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Intercultural and Deliberative Disaster Ethics in Volcanic Eruptions

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Abstract: The objectives of this article are (i) to identify the most challenging ethical dilemmas and questions arising from the experiences of communities and professionals affected by or involved in volcanic eruptions, including risk management, the dissemination of information, and tourism; and (ii) to provide arguments for intercultural ethics to address these dilemmas. Intercultural ethics provide invaluable resources to disaster ethics across all three phases of the complete disaster management cycle. In this article, intercultural ethics is viewed as an ethics grounded in ongoing dialogue, facilitating the examination and establishment of norms and a critical reflection on values and their evolution. This approach recognizes power dynamics that may influence fair participation in dialogues and aims to address them, while also integrating elements of deliberative ethics to ensure that dialogues genuinely contribute to legitimizing decisions. Intercultural sensibility helps bridge the gap between experts and non-experts in both directions (a) by emphasizing the duty of transferring scientific knowledge (for experts) and the responsibility of acquiring scientific literacy (for citizens); and (b) by highlighting the importance of a 'knowledge dialogue' that acknowledges the non-scientific knowledge of citizens, rooted in their cultural background and experiences of dealing with past disasters, and shaping life in volcanic territories.

Keywords: intercultural ethics; deliberative ethics; volcanic ethics; disaster ethics; Tajogaite volcano

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1. Introduction

The primary objectives of this article are twofold: (i) to identify the most challenging ethical dilemmas and questions arising from the experiences of communities and professionals affected by or involved in volcanic eruptions, and (ii) to provide resources and arguments for intercultural ethics to address these dilemmas within the broader context of disaster ethics, while acknowledging commonalities between intercultural and deliberative ethics. Thus, this is a theoretical paper, in which recent eruptions (those that occurred in the 21st Century), such as that of the Tajogaite volcano in La Palma (Canary Islands, Spain, 2021), are examined as paradigmatic cases inasmuch as they reveal the most crucial ethical questions in those contexts. Against the backdrop of other ethical frames and their problems, we argue for the advantages and potential of an original imbrication between interculturality and deliberation.

Some questions revolve around the structural challenges within affected societies, stemming from deep-rooted economic and social injustices like inequality, job insecurity, poverty forcing residences to occur in unsafe places, and the exposure to war or violence. Despite volcanic eruptions being considered among the most "natural" of the so-called "natural disasters", in the sense that human action does not seem to be involved in it at all, ethical and political considerations arise regarding the event itself. For instance, questions arise regarding community decisions to inhabit volcanic areas and the resources available for recovery after the loss of human lives, properties, farmlands, and ecosystems. The current understanding of "natural disasters" encompasses these "social" dimensions,

incorporating the "vulnerability" perspective [1–3]. However, as we will explain, vulnerability studies have shown that this concept can be used in favour of paternalistic and even oppressive ways of managing disasters. Therefore, it is important to emphasize the social–structural background of those problems that natural disasters tend to reveal and/or aggravate, while avoiding a euphemistic use of the concept of "vulnerability". Moreover, intercultural and deliberative ethics offer powerful tools to avoid paternalism, thus modulating the autonomy principle of classical bioethics, as well as some problems of care ethics.

We encounter ethical dilemmas and questions throughout the disaster management cycle, including (i) risk management practices, (ii) the dissemination of information and risks by politicians, experts, journalists, and every individual accessing the internet and social networks, and (iii) the impact of volcanic tourism. Additionally, the organization of rehabilitation raises specific ethical questions related to the general aim of coexisting with volcanoes, understanding their risks, opportunities, and natural beauty, rather than working against them. Notably, one etymological interpretation of "ethics" in Ancient Greek is "inhabited place". From its inception, the concept of habitability has been an ethical concern, emphasizing the establishment of relationships with a locale conducive to sustainable living and fostering a sense of belonging. This perspective aligns with Latour's notion of habitability, emphasizing environmental sustainability, and underscores the significance of human communities' capacity to autonomously manage their means of subsistence and existence [4]. Once more, intercultural ethics assumes relevance as it advocates for dialogue between seemingly opposing viewpoints, thereby countering paternalistic or coercive tendencies. For instance, the Callaqui Volcano in Chile is perceived by the Pehuenche people to be a protective landmark, embodying security, whereas public institutions primarily view it through the lens of volcanic emergency protocols [5]. Rather than unilaterally imposing emergency protocols, local and national institutions should foster an intercultural and deliberative approach, facilitating a dialogue of knowledge ("diálogo de saberes") among stakeholders. This requires that authorities and experts acknowledge that local communities not only hold opinions regarding their lives and well-being, reflecting a liberal perspective acknowledging individual rights, but also possess pertinent knowledge about their territory, its hazards, and moral insights[1] [6]. While locals may make mistakes, experts can also be fallible; nevertheless, errors are more readily identified through multifaceted analyses encompassing diverse viewpoints.

Intercultural (and deliberative) ethics can enrich this panorama by introducing tools that, in our opinion, enhance the legitimacy of decision-making. They can complement the established ethical and bioethical frameworks such as principalism, consequentialism, and care ethics, among others. In its classical formulation, principalism [7] faces two challenges: (i) the necessity of acknowledging the cultural idiosyncrasies of groups or communities when applying or conceptualizing the four principles [8,9], and (ii) the excessively individualistic perception of autonomy, which has been reevaluated from perspectives capable of integrating the importance of social relations [10]. While some degree of consequentialism may be inevitable in public health to preserve the well-being of the collective and suspend certain individual rights for this purpose (e.g., obligating isolation for individuals with contagious illnesses), maintaining equilibrium with the recognition of individuals as ends in themselves remains crucial [11]. Care ethics confronts two challenges: (i) reconciling with principles of justice [12], and (ii) avoiding the imposition of a specific (middle-class, white, Western) model of care as universal[2] [13,14]. Instead of viewing intercultural and deliberative ethics as definitive ethical models, we regard their contributions as valuable resources for addressing many of these challenges, as they advocate for dialogue among affected groups and cultures as the foundation of moral decision-making legitimacy. They see diverse perspectives not as obstacles but as opportunities for mutual learning and the enhancement of decision-making quality. While deliberation may not always be feasible during the immediate emergency phase of a disaster, the health of civic ethics and democracy, in general, can be assessed by the

quality of the deliberations conducted as routine aspects of communal life. Therefore, deliberation is both possible and necessary in designing action protocols and establishing professional ethics codes for journalists, politicians, security forces, healthcare professionals, and scientists. Moreover, as a prevailing trend, individual and collective engagement is more likely when those expected to engage are involved in decision-making processes.

