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Hydro-politics and competing interests for water security on sharing river of the Brahmaputra between India and China

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Abstract
The trans-boundary river like the Brahmaputra originating in Tibet (China) and flowing through India and Bangladesh provides significant water resources in the Brahmaputra basin. The management of the Brahmaputra creates implications for the security of water, food and energy in the region. Hydro-politics for water security comes into play for water security as the Brahmaputra stands as centre point of water conflicts between India and China in terms of power politics and reluctance of transparency and information sharing between them. As both countries experience increasing water scarcity, their competition for controlling and accessing more water resources tends to intensify as water resource is also associated with country's economic growth, rise of living standards, population growth and demands for factories and industries. Hydro-political complexes emerge in the Brahmaputra basin as India and China have strategic, economic and security considerations on one hand and efforts to promote political stability, regional security and environmental sustainability on the other hand as Brahmaputra flows through the territory of Arunachal Pradesh which is contested by China. Consequently, both countries intend to exploit more water resources and have also initiated construction activities like hydropower dams, infrastructure projects in the Brahmaputra basin along the border areas. The potential water conflicts, if not addressed without an effective working mechanism, would pose a serious challenge in India-China relations. Therefore, this study aims to first identify the driving forces for hydro-politics on sharing Brahmaputra River between India and China along with examining the theory of hydro-hegemony and principles applying in the trans-boundary water relations. It will also attempt to bring into discussion of water cooperation and challenges and finally analyse the competing interests for both India and China on Brahmaputra with respect to their economic, political and strategic perspectives. This first section of this paper briefly introduces the importance of the Brahmaputra, hydro-politics and growing interests in its water resources. The second and third sections of the paper highlight research objectives and methodology and discuss the theories and principles applicable in the trans-boundary water relations. The fourth and fifth sections examine the water cooperation and constraints in improving water interaction between India and China. The sixth section looks closely at the analysis of competing interests on shared river of Brahmaputra from the view of India and China. And the last section of the paper presents conclusion and way forward that India and China can involve in strengthening and enhancing water interaction for water security, stability and sustainability.

Keywords: hydro-politics, water security, the Brahmaputra, cooperation, water resources etc

Introduction
Transboundary River like the Brahmaputra always marks a pivotal role in transboundary water relations between the water riparian countries. The security for freshwater resources cannot be abandoned in the development of a country. Here, hydro-politics came into play to harness and access to more resources than other in sharing cross-border river resources as water resource has become an indispensable part with respect to the country's economic growth, the rise of living standards, population growth, and the demands from factories and industries. When the transboundary River is shared between two power asymmetric countries, politics came into play that tend to complicate in enhancing trans-border water relations. The asymmetric power relations along with the absence of distinct international water laws has entangled a complex situation in establishing cooperation along the trans-boundary river resulting in more hydrological sensitive between the the riparian states. This complication remains intensified when the trans-boundary river passes through the disputed territory leading to blocking effective cooperation and collaboration between the states as can be evident in the case of Brahmaputra River. The distrust and failure to involve both China and India in sound partnership dialogue in shared water resources remained unaddressed for decades that continuously defies the potential space for joint cooperation in various dimensions. China's un-parallel advantage due to the virtue of its geographical, structural and material capacity power to influence the flow of water to downstream states results in consequences and complexes in sharing water resources with the lower riparian states.
China happens to be an upstream and water hegemon country. Amongst the major transboundary rivers shared with India, Brahmaputra, also known as Yarlung Tsangpo in China is considered as the most significant river

with respect to India and flows through three countries of China, India and Bangladesh. Therefore this study has emphasized on the Brahmaputra River for being a cross-border river as well as strategic significance from the perspective of both India and China. The cross-border river the Brahmaputra, after leaving Tibet (China) runs through the disputed territory of Arunachal Pradesh (an Indian State) between India and China that creates distrust and suspicion in sharing water cooperation between the countries. Not only border disputes, the Brahmaputra exists an indispensable part in both countries for the availability of rich natural and water resources in the basin which will be ultimately contributing to social angles, economic dimensions and environment management in the region. On the other hand, the Brahmaputra Basin introduces a significant chance for territorial cooperation and socio-economic exploitation of water resource between India and China. However, China, in order to satisfy its economic and energy demands along with its strategic consideration for the Brahmaputra river flows, has little incentive or ignorant tendency to participate in formal water sharing and water management agreements with her neighbours (Pomeranz et al., 2013) [17]. China's dam building activity on the course of Brahmaputra River, proposed South-North Water Transfer Project along with limited exchange of hydrological data with India raise suspicions and tensions brewing between India and China. India also initiated to utilize more Brahmaputra water resources by constructing infrastructure and hydropower projects and devised more plans in Arunachal Pradesh which is disputed by China in addition to other socio- economic development plans by countering China's construction activities over the Brahmaputra River. Therefore, Brahmaputra basin lying between India and China tends to be potential flashpoint and contentious issue of water management between the two countries.

