Investigating the Role of Retaliation in Protecting Human Rights

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Abstract

Religion and human rights have different dimensions, one of which is the relationship between retribution and human rights. With the formation of the concept of human rights and the emergence of international assemblies, in some documents published by these assemblies, a tendency towards abolishing the death sentence from the list of punishments is observed. The criminalization of intentional murder, and the legalization and implementation of retaliation in Islam, make it clear that this punishment not only does not violate human rights, but on the contrary, one of its most important goals is to restore human rights. Of course, it cannot be denied that there are aspects of retaliation, such as the execution of children under the age of 18, the difference between men and women, infidels and Muslims, etc. But this contradiction can be removed by applying the reservation, requiring retribution with the permission of the ruler, and applying the most important rule.

Keywords: Human Rights; International Human Rights Documents; Retaliation; The Relationship Between Retribution and Human Rights; Protection

Introduction

Because retribution has both rational foundations and has been discussed in Shari’i evidence, the discussion about it is possible intellectually and religiously. Therefore, it can be said that this topic is an intra-religious topic based on Shari’i evidence, and its audience is mainly the Islamic society and those who follow that religion, based on its rational foundations, it is also considered an extra-religious topic. It is possible that in this case, its audience is not limited to the people of Sharia and the Islamic society, but it will include all intellectuals of the world and the international community. In the fact that retaliation defends life and public interests, there is no difference between reason and Sharia; According to the law of retaliation, a person should not unjustly harm his fellow man because he is respected; Life and physical integrity are his rights and should not be violated. According to this ruling, if someone kills another, he will be killed; Therefore, this ruling is both just and wise and prudent; Because it is considered the best performance guarantee to protect and support human life and physical integrity. According to the Qur'an, one of the most important goals and pearls of wisdom of legislation and implementation of retribution is general deterrence and protection of the right to material and spiritual life for all human beings. Therefore, revenge will bring about security in society and the continuity of life for the human species, and this means protecting the most natural and fundamental human rights that are mentioned in international declarations.
1. Terminology of Research

1-1. The Concept of Right

right means "certainty" and "demonstration". Therefore, everything that has proof and realization is called right. (Ibn Manzoor, 1987, Vol. 10, p. 51). But the meaning of right in the term jurisprudence and law has a significant variety; Famous jurists have defined it as the present monarchy. (Ansari, 2011, p. 9) In the science of law, it is referred to as dominion and privilege (Lengroudi, 1999, p.1669) or the power resulting from the law (Movahed, 2005, p. 45). The meaning of "right" in this research is a concept in contrast to "duty" when it is said that man has the right to life; Such propositions can be dissolved into a right and a duty; This means that it is necessary to prove the right to life and the right to dignity for someone is to prove the obligation to the other party; That is there is a connection between the right in this sense and the obligation in such a way that the owner of this right can sue the violator in the court (Kadivar, 2013, p. 77).

1-2. Human Concept

According to some people, "human" is not conceptually synonymous with "man", but the concept of human is special from the concept of human. Human being in the word only refers to the natural and material dimensions of man (Qureshi, 1991, p. 192). Unlike the concept of human, which refers to all dimensions of human beings, both material and spiritual. However, due to the plurality of anthropological approaches, it is not possible to provide a specific definition of the term; In the majority of contemporary anthropological approaches, human is used in its literal meaning; That is, it only refers to his physical and material dimensions; The meaning of human in these approaches is only his biological meaning (Jean, 2012, p. 539). Based on humanism, human comes from the root of the Latin word "humans" which is equivalent to soil and means an earthly being, only an animal has evolved whose life begins with birth and ends with death. In this view, the human relationship with God and the universe is cut off after death (Salimi, 2013, p. 113).

In the religious and Islamic approach, human beings are not only material and one-dimensional beings but are composed of two parts, nature and nature. (Surah Rum, verse 30). In this approach, the human being is a two-dimensional entity and a mixture of soul and body (Surah Sad, verse 71), which was created by God (Surah Tur, verse 35) and does not exist independently of itself. In terms of the spiritual aspect, it is an eternal and permanent being that after death is transferred to the other world and will remain "immortal" there (Surah Rum, verse 7). Therefore, the concept of human in the religious term is synonymous with the concept of human and has distanced itself from its literal meaning. But in the approach of contemporary materialists and human rights authors, human remains in its literal meaning and refers only to the natural and material aspects of man.