2. What Is Intercultural Ethics?

This proposal is framed in intercultural theories and practices developed especially in Latin America, considering the perspectives of authors such as Ivan Illich, who founded, in 1966, the Intercultural Documentation Centre in Cuernavaca, Mexico [15]. Linked in its beginnings to the demands of Latin American indigenous peoples that children receive education in their indigenous languages and not only in Spanish, interculturality spread to other vindications in fields such as education [16], law [17] or medicine [18], with social, economic, political and territorial demands, developing an incipient philosophy linked with decolonial theories [15]. Recent studies and initiatives are fruitfully spreading intercultural methodologies and potentials to the area of disaster ethics and development ethics [19].

Although intercultural ethics and deliberative ethics diverge, they share common traits such as the appreciation of diversity and the emphasis on dialogue without the primary goal of achieving consensus. While consensus is a positive outcome of dialogue, other valuable aspects include fostering the ability to engage in peaceful discourse.

Intercultural ethics, as conceptualized in this article, extends beyond situations where distinct ethnic groups coexist in the same locale (often with a hegemonic or prevailing culture, not necessarily the majority one)[3] [20]. This is because interculturality does not perceive culture in an essentialist or ethnic sense, but rather as a praxis [21], acknowledging processes of cultural hybridization, temporal cultural evolution, and the distinction between culture and tradition. Furthermore, cultural critique is deemed essential and ongoing, particularly starting with one's own cultural context.

Firstly, interculturality emphasizes that there are no socio-cultural neutral points of departure; knowledge (including scientific knowledge) is inherently situated, and every ethical and moral corpus is shaped by cultural and social contexts [22,23]. Interculturality does not equate to moral relativism since it is compatible with defending the norms, values, and principles of justice with claims of universality rooted in deliberations among concerned parties[4]. However, it rejects the norms, values, and principles assumed to be universal solely based on their purported neutrality, especially when imposed. In this vein, interculturality strives to decolonize ethics by tracing the genealogy of prevailing ethical tenets to elucidate their origins and evolution, their ties to historical power relations and violence—particularly post-colonialism and slavery—and by acknowledging various forms of oppression, including exploitation and those intrinsic to patriarchy. Secondly, it involves engaging in a self-critique regarding one's own (and institutional) moral tenets, moral rhetoric, and moral hypocrisy, and making efforts to empathize with others, which requires a certain degree of moral imagination.

Deliberative ethics and bioethics complement these intercultural principles, offering valuable insights to enrich intercultural dialogue. According to Gutman and Thompson, deliberation involves a form of dialogue where participants engage freely, regarding diverse viewpoints not as inherent problems but as opportunities for mutual learning and the strengthening of citizenship bonds. While voting may become necessary eventually, deliberation enhances decision-making legitimacy by promoting mutual understanding and considering shared interests beyond individual concerns, providing an alternative to authoritarian decision-making. Key prerequisites for effective deliberation include competency in the discussed matters, equitable resource distribution (e.g., speaking time), open-mindedness, a willingness to reconsider one's stance, and sincerity [24,25]. From an intercultural standpoint, competence extends beyond technical–scientific expertise; other forms of knowledge and experiences are also recognized as epistemologically significant and deserve to enter into the "knowledge dialogue". We propose that the same prereq-

uisites for effective deliberation can be useful for an enriching the "diálogo de saberes", in which technical–scientific knowledge can participate in a dialogue with other kinds of expertise, as in the case of intercultural healthcare [26].

3. Volcanic Eruptions

Volcanic eruptions have been a feature of planet Earth since its formation over 4.5 billion years ago. Currently, there are approximately 550 active volcanoes globally, with around 50 erupting each year. Alarmingly, approximately one-tenth of the world's population lives under the constant threat of volcanic hazards, with an estimated 500 million people residing within the potential range of direct exposure. The dangers posed by volcanoes are multifaceted, impacting both local communities and extending over far-reaching distances, sometimes spanning hundreds of kilometres, particularly during large eruptions. In recent decades, nearly all volcanic eruptions have resulted in human fatalities. According to Schmincke [27], one in every six active volcanoes on Earth has claimed human lives, leading to the devastation of cities and entire regions while injecting massive volumes of gases into the stratosphere, thereby exerting global climatic effects. Pyroclastic flows and surges, including burning clouds, along with lahars, represent the primary causes of mortality during volcanic eruptions (excluding eruption-related famines and tsunamis) [28]. Recent volcanic eruptions have predominantly resulted in fatalities due to ash-induced asphyxiation, thermal injuries from pyroclastic flows, and traumatic injuries [29].

Among natural disasters, volcanic eruptions rank among the most perilous, particularly due to extreme and catastrophic events such as those produced by super volcanoes. In such instances, these eruptions can lead to partial or total extinction, significant climatic disturbances, tsunamis, and famines that profoundly affect various populations of living organisms, encompassing not only humans but also domestic animals. The increasing population and the expanding proximity of major urban centres to volcanic regions are escalating the risk of catastrophic losses. Doocy et al. [30] assert that alterations in land use, population growth, and urbanization are exacerbating this risk, presenting a formidable challenge for future endeavours aimed at preparing for and mitigating the adverse consequences of volcanic activity. It is imperative to recognize that certain human activities heighten the exposure to and the likelihood of death or severe harm.

From 1500 AD to 2017, a total of 635 volcanic eruptions resulting in fatalities were documented, resulting in 278,368 deaths [29]. Fatal incidents have occurred both within craters and extending over 100 km from volcanos, with residents being the most frequently affected, along with tourists, volcanologists, and members of the media [29]. It is widely acknowledged that a portion of these losses could be mitigated through enhanced preparedness and anticipation, an improved dissemination of information between scientists and public officials, and a deeper understanding of volcanic behaviour among the general populace. Peterson [31] contends that individuals with expertise in volcanology possess the most comprehensive understanding of volcanic hazards and variability, assuming an ethical responsibility to effectively communicate their knowledge for the benefit of society as a whole. Marín et al. [32] advocate for the establishment of collaborative and participatory relationships between scientists and local communities, as well as decision-makers and institutions, not only to minimize the negative impacts and uncertainties associated with volcanic activity but also to harness the potential of volcanic environments to bolster sustainable local livelihoods. However, in practice, there remains limited dialogue with local communities concerning volcanic threats and opportunities, despite numerous recent calls for attention in this regard [33,34].

