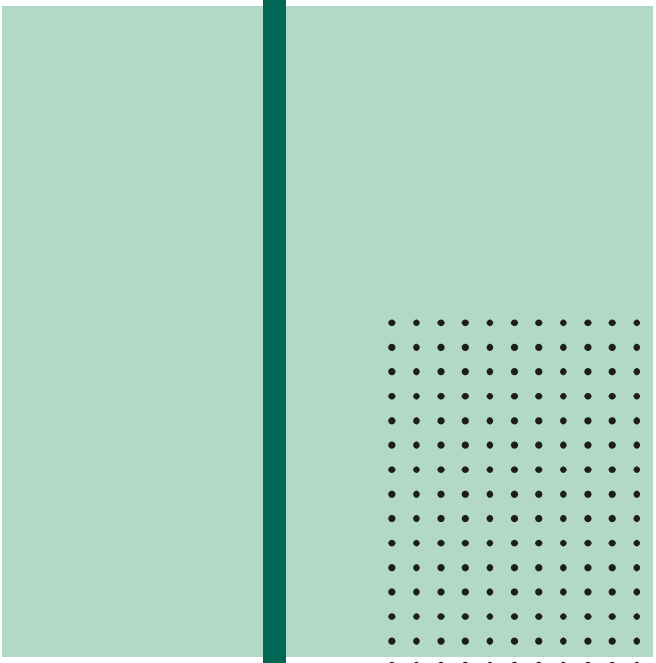

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JINGYUAN WU

Scientists and the Establishment of a Mass Environmental Awareness

(1950-1990)

ZENIT

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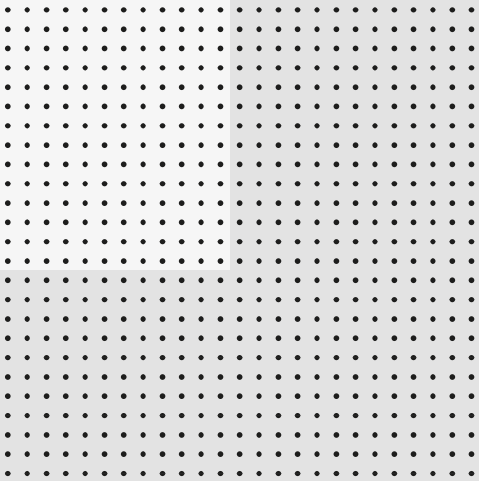
di storia globale



A cavallo tra il XX e il XXI secolo il mondo è cambiato radicalmente. Le trasformazioni sono state repentine e irreversibili. A livello storico e comparatistico la globalizzazione ha innescato cambiamenti che la metodologia e le analisi non hanno ancora assorbito del tutto.

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Scientists and the Establishment of a Mass Environmental Awareness

(1950-1990)

edited by JINGYUAN WU

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Table of Contents

Introduction

Jingyuan Wu

From the 1950s to the 1990s it was a crucial era; the world witnessed a significant rise in environmental consciousness and the foundations of today's environmental discourse were laid. Focus on this period, the primary aim of this book is to analyze the process of creating mass awareness of environmental problems, during which the scientists, policymakers, cultural institutions, environmental movements, and the broader world of work contributed to the burgeoning awareness.

It seeks to answer pivotal questions regarding the extent to which scientific objectivity has been influenced by relations with political and economic decision-makers, how scientific ideas on the environmental crisis and organizations reached the public, and whether mass awareness of the environmental crisis is based on a vulgarization of scientific ideas influenced by political debate and mass culture. By discussing these questions with historical archives, the book aims to provide a comprehensive understanding of how scientific knowledge has been intertwined with political and economic forces and how this interaction has shaped public perception and policy.

The book adopts the philosophy of "history from between", emphasizing the importance of examining the spaces between different regions and cultures to understand how environmental awareness is constructed. As Jenco and Chappell (2021) indicates, this approach highlights several key themes, starting with contextual understanding and co-production. This book emphasizes the contextual understanding of environmental issues, where scien-

tific knowledge, indigenous knowledge, and political actions interact and shape each other in complex ways. Under this notion, environmental awareness is deeply intertwined with how humans symbolically construct their worlds. By exploring the global history of environmental awareness, scholars can uncover how different societies have imagined and stabilized their relationships with the environment. This includes examining how scientific concepts, political actions, and cultural symbols have shaped environmental policies and public perceptions. The symbolic construction of worlds highlights the role of narrative and imagery in forming environmental consciousness, showing how scientific and political discourses are embedded in cultural contexts. Understanding this context-dependent nature of environmental awareness allows us to appreciate the multifaceted nature of environmental awareness as it developed in different contexts and what are the key generating mechanisms.

The second key theme is how different actors interact during the "world-making" process (Bell 2013), during which the awareness of the environment turns into influencing the reality of it. Scientists and politicians are two important actors. Scientists play a crucial role in generating and disseminating knowledge about environmental issues, providing the empirical basis for understanding environmental changes and their impacts. Their engagement with environmental politics helps translate scientific knowledge into actionable policies and practices. On the other hand, political dynamics significantly shape the development and implementation of these policies. This book shows the importance of intellectual and material contributions from various regions in shaping global environmental awareness. This approach acknowledges that the outcomes of environmental interactions are not mere reactions but are co-produced through the engagement of local and global actors. By focusing on the role of scientists and politics, historians can trace how scientific knowledge and political decisions have mutually influenced each other, leading to the development of environmental policies and practices. This co-production framework allows us to see how envi-

ronmental knowledge is continually reshaped through interactions between different actors and contexts.