Research Objective and Methodology

The objective of this paper will first attempt to examine the theory of hydro-hegemony and principles applying in the trans-boundary relations along with cooperation and challenges developing between the two countries. It will further analyse the competing interests for both India and China in terms of their economic, political and strategic importance and finally discuss the consequences and implications played by the hydro-politics in the development of water relations between the two countries. The research method utilized here is mostly descriptive and analytical in nature. This paper employs qualitative primary and secondary data congregated from different sources in the analysis of the subject under study.

Trans-boundary Water Relations: Power Theory and Hydro-Hegemony

The concepts of hydro-hegemony mark an important place in analyzing the water relations between the countries. The roles of hydro-hegemony, the existing power and the setup of political-economy processes brought an emphasis to shape and construct international trans-boundary water relations. Hydro-hegemony is hegemony active in international trans-boundary water settings (Zeiton & Allan, 2008) [21].

Use of Power and Hegemony Position

Power, when a country possess more than other riparian states, has the potential and tendency to mobilize more resources in cross-border river water relations. Here, the three dimensions of power used by Lukes can be analyzed in the domain of international hydro-politics (Lukes, 2005) [18]. The first dimension of power is 'structural power'. Here, power is focused on behaviour decision making, key issues, conflicts and interests. The power in most its recognizable form is utilization of the existing or prevailing material capacity of one country to gain compliance of the other country. The state with military or economic superiority remains lasting to coerce over other states. Observing the concrete nature and enduring quality of the state after possessing material capacity, the riparian position of state can be treated an asset of 'hard' or ' structural ' power (Zeiton & Allan, 2008) [21]. The second dimension of power is described as 'bargaining power**.'** The second dimension of power tends to "control over the rules of the game i.e. the power to decide where the goalposts are, and to move them at will. This form of power consists essentially of stripping the weaker party of the capacity to choose between compliance and non-compliance when confronted with the demands of the stronger party" (Lukes, 2005). In this situation, the weaker will find no alternatives and agree to the demands of stronger party in the allocation of benefits between it and stronger party. The third dimension of power tends to keep potential issues out of politics through the help of individuals' decisions or through the operation of social forces and institutional practices (Lukes, 2005) [18]. The state that possess "power within the institutions of hegemonic state become the deans of world politics, the administrators, regulators and geographers of international affairs" (O'Tuathail & Agnew, 1992). Luke (2005) [18] states that the third dimension of power concerns the power that can dissuade the people from meeting grievances by making their perceptions, cognitions and preferences in a manner in which they feel acceptance of their role in the existing order of things. As this power largely involves ideas, it can third dimension of power as **'**ideational power' (Zeiton & Allan, 2008) [21].

Power of Hydro-Hegemony

The hegemon possesses an unprecedented capacity to pressurize a weaker riparian state. Zeiton & Warner (2006) [22] demonstrated that hydro- hegemony can be defined as hegemony which is active over water issues. They assumed that the power asymmetries that are perceived to own the advantage of ability to exert influence over one riparian state over others more common than one might imagine. The framework of hydro-hegemony signified that "the use of force or coercion (sticks) and consent or attraction (carrots) coupled with the

establishment of ideas on a basin is much more determining of the outcome than international water law, water sharing ethics or riparian position" (Zeiton & Warner, 2006) [22]. The riparian countries like Turkey, South Africa and China are existent as upstream hegemons while other riparian states like Afghanistan, Nepal and Ethiopia are located as upstream riparians but cannot act as hegemons. Egypt unleashes its characteristics as downstream hegemon while Bangladesh and Mexico being downstream but cannot possess the attributes of hydro-hegemons (Zeiton & Allan, 2008) [21]. Menga (2016) expresses that the manifestation of material power with regard to trans-boundary context comprises of riparian's position, size of the country, military power, economic strength and structural capacity. Mirumachi (2015) [14] in his book *Trans-boundary Water Politics in the Developing World* highlights "geographic proximity to a water source may influence material power, since it is an important factor that explains upstream–downstream dynamics in the politics of water allocation and river basin management." Besides this, power asymmetry is a fundamental aspect of hydro-politics in the context of trans-boundary water. It affects the bargaining process for basin riparians (Daouby, 2009).