The following list (Table 1) serves as an example of some volcanic eruptions that occurred in the 21st century that led to the loss of human life.

Table 1. Recent volcanic eruptions that led to the loss of human life.

Year (Date)	Country	Victims
2021 (12 November)	Spain	One person died from the inhalation of toxic gases while cleaning ash from a roof following the eruption of the Tajogaite volcano.
2019 (9 December)	New Zealand	The White Island volcano erupted with 47 tourists and employees nearby. Twenty-two of them died, and a dozen were seriously injured. Ten companies and three people were indicted.
2018 (22 December)	Indonesia	Anak Krakatau volcano suffered a partial collapse in the Sunda Strait, causing a tsunami between Sumatra and Java. More than 420 people died, and 7200 were injured.
2018 (3 June)	Guatemala	Fuego volcano erupted with a fiery cloud that devastated the town of San Miguel Los Lotes, causing about 200 deaths and leaving 230 people missing.
2016 and 2014	Indonesia	On the island of Sumatra in May 2016, several villages were buried after an eruption of the Sinabung volcano, which caused at least seven deaths. Two years earlier, at least 16 people died in another eruption in early February.
2014 (27 September)	Japan	Ontake volcano erupted, resulting in the deaths of about 60 hikers.
2010 (25 October)	Indonesia	Merapi volcano on Java Island erupted, resulting in more than 300 deaths and the displacement of 280,000 people.
2002 (17 January)	DR Congo	Nyiragongo volcano erupted, resulting in over a hundred deaths and prompting the exodus of more than 120,000 people from the city of Goma.

Note: Elaborated by the authors.

In Indonesia, situated within the Pacific Ring of Fire and home to 127 active volcanoes, eruptions are a common occurrence. For instance, in December 2023, the Lewotobi Laki-Laki volcano erupted, followed by another eruption of Mount Merapi in January 2024. A previous eruption of Mount Merapi in 2010 resulted in the loss of over 300 lives, countless domestic and wild animals, and vegetation, dramatically altering the landscape and forcing the evacuation of 280,000 individuals.

The eruption of Iceland's Eyjafjallajökull volcano in 2010 spewed 250 million cubic meters of volcanic ash into the atmosphere, reaching heights of up to eleven kilometres. This ash blanketed thousands of square kilometres, disrupting air travel in Northwestern Europe. Subsequent eruptions have occurred in Iceland, with recent instances originating from the Reykjanes peninsula in southwestern Iceland. These eruptions, which took place in the final weeks of 2023, prompted the evacuation of thousands from the Grindavik area, resulted in property losses, and necessitated the closure of economic activities such as the Blue Lagoon geothermal spa.

Therefore, the effective public management and understanding of volcanic eruptions and volcanic territories demands a comprehensive perspective, considering their significant ecological, environmental, sociological, political, economic, and ethical complexities. These complexities manifest before, during, and after eruptions, irrespective of their occurrences

being hundreds, thousands, or millions of years ago. Cultural, gender, social, political, economic, and ecological issues intersect with the knowledge of hazards, disaster prevention and management, resilience, and restoration in areas with current, recent, and historical volcanic activity.

Understanding the nature of volcanoes, their behaviour, and the challenges posed to life within volcanic territories is essential. A volcano is defined as any opening through which lava breaches the Earth's surface, often forming cone- or dome-shaped mountains. Volcanic eruptions involve both constructive and destructive processes, emitting diverse materials and triggering explosions, deflagrations, avalanches, and other dynamic events that reshape landscapes and impact living organisms, human structures, and natural formations.

At present, scientists have a thorough understanding of the characteristics of volcanoes, and volcanic areas are meticulously mapped. Volcanic activity is intricately linked to the movements of tectonic plates, with various mechanisms explaining the nature and characteristics of volcanic eruptions in specific regions. Additionally, there are regions within tectonic plates where magma ascends to the surface due to thermal anomalies in the mantle, forming hot spots. These hot spots have given rise to volcanic archipelagos such as Hawaii or the Canary Islands.

This understanding is crucial because the characteristics of magma, including its production and source, are influenced by factors such as the type of plate interaction (convergent or divergent) or the presence of a mantle plume. These factors determine the magma's behaviour and explosiveness. Mafic magmas, for example, are more alkaline, denser, and hotter, while felsic magmas are more acidic due to their higher silica content, making them more viscous [35]. Higher viscosity leads to lower fluidity, potentially resulting in dangerous plugs and explosions. Upon solidification, magmas form basalts if they are alkaline or rhyolites, dacites, and andesites if they contain more silicates. Therefore, the presence of these rocks in a volcanic region provides clues about the characteristics of the underlying magma and its potential behaviour upon eruption.

Alkaline or basic magmas tend to result in less explosive eruptions because the magma flows more freely. This phenomenon is observed in Hawaiian and fissure volcanism, as well as in Strombolian eruptions characterized by alternating phases of lava emission and pyroclast expulsion with low explosiveness. On the other hand, felsic or more acidic magmas are associated with more violent eruptions. The degree of volcanic danger is assessed based on its explosiveness index, which ranges from 0 in the case of Hawaiian eruptions to 7 or 8 in ultraplinian eruptions of super and mega-colossal magnitudes.

While we recognize the regions prone to volcanic activity and have insights into the potential characteristics of eruptions, predicting when they will occur remains elusive. However, we do have the capability to anticipate eruptions by monitoring telltale signs, such as precursor earthquakes indicating magma's ascent toward the surface.

Among the direct hazards associated with eruptions are lava flows, the deposition of tephras or pyroclasts, and pyroclastic flows and surges. Indirect dangers include gaseous emissions, lahars, avalanches, and structural collapses [36]. As inhabitants of regions surrounded by volcanoes, we are exposed to both direct and indirect hazards. In recent decades, significant efforts have been made to develop strategies for mitigating the natural disasters triggered by volcanic eruptions.