1-3. The Concept of Human Rights

The term human rights in the history and literature of the world's valid legal systems, both religious and non-religious, in its modern meaning, does not have an ancient history; Therefore, this term is relatively new and only after the Second World War and the establishment of the United Nations in 1945, it entered the legal literature and everyday conversations and gradually replaced the term Natural Law, which is older in the history of law. Therefore, it can be said that human rights describe natural rights or human rights in the 20th century (Habibi, 2004, p. 220). According to humanism, human rights are: "a set of privileges that have a noble human theme and meaning, which a person can enjoy regardless of any religious, racial, sexual, linguistic and similar complications and even the level of individual ability and competence and regardless of the situation. The changing social conditions have it, and it is related to the dignity respect, and character of the human being. (Khorbania, 2017, p. 36). According to this definition, human rights arise from human nature and are always with him, they are considered absolute, fundamental, and the basis of other rights, and except in rare cases, they cannot be limited or revoked.
In another definition based on the religious approach, human rights are: "a set of principles and rules derived from human nature and divine law that are necessary for the ultimate development of man" (Zanjani, n.d., p. 30-31). In this definition, the divine law and the legislative will of Almighty God are considered the source and origin of human rights. But despite the difference of opinion between theists and materialists in the concept of "human" and the origins and foundations of human rights, they agree on one point, and that is that humans because they are humans, are subject to a series of basic rights. It has the title of human rights.

1-4. The Concept of Retaliation

Retribution in the word means following and following the effect of something (Ibn Manzoor, 1993, vol.7, p. 42) in jurisprudential usage, it means "following the effect of a crime" (Farahidi, 1998, p. 10) so retribution is the perpetrator will inflict the same crime on his life (Najafi, 1993, vol. 42, p. 7). Therefore, revenge in jurisprudential terms means confronting the same and following the effect of the crime; It means to follow the effect of any kind of damage against the physical integrity of persons, whether it is murder or injury or cutting and beating. (Marashi Najafi, 1994, vol. 1, p. 19). According to this definition, in a society where people commit bloodshed and mass murder after a crime and take revenge on a person or his tribe, revenge has not been done; Because in retribution, the amount of the crime inflicted on the victim must be inflicted, not more than that.

2. Retaliation Relationship with Human Rights

The relationship between retaliation and human rights can be discussed in at least four areas:

One. In terms of basics and resources; The question is, do these two issues agree on the basics or do they reject each other's basics?

two. In terms of international human rights documents and laws; The question that can be investigated here is what is the view of international human rights documents regarding revenge?

Three. The role and effect of retribution on human rights; The question is raised whether retribution violates human rights or on the contrary, retribution has a protectionist stance towards human rights.

Four. Examining solutions to resolve the conflict between retribution and human rights; Therefore, in the third area, the inconsistency of retribution with human rights is proven. Scientific and analytical forms are to be discussed.

2-1. In the Field of Human Rights

A detailed study of retaliation in religious sources and human rights in international documents shows that there is a fundamental contradiction between retaliation and human rights; One aspect of the contradiction is the contradiction in the issue of anthropology and the issue of human rights; The second aspect of contradiction; The discrepancy is in the issue of cosmology and human rights.

Contradiction in the first direction means that a person who is the subject of divine decrees and a person who is the subject of human rights have many differences; A person who is defined by religion is worshiped and oriented towards the essence of God's existence and his oneness in the continuation of his existence (Surah Rum, verse 3). From the point of view of Islam, man has two aspects, body, and soul, and in terms of the spiritual aspect of man, resurrection, and life after death are justified and acceptable, and based on this, the world and the hereafter are connected. (Surah Ankabut, verse 64) and is responsible for all his actions and behavior; Because he is a free and independent being (Surah, Insan, verse 3). But man does not have these characteristics in the approach to human rights, and basically, his spiritual and religious aspects have not been taken into consideration. At the time of the approval of the declaration, some representatives of the Western countries tried to move the declaration towards referring to God, but
their opinion was not accepted. The representative of the Netherlands admitted in his speech in the General Assembly that in this declaration, he refers to the divine origin of man and the immortality of his soul. has not been (Habibi, 2014, p. 423).