In the case of Brahmaputra, it has been a subject of discussion between the governments of the region because of their diverse interests including economic development and national security concerns. China, being an upstream country, has been suspected exercising its hegemon on water issues by the downstream riparian countries. China's reluctance to involve in multilateralism on the development issues of rivers except bilateral engagement has caused a suspicion among the riparian states of Brahmaputra River. It does only seasonal data sharing with other riparian countries that leads to cause a stumbling block in formulation of plans and infrastructure development on the Brahmaputra basins. In case of data sharing, "Indian critics have dismissed data sharing cooperation as useless at worst and limited at best. The information had been exchanged but it is not actionable because the data provides only volume of water figures not from where or what time," (Samaranayake, Limaye & Wuthnow, 2016). Negotiations among the co-riparian nations in this region have also been challenging. This is due to various inter-related factors such as "historical stereotypical rivalries, conflict of interest on water resources development among the upstream and downstream nations, suspicion and distrust among the countries owing to previous political disagreements, lack of open communication, and asymmetric power dynamics (financially or geographically)," (Gulati et.al., 2017) [8].

Some Principles Applying on the Use of International Rivers

Various principles are attempted to apply as practice on the use of international rivers and lakes since 19th century. Some of the important principles are examined here as widely considered in the diverse opinions of riparian states. 'Absolute Territorial sovereignty' which is also tagged as Harmon doctrine is one of the principles applied on cross-border rivers. This principle states that " a state is free to dispose, within its territory, of the waters of an international river in any manner it deems fit, without concern for the harm or adverse impact that such use may cause to other riparian states" (McCaffrey, 1996). However, this principle stands contrary to the basic principles of international law, which forbids any harmful action undertaken by riparian states to other states and also dictates the room for cooperation and peaceful settlement of disputes between them. Another water related principle is 'Absolute Territorial Integrity' that determines the requirement of a riparian right of a state to stipulate continuation of the natural flow of an international river into its territory from the upper riparian. This principle compels a duty on the state to allow natural flow of waters to other downstream states. This principle implies that the upstream state can tolerate only minimal uses and ensure its natural flow without much restricting the water flow (Salman, 2007) [8]. 'Limited Territorial Sovereignty' or 'Limited Territorial Integrity', an another water related principle sounds applicable with less hindrance and codes that every riparian state possess a right to utilize the waters of international river but lies a corresponding obligation to maintain that such utilization does not create harm to other riparians. Further, some other principles like 'Helsinki Rules (1996)' emphasized the principle of "reasonable and equitable utilization" of the flow of international drainage basin among the riparian states as the basic principle of international water law. The United Nations Watercourses Convention (UNWC) (1970) aims at "ensuring the utilization, development, conservation, management and protection of international watercourses. As a framework convention, it addresses some basic procedural aspects and riparian states has to complement in agreements that would take into account the specific characteristics of the watercourse in question" (Salman, 2007) [18].

Cooperation between India and China

In spite of having issues and complexities, both China and India works in cooperation on Brahmaputra River in few areas. India-China water cooperation at the bilateral level particularly emphasizes on flood control. The diplomatic engagement on water interaction between them diverges away from always abiding by the contours of their geographical proximity. Before the 1962 Sino-India war, the collaboration between India and China mainly embraces joint water, flood management and disaster mitigation and prevention. When the relations were restored to normal post the 1962 war, China and India engaged in water interaction through signing the first Memorandum of Understanding (MoU) on sharing the Hydrological Information on the Brahmaputra/Yalu Zangbu river in 2002 (Mittra, 2018) [15]. In 2006, both the countries held the Expert-Level Mechanism on trans-border rivers. In 2018 again, India-China Expert Level Mechanism resumed their 11th meeting for sharing hydrological data on transboundary rivers. The 2010 witnessed another MoU between India and China in which China has to furnish hydrological information of Satluj/Langgen Zangbo during the flood season for a period of five years. The MoU signed between them in 2011 provided the scope for implementation involving technical

details of hydrological information, the method of data transmission, cost settlement etc. This MoU got renewed with a validity of further five years in 2015 when the then China's vice president made a visit to India. Before this MoU, India and China inked another MoU in 2013 for strengthening cooperation on trans-border rivers (Ministry of External Affairs Government of India, 2013).