4. Volcanic Vulnerability and Volcanic Risk

According to standard risk management studies, volcanic risk is defined as the potential negative impact that an eruption of a volcano could have on humans and anthropic elements. This risk is quantified using a numerical value corresponding to the number of victims or economic losses. Volcanic risk is determined by multiplying three factors: (a) the danger, (b) vulnerability, and the (c) exposure or value.

(a) Volcanic danger refers to the likelihood of a volcanic eruption occurring in a specific location and timeframe.

(b) Vulnerability encompasses the anticipated damage or loss resulting from the volcanic event. Vulnerability is influenced by factors such as the characteristics of the eruption, such as the Explosivity Index, and the elements exposed to it. It is expressed as a percentage of the damage relative to the total potential loss.

(c) Value refers to the human lives and material assets put at risk during a volcanic eruption. This encompasses potential material and economic losses due to the eruption.

This measurement of risk presents both strengths and weaknesses. On the one hand, despite its apparent neutrality, the concept of volcanic risk involves a probabilistic calculation subject to interpretation and, to a certain extent, the subjectivity of the person conducting the calculation. Additionally, it tends to prioritize the valuation of human lives and material goods within an economic framework. However, this approach reflects a specific model of society and socioeconomic organization that may overlook other valuable considerations such as wildlife or heritage, which are not easily susceptible to monetary valuation.

On the other hand, integrating the concept of vulnerability involves considering factors such as exposure and sensitivity to volcanic risk, resilience (including health and medical responses, individual and community preparedness levels), as well as spatial relationships and territorial patterns. In essence, the concept of vulnerability acknowledges that, besides human lives and economic assets, there are other factors to account for that can render certain human groups or regions more vulnerable than others. It is important to note that vulnerability does not equate to weakness, as it also encompasses the capacity for recovery and dealing with hazards. However, it is crucial to avoid interpretations of vulnerability that lead to the victimization of affected individuals in a paternalistic manner (which may contradict the principle of autonomy, even in its relational form) [37], stigmatization, blaming, the exclusion of those not deemed "vulnerable" [38], and the euphemistic use of the concept that overlooks structural problems and injustices [39].

Intercultural and deliberative perspectives offer avenues to address these issues without undermining the strengths of the vulnerability approach (as described, for instance, by Mbonda [40]), with a particular emphasis on the process of identifying and determining vulnerable groups. This process can occur either from the top down or from the bottom up, through deliberative dialogues with the affected groups. Otherwise, there is a risk of imposing the vulnerability label without considering the capabilities or perspectives of those individuals defined by it [37]. In this regard, intercultural ethics underscores the necessity of dialogue between experts and affected/concerned individuals not only in designing methods for measuring risk but also in applying these measurements to real-life situations. From an intercultural standpoint, it is not just about "informing" the population about the risks, but about negotiating the very notion of risk from the outset. This negotiation is essential to prevent paternalism and the victimization of individuals and groups labelled as "vulnerable".

Scientific knowledge and expert reports play a crucial role in calculating and mitigating risks, and it is the right of human groups to receive this information in an understandable manner. However, we acknowledge that the concept of risk encompasses a subjective dimension that includes the ability to embrace and manage uncertainty. This is exemplified, for instance, by the residents living near the Merapi Volcano, who prioritize their relationships with their neighbours and the volcano itself, valuing these connections over the risk posed by residing near an active volcano [41]. A similar sentiment was observed in a study conducted in Southern Iceland, where rural inhabitants perceived the response plan implemented during the Eyjafjallajökull eruption in 2010 as insufficient. These residents exhibited a strong sense of community, an attachment to their surroundings, and a deep understanding of their environment, rendering them highly resilient to volcanic hazards [34]. Therefore, strategies for volcanic risk management should encompass elements such as personal accountability, community cohesion, and the active participation and collaboration of communities to enhance emergency responses. This approach is not only about avoiding paternalism but also recognizes that initiatives undertaken with local

communities (in a deliberative, intercultural manner) are more likely to succeed, as people are more inclined to comprehend and endorse decisions when they have been involved in the decision-making process.

5. Intercultural and Deliberative Ethics in the Disaster Management Cycle

Modern disaster management follows a three-phase cycle: preparation, response (during the emergency phase), and recovery (which includes rebuilding)[5] [42]. This conceptualization aims at disaster risk reduction and has been embraced by the UN (United Nations International Strategy for Disaster Reduction) [2]. Using the Tajogaite volcano in La Palma as a paradigm, this article will identify the most challenging ethical questions in each of these phases and examine them from the perspective of intercultural and deliberative ethics.

5.1. Preparation Phase

The adaptation of a society to its environment can never be perfect. However, when it comes to dealing with volcanoes, there is a stark contrast between communities that have experienced eruptions firsthand, either directly or through inherited knowledge passed down through oral traditions, history, or cosmological narratives, and those that have not. Even when faced with sudden, unimaginable hazards that challenge their beliefs and security, communities can draw upon their oral traditions, myths, historical records, and scientific understandings to help them cope with trauma, especially when these experiences feel imminent (see Cashman and Cronin [43] for more on this). Recent advancements have been made in understanding and monitoring volcanic activity, particularly following the eruptive events of 2021. This progress, coupled with the collaborative efforts of institutions, builds upon previous experiences and enhances our ability to anticipate and respond to volcanic hazards [44]. However, most of La Palma's population was too young to have directly experienced the destructive eruption of San Juan in 1949. Instead, many could recall the more recent eruption of Teneguía in 1971, which did not cause significant damage as the lava flowed out into the ocean. This event was fondly remembered by the locals and even idealized as a beautiful spectacle. Melo et al. [45] suggest that this narrative had been adopted not only by the population but also by politicians and some scientists before the eruption of Tajogaite, possibly leading to an underestimation of risks.

Intercultural ethics emphasizes the importance of exposing the contexts in which knowledge is created and exchanged. Narratives hold significant power, especially when intertwined with collective emotions, as seen in this case. Therefore, a valuable lesson to draw from this experience is that dialogue is essential not only among concerned parties but also between narratives and knowledge. Emotions constitute a crucial dimension of risk management and perception. While deliberation and dialogue may not entirely eliminate failure, they offer the advantage of minimizing it by considering as many perspectives as possible and allowing for the repeated reconsideration of statements or decisions.