But the discrepancy in the second aspect, which is caused by the discrepancy in the first direction, is related to the status and legislation of human rights; Based on humanism and the school of human originality, instead of divine will, human will is proposed as the basis, origin and author of human rights; Because in this approach, man has originality, and based on the originality of man, his will also finds originality, the dignity of man also lies in originality, and his inherent independence (Ahmadi, 2010, p. 41). The meaning of this statement is that man acts independently in all matters, including legislation, humanists and founders of human rights believe that there is no need for divine orders to enact human rights and other laws. Because the subject of these rights is a pure material being whose life is limited to this world, worldly life does not have complex dimensions and layers, so it needs divine legislation; Therefore, we can solve our material needs and problems without the inspiration of divine revelation by relying on sensory and intellectual knowledge and determine the path of our happiness and prosperity.

In the religious approach, the determination of human rights and duties, including the enactment of the law of retaliation, is only under the jurisdiction of God. (Mesbah Yazdi, 2009, p. 57).

According to God's scientific and moral characteristics, he is the only one who can establish laws about human rights without interfering with love and hatred and regardless of any ignorance or mistakes (Collection of Authors, 2016, p. 207). Therefore, it can be said that in terms of fundamentals, there is a contradiction between retribution and human rights, to the extent of a general distinction; These two issues, the foundations of anthropology and creditology, confuse each other; Therefore, it is not possible to solve the conflict and sum between these two issues at the basic level.

2-2. In Terms of International Human Rights Documents

The question examined here is what is the view of international human rights documents about retaliation? Have international human rights documents rejected retribution as a physical punishment that violates human rights, or have these documents accepted retribution and execution in some cases?

According to international human rights documents, it should be said that although the Universal Declaration of Human Rights itself does not explicitly deny or affirm this punishment, there are ambiguous materials in this declaration that, although there is no direct conflict with this ruling, in the interpretation Expanded, there is a possibility of its extension to this Islamic ruling.

For example, in Article 5 of this declaration, it is stated that "no one can be subjected to torture or punishment contrary to humanity and human affairs or offensive". If torture and punishment against human rights and offense are interpreted in this article in such a way that it includes some Islamic punishments, or if some Islamic punishments are considered torture and punishment against human rights and offensive, in both cases of this article, it conflicts with the punishment of retaliation and some other punishments.

But it seems that according to the evidence in other documents, this article does not include Islamic punishments, including retribution; Because the Convention Against Torture, Cruel, Inhuman or Degrading Treatment or Punishment adopted in 1984 by the United Nations General Assembly, after defining torture in Article 1, under Paragraph 1 of this Article, states that: "Suffering and pain that are intrinsically or consequentially It requires legal punishments, it is not considered torture. (Mehrpour, 1998, p. 97).

The word “Punishment” in Articles 5 and 16 of this declaration should also be interpreted as a punishment that is carried out outside the legal procedure and court order. That is, the meaning of these two articles is that, except for torture, other types of punishment or harsh and inhumane or humiliating treatment that occurs after the sentence and during the serving of the sentence or outside the judicial
process without the intention of obtaining information and confession without the fact that the basis of the law and sentence is also forbidden to have a court. (Mehrpour, 1998, p. 100).

Secondly: In Article 6 of the International Covenant on Civil and Political Rights, which is the description and interpretation of the Declaration of Human Rights, deprivation of life and the death penalty are generally accepted; This article talks in more detail about the right to life and guarantees about it, some of its clauses are mentioned here:

1. The right to life is an inherent human right, this right must be protected by law. No one can be arbitrarily deprived of life without permission;
2. In countries where the death penalty has not been abolished, sentencing must be carried out only for the "most important and serious" crimes under the law in force at the time of the crime. ..., the execution of the death penalty can only be carried out according to a final verdict issued by a competent court...;
3. Every person sentenced to death has the right to ask for amnesty or reduction of punishment. General, individual amnesty or commutation of the death penalty can be granted in all cases;
4. The death sentence is not issued for crimes committed by people under the age of 18, and it is not carried out in the case of pregnant women.