The 2013 MoU between India and China to provide hydrological information on Brahmaputra River from China was aimed at addressing the demands for flood control as well as disaster mitigation in the downstream areas of Brahmaputra River. However, the MoU helps to receive hydrological information data during temporary period of the flood season only as China requires to share it with India. However, China opines that long term cooperation with India with respect to hydrological information sharing will prove invaluable to flood forecasting and mitigation action and also provide a path to enhance mutual trust between the two countries.

(Ministry of Foreign Affairs of China, 2014). Woulter & Chen (2013) [4] says that this accord with China's approach with regard to talk of enhancing cooperation bears a mind with a focus on ensuring peaceful diplomacy (i.e. the duty to cooperate; duty of equitable and reasonable utilization). This intention not only reflects "the subtle change of attitudes of each state towards the other, but also suggests an emerging closer Sino-Indian cooperation and more open interaction on water issues" (Lui, 2015) [9]. The enhanced water interaction between India and China will ultimately benefit both countries as water related resources and significance of ecosystem in the Brahmaputra basin will help to bring socio- economic development in the region. This will also lays a road to sustainable management and utilization of shared water rivers and their resources.

Constraints in Water Cooperation

China's unparallel advantage and power to influence the flow of water to nations downstream has far consequences and complexes in sharing water resources with the lower riparian state. A lack of initiative of comprehensive and effective frameworks for cooperation pushes a hindrance in sustainable management of transborder rivers. "China, which controls the headwaters of these rivers, has an enormous need for Himalayan water to satisfy economic and energy demands but has little incentive to participate in formal water-sharing and water-management agreements with its neighbors" (Pomeranz et al., 2013:) [17]. The planning and construction of dams and water diversion projects over the flow of Brahmaputra River are a source of concern for downstream riparian states like India as water cooperation between India and China is very limited and India remains sceptical about China's lack of transparency and reluctance to furnish information to India. With the Chinese asymmetrical power with regard to India, the Chinese activities in the Brahmaputra Basin poses a prominent challenge. Besides this, apprehension holds high with the potential environment impacts incurred from man-made diversion projects and building activities in the river as India and China are less associated to engage in adequate cooperation on scientific research to understand the effects brought by the climate change in the Brahmaputra basin's water supplies.

The other irritant erupted between India and China involves the exchange of data on Brahmaputra River. Experts claim that the sharing of data by China with India works not actionable. As we know that flash floods of river Brahmaputra and its tributaries devastated thousands of life and properties, inundating agricultural areas and forest areas in the downstream areas of Brahmaputra basin like Assam, Meghalaya and West Bengal of India and Bangladesh. This occurrence of flood originated from intense rainfall pour in the upper reaches of the basin, existence of steep geography, land fragility, increasing deforestation and growth of urbanization. However, exchange of adequate hydrological data by China can assist the downstream states in detecting flood forecasting and providing warning which will ultimately allow them to attain ample time and opportunity to safeguard destruction of life and properties. Presently, the water interaction among riparian countries of the Brahmaputra involves in a very limited arrangement for hydro meteorological, and land use related data sharing between these three countries (Battarai, 2009). Although the downstream riparian states strongly wish to receive fully adequate data from China, China remains adamant in reluctance of sharing of hydrological data fully due to the various reasons in China's perspectives. With regard to international water laws, China restricted itself and reveals reluctant to ratify the 1997 UN Convention on the Law of the Non-navigational Uses of International Watercourses which provides a framework for multilateral cooperation on water (Bhattacharya, 2018). China also closed door to sign and ratify the Helsinki Rules too. This attitude of China creates a stumbling block to apply international laws in sharing water resources between India and China. In addition to this, the emergence of border dispute and resurfacing it frequently at the eastern and northern sector also created hindrances in improving water cooperation between India and China.