In the preparation phase, there is another lesson to be gleaned from the Tajogaite case. Some authors advocate for the development of a Canarian Strategy for Disaster Risk Reduction, as recommended by the Sendai Report [46], citing concerns that existing Spanish strategies may lack sufficient specificity and comprehensiveness [47]. Such a strategy should emerge from rigorous deliberation and integrate risk reduction with other objectives of territorial sustainability. For example, the authors mention water management and territorial planning. Additionally, it should prioritize social justice by addressing the basic needs of local residents, such as their access to housing.

In the Canary Islands, land use has historically lacked coherent organization, with the volcanic risk variable often overlooked in general urban planning directives. La Palma, in particular, has been inhabited without a comprehensive understanding of risks, perhaps due to a predominant aesthetic appreciation of volcanoes. Addressing this issue requires more than simply "properly educating the population" [48]. It necessitates deep reflection

and collaboration among experts and citizens to reconsider the individual and collective perceptions of the volcano, encompassing both its attractiveness and its risks.

In the case of La Palma, there was a clear need for less construction and more thoughtful urban planning. The recovery phase presents an opportunity to manage the territory more effectively, ensuring sustainable habitability without reverting to the urban indiscipline that existed prior to the eruption [49].

5.2. Emergency Phase

During the emergency phase, a crucial ethical concern emerged regarding the dissemination of information about the eruption by local authorities and experts. They operated under the PEVOLCA (Special Plan for Civil Protection and Emergency Response to Volcanic Risk in the Canary Islands), coordinated by the minister of public administrations, justice, and security of the government of the Canary Islands. Despite the PEVOLCA being a valuable tool for crisis management, a notable oversight occurred when the volcanic alert level for the population remained at yellow despite the scientific committee's recommendation on 19 September 2021 to initiate the preventive evacuation of the at-risk population due to the imminent eruption (corresponding to the orange alert level) [45]. Interestingly, on the very same day as the scientific committee meeting, the volcano erupted at 3:12 p.m., while the alert level remained yellow. This discrepancy led to a perception among the populace of a lack of foresight, hindering their ability to organize the evacuation effectively. This situation raises an ethical question (with potential legal implications): Should those responsible prioritize the worst-case scenario, even at the risk of unnecessarily alarming the population, or maintain a more conservative approach in managing the available information, given the difficulty of accurately predicting the imminence of a volcanic eruption? Testimonies, such as those collected by Melo et al. [45], suggest that the population prefers a higher level of alert to enable adequate preparation. The economic and emotional damage can be greater if the population does not have sufficient time to prepare for evacuation, such as being unable to collect personal belongings or organize their departure appropriately.

Furthermore, the communication process during the emergency phase faced criticism from citizens due to its unidirectional nature. Responsible authorities did not respond to questions or doubts from citizens during press conferences, only those posed by journalists. This contravenes the very principles of deliberation and intercultural ethics, as previously explained. Citizens were not only required to comply with decisions without the opportunity to inquire about their reasons but were also unable to seek clarification on the technical concepts or terms that were not easily understandable for non-experts. Although informative sessions were held for the population, attendees reported a lack of clear and understandable information, with some scientists attempting to monopolize the spotlight [45]. This underscores that the transmission and management of scientific information in an emergency context are crucial and cannot be considered exempt from values, personal appreciations, emotions, and power relations.

In the field of journalistic ethics, other relevant factors are included when communicating information during an emergency. The eruption, which lasted 85 days, received international media coverage for several weeks, spanning local, national, and international press outlets, as well as the dissemination of photos and information through social networks. This extensive coverage of the event created a constant expectation for spectacular and immediate information, conflicting with recommendations to prioritize the safety of the population and respect the privacy of those affected [45]. Journalistic objectives may prioritize maximizing the impact of news at national and international levels, sometimes leading to sensationalism or the pursuit of news at all costs, which can endanger reporters or pressure affected individuals to share their stories, often without preserving their anonymity when necessary. Conversely, in an emergency, the media's citizen function should take precedence, prioritizing the needs of the local population and refraining from exploiting their situation to generate sensationalized content.

Regarding the management of trauma, there are several relevant considerations for ethical dialogue during the emergency phase. First, it is recognized that individuals may experience various psychological reactions to trauma, including anxiety, fear, inhibition, psychosomatic symptoms, nightmares, and other psycho-physical illnesses. These reactions undoubtedly impact their ability to engage in deliberation. However, this should not be used as justification for paternalistic interventions that minimize the agency of those affected or victimize them. Nor should it justify the replacement of necessary support and social intervention with psychotropic drugs and psychotherapy, thereby pathologizing the normal response to a traumatic situation. While psychological and psychiatric care may be necessary, professionals have a responsibility not to pathologize normal stress and frustration in situations of loss, as stated by González [50].

While the emergency phase may necessitate swift and urgent measures, which may not always allow for time to reach a consensus with the population, having agreements established during the prevention phase significantly enhances the population's readiness to accept and adopt such measures in times of crisis. Conversely, immediate orders and interventions are more likely to be embraced if they are promptly explained and discussed. Emergency situations should never serve as justifications for the abuse of power or the implementation of incomprehensible protocols, especially if they jeopardize the rights and freedoms of citizens.

Another reason for maintaining dialogue during the emergency phase as much as possible is that it reinforces social and personal networks, which are crucial for preventing and addressing trauma. Dialogue, particularly within the framework of deliberation and interculturality—accepting the participation of all individuals and taking their perspectives seriously, including those of children—plays a significant role in this regard.

All studies consistently highlight the pivotal role of a strong support network as the most potent defence against trauma. For individuals to heal, they must feel safe and secure. In the aftermath of acute trauma, such as assault, accidents, or natural disasters, survivors rely on the presence of familiar faces, physical contact, access to essentials like food and shelter, and a stable environment conducive to rest. Communication with loved ones, both near and far, becomes paramount, and gathering with family and friends in perceived safe spaces should be prioritized as swiftly as possible [51].