As can be seen in this article, the death penalty based on the court order is considered as an exception to the right to life, therefore, its existence in the regulations of the countries will not be considered as a violation of life. According to paragraph 2 of this article, the death sentence is issued in the case of "the most important and serious crimes" according to the law in force at the time of the crime. Although the concept of "the most important and serious crimes" is a concept, it is very vague and this ambiguity prompted the Human Rights Committee to interpret and disambiguate this phrase. According to the interpretation of the Human Rights Committee, this phrase includes crimes related to Property, economic crimes, political crimes, and any crime that does not involve the use of force and coercion are not considered (Sayed Fatemi, 2010, p. 54).

In this interpretation, the crimes in which the death penalty cannot be applied have been specified, and among them, there is no crime of "intentional murder", so intentional murder is not excluded, and in the case where there is no provision, the general public is held unless it should be said that intentional homicide is not considered the most important crime, which is necessarily rejected. Therefore, according to paragraph 2 of the above-mentioned article, the death penalty can be applied in the case of "the most important and serious crimes", one of which is certainly intentional murder, and this is exactly what is in the teachings of Islam.

Therefore, retribution is not carried out beyond the range (the most severe crimes) that the Covenant of Civil and Political Rights has considered for applying the death penalty, but it is carried out within the same accepted range. Bekaria, who is one of the first and staunch opponents of the death penalty, accepts the death penalty in two cases, one in the case of political crimes in which the criminal can "create a dangerous change in the form of government". In the case where the death of the criminal is the only deterrent and causes others to refrain from committing the crime. (Jun Pradel, 2013, p. 54) With this statement, it became clear that international human rights documents are not against the principle of retribution, but retribution and execution in specific cases (the most serious crimes) regardless of some branches and details, these documents have been accepted.

2-2-1 Dimensions of Retaliation Protection for Human Rights

In examining the protectionist dimensions of retaliation for human rights, it is necessary to pay attention to the fact that this topic is not dedicated to the nature of retribution because retribution is a punishment. Still, all aspects related to retaliation that have a positive role and effect on human rights, have or limit the scope of the conflict of retribution with human rights, regardless of whether it is the
subject of retaliation or the legislation and implementation of it or its conditions and obstacles are considered in this research.

2-2-2. Criminalization of Murder and Its Role in Protecting Human Rights

Undoubtedly, one of the behaviors that violates the foundation of human society and human rights is killing innocent people. Therefore, this act is criminalized in Islam; There are many verses and hadith to prove that this act is sacred and a crime in Islamic law (Surah Anaam, verse 151) and (Surah Furqan, verse 68) on the other hand, based on the principle of obeying the rulings from benefits and corruptions (Motahhari, 2002, Vol. 21, p. 297). Any criminalization and divine legislation must be based on its own goals and principles. According to these two points, the question that exists now is what was the meaning and purpose of the Shariah in sanctioning and criminalizing intentional murder?

In response, it should be said that although the main goal of this ruling is to worship and obey the master; A servant must obey his master. But it cannot be denied that there are other goals and philosophies behind this basic goal. One of the important goals pursued by these verses and traditions is to provide human rights in the field of preserving human life; Because in some narrations, the issue of deterring the killing of human beings has been explicitly mentioned in explaining the criminalization of intentional murder. For example, it is stated in the letter that Hazrat Ali bin Musa al-Reza wrote in response to Ibn Sinan's questions: “God forbade killing a human being; Because if he made it halal, then in making murder halal, it was the corruption of the people and their destruction and the corruption of the policy” (Hor Ameli, 1988, vol. 29, p. 14).

In this letter, he mentions two human rights issues as the philosophy and foundations of sanctions and criminalization of murder and killing of humans; One is to protect people's lives from corruption and destruction. Second, maintaining order and planning of social affairs; The saying of Imam refers to the fact that analyzing and considering suicide as halal and not criminalizing it exposes people's lives to annihilation and destruction. And it destroys the order and security of the society. While people have the right to have their lives protected and not threatened by any factor, and to have order and security in the society they live in.