Competing Interests on Shared River of Brahmaputra

Trans-boundary rivers originating from China to India falls into two main groups in which Brahmaputra river system flowing in the eastern side consisting river Siang and its tributaries Subansiri and Lohit river and Indus river system on the western side consisting Indus river and Satluj river. It is observed that Brahmaputra River in terms of water relations with China is associated with more strategic, political and economic significance for both India and China. As Brahmaputra River flows through Indian state of Arunachal Pradesh, which China claims as their South Tibet, development of water interaction due to this border dispute remains one of significant flashpoints disturbing Sino-India relations (Christopher, 2013). The Brahmaputra basin holds more than 100 million people and their economic structure in the region is highly water dependent. A large section of the population dwelling in the basin is associated their livelihood based on the resources of agriculture

cultivation, rearing livestock, forestry farming, fisheries harnessing and development of industries in the basin. The river Brahmaputra also provides the scope of opportunities for irrigation and hydropower developments, livelihood management and operation of internal water transport system. In addition to this, the critical issue of food security and water dependent industries has forced the states to maximize use of shared water resources by controlling them.

Both China and India are treated as water stressed countries. With China's meeting of shortages of clean water and growth of energy demand due to raise in their living standard and urbanization, China now feels threatened in her prospects for continued economic growth. The accelerating water and energy pressures in China's economy forced China to utilize its engineering and financing capabilities to undertake numerous water resource projects in water-abundant Himalayan Tibet region near Indian border. However, it appears that "if large hydroelectric dams are going to be built on the international rivers that begin in China, upstream sites will often, though not always, offer the best ratio between power generated, people displaced, and environmental risk,"(Pomeranz, 2013) [17]. The Himalayan watershed is currently fraught with growing tensions by the confluence of three factors: China's upsurge in demand for hydroelectric power, depletion of freshwater availability or water scarcity as well as the trans-boundary nature of rivers. China's accelerating efforts to harness more energy for building cities and fuelling industries and simultaneously devising plans for diminishing greenhouse gas emissions have generated a new wave of plans for construction of dozens of mega dams along the mainstream of trans-boundary rivers (Batten, Turner & Shifflet, 2013). However, Brahmaputra/Yarlung Tsangpo, despite having huge economic and energy potentialities, is yet to materialize in full development and utilization for meeting the increasing demands in China.

The distribution of China's water resources in remains unequal between northern and southern portion of the country. The North of China, which is the epicenter of economic and agricultural activity and also home of the half of the population of China, contains only twenty percent of China's water resources. The northern China is extremely water stressed but finds concentration of agricultural and coal sector there which utilizes seventy percent and twenty percent of China's water resources respectively (Bhattacharya, 2018). This factor pushed China in her 12th Five Year Plan to emphasize hydropower as the central focus of China's plan to expand renewable energy by 2020. China has worked out their proposed plan of South-North Water Transfer Project to be realized by 2050 and under this project, China will divert additional water from trans-boundary river in South China to its dry northern regions to fulfill the demands of China's coal and grain production. They have already constructed their first mega hydroelectric power station i.e. the Zangmu Hydroelectric Power Station in 2015 over the Brahmaputra River. Thus, the above factors along with the concern of boundary issue on Arunachal Pradesh have resulted to cultivate their perpetuating interests in the resource of Brahmaputra River.

With regard to India's interest on Brahmaputra resources, it finds more or less similar with China's internal and external interests on Brahmaputra. The natural resources availability, concern of underdeveloped regions of north east India and boundary issue have associated with strategic, political and economic significance of the Brahmaputra River. Brahmaputra River imparts a great interest for India from the internal perspective as can be mentioned that "India's main domestic considerations are hydroelectricity, flood, erosion, sediment control, and integration of the isolated north-east of India into the rest of the country through local development by harnessing the potential of the Brahmaputra river," (Barua & Vij, 2018). The Brahmaputra basin is gifted with vast water resources potential, in fact the highest among all other Indian rivers, yet their utilization and development are the lowest in the country. The hydropower potential of the Brahmaputra basin is 27949 MW which is 33% of the country's total potential. Several big hydroelectric projects with large dams are being executed and a few are in the pipeline on rivers like the Siang, Subansiri, Kameng, Dibang, lohit and Pagladiya etc. which are supposed to deliver multiple benefits by harnessing water for power, irrigation, flood moderation, pisciculture, navigation, tourism development etc. India has also come up with inter-linkage water diversion project in which India aims to divert ore quantities of water from Brahmaputra to more water scarce, populous and drier areas of other parts of the country. This inter-basin transfer of water from the water rich Brahmaputra basin to the water scarce basins of western India poses another possibility of utilization of the water resources , not only helping in reducing floods in the region (Das, Pathwary, Kumar & Choudhury, 2010) but also beneficial for socio-economic development and welfare of the people of the country.