Another crucial lesson from trauma studies concerns the immediate needs of individuals affected by disasters: ensuring access to food, providing secure shelter, and allowing sufficient time for rest. These fundamental necessities should be incorporated into emergency protocols and plans.

Finally, disaster tourism poses ethical dilemmas as it juxtaposes the fascination of witnessing a volcanic eruption with the harsh realities faced by those who have suffered the loss of homes, livelihoods, and even lives. The presence of tourists during emergencies, including the "scientific tourism" by uninvolved experts, raises significant ethical concerns. While tourism can bring economic resources to the island, it also risks creating unnecessary dangers and hindering rescue efforts. Moreover, the intrusive presence of curious onlookers can disrupt the already challenging circumstances faced by survivors. In today's digital age, satisfying curiosity through disseminated images is feasible, and ecologically responsible tourism can aid economic recovery—but only during later phases of the emergency. For instance, Teneguía became a tourist attraction after the 1971 eruption [44], but tragically, one visitor died from inhaling toxic gases when approaching the volcano during the eruption.

5.3. Recovery: Living with a Volcano

The Aeta indigenous communities, inhabitants of the island of Luzon in the Philippines, were severely impacted by the eruption of Mount Pinatubo in 1991. Fieldwork conducted in 1999, 2000, and 2001 highlighted the vertical policies implemented by the Philippine government, which lacked the involvement of victims in rehabilitation efforts, thereby impeding recovery. In response, many Aeta families chose to leave government resettlement sites and return to the mountains to take control of their future projects [33].

Community-based disaster recovery initiatives, in contrast, align with a deliberative and intercultural approach, as well as with research on the effects and improved treatment of collective traumas. When affected individuals are empowered to participate, such as through volunteering during the emergency phase, trauma can become more manageable [51]. If citizen involvement is encouraged, especially during the emergency phase, it becomes essential during the recovery phase. This involves restructuring life and converting one's territory—or another—into habitable spaces. Without this participation, the recovery phase risks unnecessary prolongation, ineffectiveness, or even further trauma.

The recovery phase presents an opportunity to cultivate communities of shared emotions that strengthen social networks for addressing past events and restructuring life [52]. In this regard, recovery commissions must ensure the inclusion of all affected groups, as highlighted by Viña and González [44], who criticized the exclusion of sectors like the banana industry in La Palma. Additionally, prioritizing the resettlement of displaced individuals and considering their life aspirations is crucial, along with acknowledging the inevitable feelings of grief and loss and providing mutual support, as suggested by Viña and González [44]. Valuable lessons underscore the importance of developing urban plans that prioritize the common good and incorporate scientifically informed risk assessments [49], guided by citizen deliberation that recognizes the subjective nature of risk. Therefore, collaborative reflection on risk assessments is essential.

Tourism also impacts the sustainability of a region, raising concerns within the realm of eco-ethics. It sparks debates regarding the rise in housing prices, development strategies, and the preservation of local ways of life. In this regard, volcanoes have often been perceived as both resources and a cultural heritage to be utilized or preserved. This perspective introduces a new realm of ethical dilemmas and questions regarding how communities interact with their environment, as well as the intricate relationships between humans and nature. Additionally, it prompts reflections on the very conceptualization of the nature to which volcanoes belong—a domain that humans themselves are a part of. In the current context of extensive ecological challenges, a calm dialogue promoting ecological citizenship is more crucial than ever. The reconstruction phase following a volcanic eruption offers an opportunity for in-depth discussions within a framework of awareness of the impact of certain forms of tourism on the environment and local way of life, in the short, medium, and long term, particularly in areas heavily frequented by tourists, like the Canary Islands. While contemporary ecological problems are global in nature, their impacts are felt most acutely at the local level. Therefore, an intercultural and deliberative dialogue must encompass both local and global perspectives to address the challenges we face, guarding against the risk of succumbing to new universal authoritarian structures.

6. Conclusions

Intercultural ethics provides invaluable resources to disaster ethics across all three phases of the complete disaster management cycle, including the emergency phase, where interventions are often urgent and allow little time for deliberation. In this article, intercultural ethics is viewed as an ethics grounded in ongoing dialogue, facilitating the examination and establishment of norms and a critical reflection on values and their evolution. This approach recognizes the power dynamics that may influence fair participation in dialogues and aims to address them, while also integrating elements of deliberative ethics to ensure that dialogues genuinely contribute to legitimizing decisions.

Central to intercultural ethics is the concept of "diálogo de saberes" or a dialogue of knowledge, which fosters a culture of recognizing that all knowledge is contextual and limited. While experts play a crucial role in these dialogues, they are not vested with ultimate authority in political decisions, including those pertaining to risk management, to avoid the pitfalls of technocratic governance models. Instead, experts are tasked with providing necessary, accurate, and accessible information, empowering citizens to engage in discussions about how they wish to shape their world.

In this sense, intercultural sensibility helps bridge the gap between experts and non-experts in both directions (a) by emphasizing the duty of transferring scientific knowledge (for experts) and the responsibility of acquiring scientific literacy (for citizens); and (b) by highlighting the importance of a 'knowledge dialogue' that acknowledges the non-scientific knowledge of the population, rooted in their cultural background and experiences of dealing with past disasters, and shaping life in volcanic territories. Volcanic eruptions are unexpected events of enormous magnitude that surpass the dimensions of human perspectives. Intercultural ethics can offer valuable resources to confront the dilemmas arising in the process of understanding what can happen and what has happened, with science and experts playing a role alongside other forms of knowledge and experiences.

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Notes

1 See, in this sense, the critique of the Sendai Framework [6].

2 As discussed by Noddings [12,13].

3 As discussed, for example, in León Pérez and Riverol Rodríguez [20]. Although their contribution is valuable in revealing the intercultural diversity among foreigners living in La Palma in relation to the experience of the volcanic eruption, it is important to note that our approach assumes that majority groups also possess cultures and engage in intercultural relationships. Furthermore, our approach differs from that of León Pérez and Riverol Rodríguez in that they advocate for "intercultural integration", which tends to imply the assimilation of subaltern cultural groups into a prevailing or hegemonic culture. In contrast, we argue for the articulation of relations and spaces in which different cultural groups can deliberate about their moral commitments and democratically make decisions, without imposing ethically loaded decisions on all involved parties.