Therefore, the criminalization of intentional murder and the expression of severe punishment in the afterlife, such as entering the fire and solitude in hell, etc., in the verses (Surah Nesa, verse 93) and hadiths, (Hor amili, 1988, vol. 29, p. 13) play a major role in reducing the commission of murder; Because a person who believes in the fundamentals of religion and adheres to Islamic ethics does not act against divine prohibitions and prohibitions, especially the killing of innocents. Therefore, the prohibition of killing in Islam is a deterrent for most people in the society who consider themselves to be committed and subject to Islam; A Muslim and a potential survivor who believes in God and the Day of Resurrection, when he realizes such severe punishment, the four pillars of his body tremble and take the threats and punishment of the Almighty God seriously. Therefore, fearing the hereafter is a factor that plays an effective role in preventing unjust bloodshed. Internal deterrence is more important than external deterrence; Because people may be able to hide from external deterrence, but internal deterrence, which is the belief in the hereafter, is always with the person and it is not possible to hide from it (Surah Alaq, verse 14).

Therefore, based on the verses, hadiths, and religious teachings, the criminalization of murder and intentional killing of humans, in line with the protection of human values and the basic interests of society, can be assessed, which indicates its conformity with rationality and its alignment with human rights.

2-2-3. Retaliation Legislation and Its Role in Protecting Human Rights

In defense of human rights and social life, Islam is not limited to falsifying the law and criminalizing the killing of human beings; it is also clear that criminalizing murder and stating the
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punishments in the afterlife alone are not enough; Because there are still people in the society who do not believe in the world after death and have not benefited from humanity. Therefore, Sharia has identified the best way to preserve social life and society's security in the issue of intentional murder, social revenge, and the right to retribution; verse 179 of surah Al-Baqarah says: “In retribution is life for you, O wisdom, maybe you will be pious”. However, in verse 178 of Al-Baqarah, which is before this verse, the forgiveness of retaliation is legislated. The juxtaposition of these two verses shows that in the case of intentional murder, as well as revenge and preservation of public life expedient, pardoning the killer and paying the ransom is also expedient but it should be noted that the expedients are not at the same level; In the clash of expedients, based on the hadiths and rule, the most important expedient should be considered (Muntaziri, 2008, p. 78). Based on a monotheistic worldview and Islamic culture, preserving the public life of society is more important and therefore considered important; This importance can be understood both through reason, which is one of the sources of religion, and based on the verses of retribution.

The mention of verse 179 after verse 178 and the expression of the best social wisdom for retaliation, points to the point that perhaps the legislation of pardon in the previous verse caused the illusion that pardon is closer to the interest of society than revenge, verse 179 referring to the wisdom of the law of retaliation, in dispelling the aforementioned illusion, says: Although in forgiveness, it is a reduction and mercy of God. But public interest is based on retribution; Because the life of the society is guaranteed by nothing but retaliation, and every wise person with lips and thoughts understands it correctly. Therefore, waiving the right of retribution is acceptable as long as the wisdom of retribution is not lost (Hashmi Rafsanjani, 2000, Vol. 1, p. 577). The meaning of this statement is that according to the Holy Qur'an, the interests of society come before the interest of the individual, and the Sharia has paid more attention to the preservation of public life; Therefore, in cases where intentional killing threatens the security of the society, retribution is the main principle, mitigation and amnesty is secondary, and in the case of a conflict between amnesty and retribution or ransom and retribution, regardless of the external causes of preference, preference is given to the side. It is revenge and pardon should not harm the general life of the society (Javadi Amoli, 2008, Vol. 9, p. 184).

However, such an opinion may be surprising today, as revenge has provoked hostile reactions in some countries. Nevertheless, it should be said that these enmities are based on emotional tendencies and emotional reasons, not based on a rational approach. If we want to speak from a purely rational point of view, we will acknowledge that retribution is the only executive guarantee that exactly meets the expectations of criminal justice. He says the answer. Retribution is the only punishment that is exactly equal to the crime. But other punishments of any nature are unjustifiable from a rational point of view (Jun Pradel, 2013, p. 152).

The role of prevention of aggression is the threat of retribution and reciprocation, not its implementation. Because the execution of revenge is possible after the violation. Therefore, the role of threatening retribution, which has a preventive aspect, will be its widest and deepest role. Fear is a powerful natural factor in human societies, which can be effective and useful in preventing aggression. According to what was said and the precision in the verse of retribution, the protectionist role of the legislation of retaliation can be seen. compared to the right to life as follows:

On the one hand, the legislation of retribution guarantees the life of the society; Because if the sentence of retribution did not exist at all and hard-hearted people felt safe, the lives of innocent people would be in danger, just as in the countries where the sentence of retribution has been completely abolished, the number of murders and crimes has increased (Manouchehr Khazaei, 1990, No 8, p.p. 105).