Conclusion

Water management in trans-boundary basin is often politicized and has a considerable impact in the efforts of conflict prevention, imposing regional stability, maintaining environmental peace-making and applying international governance on water issues. Water relations and hydro-politics played between the India and China, as marked by the existing border conflicts, mistrust, suspicion and lack of co-operations will continue to be regional problem in South Asia. . The two countries, being water stressed countries, will also increase their competition on shared water resources particularly Brahmaputra river triggered by the rapid economic development, rise of demand of energy, urbanization and growth of clean energy and water-dependent industries. The absence of effective working mechanism will have a tendency to pose a serious challenge in Sino-India relations. The MoUs signed between India and China on cross-border rivers have no dispute redressal mechanism and some critics also blamed the exchange data share as it is not actionable or executable in reality. No water institutional mechanism existed between the two countries that generates obstacles in strengthening water cooperation between India and China. The domestic interest resulting from the emergence of necessities to

fulfil the internal growing demands and the political scenario between the riparian countries push riparian governments to initiate more actions in accessing to trans-border water resources. While attempting to share and control more cross-border water resources, the riparian state which has asymmetrical characteristics in power play more hydro-politics that produces more conflicts over shared cross-border water resources. This will ultimately pose to threaten international peace and security and also affects sustainable management of shared water resources. The consequent result may be manifested in affecting agricultural production, livelihood angles, domestic uses of water, hydropower generation and finally posing water security risks jeopardizing and compromising in various dimensions of life.

Both China and India have significant concern on Brahmaputra River from the perspective of multilateral dimensions including political, economic, geographical and environmental considerations. However, the reckless exploitation of water resources disregarding harmful effects on downstream sites and environment will cause wide-ranging consequences on water relations between India and China in the long term. India has perceived apprehension of China's activities and geo-engineering experiments in Brahmaputra basin in such way that these activities would potentially reduce availability of water in the downstream course of the river as well as weakening monsoons in India and elsewhere in Asia. The South Asia region would be ultimately pulled down into disability position. India also feels very insecure that China, with its asymmetrical power, would use cross-border rivers as strategic means to exert influence in the case of boundary negotiations in Sino-India boundary conflict in future. These insecurities and China's increasing construction activities in Brahmaputra basin along with the hydro-politics played by China towards her neighbours remain a point of serious concern for India from the long term view. The perpetuating interests for China on Brahmaputra, if unchecked and continued unsustainably, will generate a tangible repercussions affecting India's socio- economic development and environment degradation particularly in the north-eastern part of India. India, in order to handle these potential threats as well as reducing conflicts, requires to devise its plan by exploring ways to strengthen its relationships with other lower riparian countries like Bangladesh to attain desired strategic outcomes while dealing with impending water conflicts. India must unearth various options and strategies to stop spill over effects on the use of water rights from the eruption of any political dispute in the future. China should also extend her support to enhance more water cooperation through joint cooperation and sharing adequate information with other riparian states. India must find ways to bring Bangladesh in joint cooperation with China so that their joint cooperation might regulate China's behaviour before a potential water crisis and China's tendency to divert Brahmaputra water in her best interest. This will bring stability, peace and development in the Brahmaputra basin. India should visualize a way forward with a strengthened long vision to evolve effective mutual co-operation through Himalayan Charter and Himalayan Council and also improve diplomatic communication by sharing hydrological data and cooperating in infrastructural development. Had riparian states today not addressed the water issues with a wise and effective working mechanism, the future water war in competing and controlling water resources triggered by the growing necessities associated with the growth of economy cannot be precluded.

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