4 And not solely because they can be 'trans-cultural' from a descriptive perspective, as defined by Osório Pineros [6].

5 Being conscious of the debate around the conceptualization of disaster risk-management phases [42], we have decided to take as reference the three classic phases in order to offer a first approach to the ethical issues raised in them, leaving the door open for future studies that delve deeper.

References

1. Wisner, B.; Blaikie, P.; Cannon, T.; Davis, I. (Eds.) *At Risk: Natural Hazards, People's Vulnerability, and Disasters*; Routledge: London, UK, 2004.
2. Jha, M.K. (Ed.) *Natural and Anthropogenic Disasters*; Springer: Greer, SC, USA, 2010.
3. United Nations Office for Disaster Risk Reduction. Sendai Declaration 2015. Available online: https://www.undrr.org/publication/sendai-declaration (accessed on 10 May 2024).
4. Latour, B. *How to Inhabit the Earth*; Polity Press: Cambridge, UK, 2022.
5. Contreras Véliz, C. Sobre fogones y semáforos: Percepciones y analogías de dos geografías desencontradas. El caso del volcán Callaqui en la geografía ancestral pehuenche de Alto Biobío. *Rev. Cienc. Y Humanidades* **2020**, *X*, 73–99.
6. Osório Pineros, J.D. Technocracy, disaster risk reduction and development: A critique of the Sendai Framework 2015–2030. *Rev. Derecho Del Estado* **2020**, *47*, 319–342. [CrossRef]
7. Beauchamp, T.L.; Childress, J.F. *Principles of Biomedical Ethics*; Oxford University Press: New York, NY, USA, 2008.
8. Baker, R. A Theory of International Bioethics: Multiculturalism, Postmodernism, and the Bankruptcy of Fundamentalism. *Kennedy Inst. Ethics J.* **1998**, *8*, 201–231. [CrossRef] [PubMed]
9. Clouser, K.D.; Gert, B. A Critique of Principlism. *J. Med. Philos.* **1990**, *15*, 219–236. [CrossRef] [PubMed]
10. Casado da Rocha, A. *Autonomía con Otros*; Plaza y Valdés: Madrid, España, 2014.
11. Gil Martín, F.J. Deberes éticos en la preparación ante posibles desastres. *Rev. Española De Salud Pública* **2022**, *96*, e202210071.

12. Csordas, T. The body's career in anthropology. In *Anthropological Theory Today*; Moore, H.L., Ed.; Polity Press: Cambridge, UK, 1999; pp. 172–205.
13. Noddings, N. *Starting at Home: Caring and Social Policy*; University of California Press: Berkeley, CA, USA, 2002.
14. Noddings, N. *Caring: A Relational Approach to Ethics and Moral Education*; University of California Press: Berkeley, CA, USA, 2013.
15. Gómez Rendón, J. La interculturalidad. Itinerario de un concepto. *Let. Del. Ecuad.* **2019**, *210*, 56–62.
16. Vergara, M.; Sir, J. *Políticas para la educación y formación de los profesores indígenas*; Universidad Arturo Prat del Estado de Chile: Iquique, Chile; Universidad de Guadalajara: Guadalajara, México, 2019.
17. Walsh, C. Interculturalidad, Estado y sociedad. In *Luchas (de)Coloniales de Nuestra Época*; Universidad Andina Simón Bolívar/Abya Yala: Quito, Ecuador, 2009.
18. Muñoz Martínez, J. Antropología, psiquiatría y alteridad. In *De los médicos etnógrafos a la colectivización intercultural del cuidado*; Universitat Rovira I Virgili: Tarragona, Spain, 2021.
19. Waldmüller, J.M. Expanding the transdisciplinary conversation towards pluriversal distributive disaster recovery: Development ethics and interculturality. *Disaster Prev. Manag. Int. J.* **2022**, *31*, 319–332. [CrossRef]
20. León Pérez, I.K.; Riverol Rodríguez, C.G. "Luces que entran por las grietas del tejado": La mirada intercultural como motor para la isla de La Palma tras la erupción volcánica de 2021. In *La Palma: Una Isla de Oportunidades. Repensando el Futuro a Partir de la Crisis Volcánica*; García Rodríguez, F.J., Fernández Hernández, C., Eds.; Fundación Fyde CajaCanarias: San Cristóbal de La Laguna, España, 2023; pp. 209–220.
21. Bauman, Z. *Culture As Praxis*; SAGE Publications Ltd: Thousand Oaks, CA, USA, 1999.
22. Fornet Betancourt, R. Interculturalidad o barbarie. 11 tesis provisionales para el mejoramiento de las teorías y prácticas de la interculturalidad como alternativa de otra humanidad. *Comun. Rev. Int. De Comun. Audiov. Public. Y Estud. Cult.* **2006**, *1*, 27–49.
23. Mbonda, E.M. *Une Décolonisation de la Pensée. Études de Philosophie Afrocentrique*; Sorbonne Université Presses: Paris, France, 2021.
24. Gutmann, A.; Thompson, D. Deliberating about bioethics. *Hast. Cent. Rep.* **1997**, *27*, 38–41. [CrossRef]
25. Gutmann, A.; Thompson, D. *Why Deliberative Democracy?* Princeton University Press: Princeton, NJ, USA, 2004.
26. See Organización Panamericana de la Salud. Available online: https://www.paho.org/es/dialogos-saberes (accessed on 10 May 2024).
27. Schmincke, H.U. Volcanic Hazards, Volcanic Catastrophes, and Disaster Mitigation. In *Volcanism*; Springer: Berlin/Heidelberg, Germany, 2004; pp. 229–258. [CrossRef]
28. Baxter, P.J. Medical effects of volcanic eruptions. *Bull. Volcanol.* **1990**, *52*, 532–544. [CrossRef]
29. Brown, S.K.; Jenkins, S.F.; Sparks, R.S.J.; Odbert, H.; Auker, M.R. Volcanic fatalities database: Analysis of volcanic threat with distance and victim classification. *J. Appl. Volcanol.* **2017**, *6*, 15. [CrossRef]
30. Doocy, S.; Daniels, A.; Dooling, S.; Gorokhovich, Y. The human impact of volcanoes: A historical review of events 1900–2009 and systematic literature review. *PLoS Curr.* **2013**, *5*. [CrossRef] [PubMed]
31. Peterson, D.W. Volcanic hazards and public response. *J. Geophys. Res.* **1988**, *93*, 4161–4170. [CrossRef]
32. Marín, A.; Vergara-Pinto, F.; Prado, F.; Farías, C. Living near volcanoes: Scoping the gaps between the local community and volcanic experts in southern Chile. *J. Volcanol. Geotherm. Res.* **2020**, *398*, 106903. [CrossRef]
33. Gaillard, J.C.; Le Masson, V. 'Traditional Societies' Response to Volcanic Hazards in the Philippines. *Mt. Res. Dev.* **2007**, *27*, 313–317. [CrossRef]
34. Bird, D.K.; Gísladóttir, G.; Dominey-Howes, D. Different communities, different perspectives: Issues affecting residents' response to a volcanic eruption in southern Iceland. *Bull Volcanol* **2011**, *73*, 1209–1227. [CrossRef]
35. Martí Molist, J. *Los Volcanes (¿Qué Sabemos de?)*; Consejo Superior de Investigaciones Científicas: Madrid, Spain, 2011.
36. Alvarado, G.E.; Soto, G.J.; Pullinger, C.R.; Escobar, R.; Bonis, S.; Escobar, D.; Navarro, M. Volcanic activity, hazards, and monitoring. *Cent. Am. Geol. Resour. Hazards* **2007**, *2*, 1155–1188.
37. Ahmad, A.; Chung, R.; Eckenwiler, L.; Ganguli-Mitra, A.; Hunt, M.; Richards, R.; Saghai, Y.; Schwartz, L.; Scully, J.L.; Wild, V. What does it mean to be made vulnerable in the era of COVID-19? *Lancet* **2020**, *395*, 1481–1482. [CrossRef]
38. Phillips, S. Vulnerability in Immigration Detention. Are some more Vulnerable than Others? *Asylum Insight*. 2018. Available online: https://www.asyluminsight.com/c-stephen-phillips?rq=phillips#.Xbl1RyV7m3U (accessed on 10 May 2024).
39. Madrid, J.A. *La Política y la Justicia del Sufrimiento*; Trotta: Madrid, Spain, 2010.
40. Mbonda, E.M. Développement humain, sécurité humaine et vulnérabilité humaine: Quelle approche pour l'analyse de la situation des ‚sociétés entravées'? *Ethica* **2016**, *20*, 151–167.
41. Warsini, S.; Mills, J.; West, C.; Usher, K. Living through a volcanic eruption: Understanding the experience of survivors as a phenomenological existential phenomenon. *Int. J. Ment. Health Nurs.* **2016**, *25*, 206–213. [CrossRef]
42. Bosher, L.; Chmutina, K.; van Niekerk, D. Stop going around in circles: Towards a reconceptualisation of disaster risk management phases. *Disaster Prev. Manag.* **2021**, *30*, 525–537. [CrossRef]
43. Cashman, K.V.; Cronin, S.J. Welcoming a monster to the world: Myths, oral tradition, and modern societal response to volcanic disasters. *J. Volcanol. Geotherm. Res.* **2008**, *176*, 407–418. [CrossRef]
44. Viña Brito, A.; González Pérez, P.B. La historia de La Palma como referencia para afrontar el presente y el futuro: Algunas claves. In *La Palma: Una Isla de Oportunidades. Repensando el Futuro a Partir de la Crisis Volcánica*; García Rodríguez, F.J., Fernández Hernández, C., Eds.; Fundación Fyde CajaCanarias: San Cristóbal de La Laguna, España, 2023; pp. 231–242.