On the other hand, revenge is the reason for the killer's life; Because it prevents and controls him from the thought of murder to a great extent. On the third hand, because of the need for equality, it prevents successive murders and puts an end to Jahili traditions, which sometimes cause one murder to be the cause of several murders, which in turn become the cause of more murders. In this way, it is the lifeblood of the society (Makaram Shirazi, 1983, Vol. 1, p. 684).
2-2-4 Execution of Retribution and Its Role in Protecting Human Rights

What has been said so far regarding retribution and human rights values was related to the stage of legislating retribution. But these works are not necessarily related to the legislation of retribution, perhaps the performance of retribution and the scene of hanging the murderer on the gallows, for some, is more deterrent than the principle of the legislation of retribution, in addition to compensating the material and spiritual damages resulting from the crime in the case of at the request of parents, it is possible only by implementing retaliation, merely legislating retaliation has no effect in repairing such damages. The association of suffering and torment that occurs in retribution for every viewer or listener, or the scandal resulting from the retribution of a member, which is raised for the criminal in a crime, for members and jewels in the social scene and in the minds and opinions of the public, and next to them, the certainty of punishment of retribution, in some way, causes general intimidation of the members of the society and also makes the severity of the punishment urgent in the minds of the criminals and leads them to learn a lesson from the sealed and promised fate. In this way, with the deterrent effect of crime on potential criminals, human life in the social system is seriously supported. (Khobbijari, 2010, p. 63).

The appearance of the Qur'an, which introduces retribution as an important factor in life, also refers to implementation and legislation; That is, just as the important factor of life lies in the legislation of retribution, this effect also follows on the implementation of retribution. If it were possible, an accurate statistic would be taken of those who think of destroying others and have many times planned the murder of a colleague a partner, or even their spouse in their thoughts. But they have given up on it because of the fear of retribution. At that time, we correctly acknowledged that the ruling of retribution is a deterrent and deterrent from killing others.

Conclusion

Undoubtedly, one of the behaviors that violates the foundation of human rights; is the bloodshed and killing of innocent people; Hence, this act is criminalized in Islam and the punishment is determined for it; Based on the results of this research, revenge plays an important role in guaranteeing human rights and protecting the right to life; Therefore, in this research, the protectionist dimensions of this punishment have been taken into consideration. One of these dimensions is the criminalization of revenge; In some narrations, the issue of preventing murder and preserving human life has been explicitly mentioned in explaining the criminalization of intentional murder. The second dimension is the legalization of retribution as a punishment commensurate with murder. Enacting the law of retribution in the form of a just criminal system, relying on the principle of personal punishment, plays a significant role in preserving life and ensuring justice in society; Therefore, the legalization of retribution in Islam is considered one of the most important steps in the direction of preserving human life and ensuring order and security in society. The third dimension is the implementation of retribution. The above works are not necessarily related to the legislation of retribution, perhaps the execution of retribution and the scene of hanging the murderer, for some, are more deterrent than the principle of the legislation of retribution. Considering the nature, effects, and actions of revenge, it can be said that this punishment is not only against the international human rights documents, but it goes towards supporting and strengthening its content. According to paragraph 2 of Article 6 of the United Nations Covenant on Civil and Political Rights, the death penalty can be applied to "the most important and serious crimes", one of which is murder.

References

Holy Quran

Ahmadi, Eid Muhammad, human dignity and corporal punishment from the perspective of Islam and Western human rights, Qom, Imam Khomeini Institute Publications 2019.


Declaration of Human Rights, approved in 1948.


Harr Ameli, Muhammad bin Hassan, Al-Wasal al-Shi'ā, first edition, Qom, Al-Bayt Institute, peace be upon them, 1988.


International Covenant on Civil and Political Rights, approved in 1966.


Khazaei, Manouchehr, death penalty based on Syracuse International Conference, (Italy) 1990.


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