45. Melo López, V.M.; Marrero, J.M.; Backhouse, S.; Ireland, B. El proceso de comunicación e información durante la erupción de La Palma: Errores, aprendizajes y propuestas de mejora. *Cosmológica* **2023**, *3*, 109–154.
46. United Nations—Headquarters United Nations Office for Disaster Risk Reduction. *Sendai Framework for Disaster Risk Reduction 2015–2030*; The United Nations Office for Disaster Risk Reduction: Geneva, Switzerland, 2015.
47. Díaz Pacheco, J.; López Díez, A.; Dorta Antequera, P. Desarrollo de una Estrategia Canaria para la Reducción del Riesgo de Desastres. In *La Palma: Una Isla de Oportunidades. Repensando el Futuro a Partir de la Crisis Volcánica*; García Rodríguez, F.J., Fernández Hernández, C., Eds.; Fundación Fyde CajaCanarias: San Cristóbal de La Laguna, España, 2023; pp. 351–358.
48. Morcuende Hurtado, M.A. La gestión del volcán de Tajogaite (Cumbre Vieja-La Palma 2021). Lecciones aprendidas. In *La Palma: Una Isla De Oportunidades. Repensando El Futuro a Partir de la Crisis Volcánica*; García Rodríguez, F.J., Fernández Hernández, C., Eds.; Fundación Fyde CajaCanarias: San Cristóbal de La Laguna, España, 2023; pp. 343–350.
49. Daranas Carballo, R. *Aportaciones para el escenario territorial posterior al desastre en La Palma. La Palma: Una Isla de Oportunidades. Repensando el Futuro a Partir de la Crisis Volcánica*; García Rodríguez, F.J., Fernández Hernández, C., Eds.; Fundación Fyde CajaCanarias: San Cristóbal de La Laguna, España, 2023; pp. 277–288.
50. González Lorenzo, F. Volcán y psiquismo. In *La Palma: Una Isla de Oportunidades. Repensando el Futuro a Partir de la Crisis Volcánica*; García Rodríguez, F.J., Fernández Hernández, C., Eds.; Fundación Fyde CajaCanarias: San Cristóbal de La Laguna, España, 2023; pp. 199–208.
51. Van der Kolk, B. *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*; Viking Penguin: New York, NY, USA, 2014.
52. Ramírez, V.; Zambrano, L.A.; Gutiérrez, M.C.; Carvajal, A.; Armijos, T. Treinta años después de la erupción del volcán Nevado del Ruiz: Memorias, voces, reparación y escenarios de participación. *Rev. Colomb. Soc.* **2017**, *40*, 45–64. [CrossRef]

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