It is crucial to note that the interactions between scientific knowledge and political dynamics are characterized by distributed agency, with actors contributing to the development of environmental awareness within a framework of asymmetrical power relations. Understanding these interactions helps reveal how different actors, even under conditions of unequal power, exercise agency and contribute to the local discourse on environmental issues. This distributed agency is critical for grasping the collaborative and often contested processes that have shaped environmental awareness. The diffusion of environmental awareness is never a one-way process. The book reveals the dynamic and interactive nature of these processes, moving beyond simplistic narratives of knowledge transfer to consider the complex exchanges and adaptations that characterize the global history of environmental awareness.

The book brings together contributions from scholars in Asia and Europe, providing a comparative perspective on the roles of scientists and politics in different regions.

Chapter *Scientists and The Environment: Notes for A Study in Historical Perspective* by Federico Paolini analyzes the role of scientists in fostering environmental awareness in Italy, highlighting the challenges and tensions at the intersection of science, politics, and environmentalism.

Chapter *Time Lags of Environmental Issues: A Pollution History of Connections across Japan, China, and Southeast Asia* by Jingyuan Wu, identifies three types of time lags in the political recognition of environmental issues across Japan, China, and Southeast Asia, demonstrating the transboundary role of scientists and experts in advocating for local communities and fostering international cooperation.

Chapter *Bridging Science and Local Knowledge/Perception: A Case Study of Manila Bay Coastal Provinces (Philippines) after the 1988 Red Tide Episode* by Ma. Luisa De Leon-Bolinao, narrates the events of

the first red tide episode in Manila Bay, discussing the reactions of fisherfolk, government, and scientists, and analyzing how they bridged the communication gap during the crisis.

Chapter *The Damned Fate of the Bontok and Kalinga Ethnic Groups: A History of their Resistance Against the Chico River Hydroelectric Dam Project, 1973-1986* by Ma. Florina Orillos-Juan, focuses on the opposition to the Chico River Hydroelectric Dam project in the Philippines, examining the environmental and social costs and the resistance from local communities.

Chapter *Pop culture and circulation of ideas: counterculture, environmentalism, anti-science, healthism in the musical narratives of The Kinks and Alberto Camerini (1968-1978)* by Federico Paolini is an attempt to analyse two musical narratives that show how pop culture caught the debate on environmental issues, then spread it to a wide audience cleared from the complexity of scientific issues which have been replaced by subjective and emotional perceptions.

With these historical narratives on how scientific knowledge, political dynamics and sociocultural factors have interacted to shape environmental policies and public perceptions in different regions, the book highlights the co-production of environmental knowledge, the distributed agency of various actors, and the complex interactions that have shaped our understanding of the environment. Besides emphasizing the global nature of environmental issues, by providing a comparative perspective between Europe and Asia, the book also enriches the discourse on sustainability and environmental justice.

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Scientists and the Environment

Notes for a Study in Historical Perspective

Federico Paolini

1. Some Remarks on the Italian Case

This chapter presents the results obtained by a Research Unit within the project Prin 2017 *Science, Technology and International Relations. Case Studies in Italian Foreign Policy*: the goal was to try to analyze the role played by experts – especially by some scientists who occupied leading positions within the scientific research institutions – in the affirmation of a growing environmental awareness in the institutions and in public space.

A purpose at the limit of imprudence, considering the state of literature on the Italian case. The reckless nature of the historical study of science and of Italian scientists had already been mentioned by Francesco Cassata and Claudio Pogliano in their introduction to Annal n. 26 of the *Storia d'Italia* (*History of Italy*) where the two scholars highlighted three contraindications: a historiography with large gaps and very unbalanced in relation to chronological scans and disciplinary areas; the marginal role of Italian historians in the international redefinition of the epistemology of the history of science; the «neglected» reserved for the contemporary age compared to the seventeenth and eighteenth centuries (Cassata, Pogliano 2011).

A neglect that becomes a real black hole if you want to study, in a historical perspective, the relationships between scientists and the environment in Italy: in the same Annal edited by Cassata and Pogliano there are no essays dedicated to environmental is-

sues, relegated to sporadic quotations. Some quick passages can be found in a previous essay by Pogliano (1995, pp. 555-634) and in the seminal book by Cassata *L'Italia intelligente* (2013, pp. 394-407), while environmental historians reserve isolated paragraphs for those scientists who can be considered the main inspirers (and/or protagonists) of the environmental movement (Armiero, Barca 2004, Neri Serneri 2005, pp. 278-308; Bevilacqua 2006).

Our research has not even been facilitated by the state of the art of international historiography, because the relationships between environmental history and the sciences continue to be complex and troubled.

Although some have identified in the environmentaal history a discipline capable of building solid bridges between the *two cultures* (Radkau 2008, p. 274), its trajectory has produced outcomes different from those hoped. Moreover, the premises for this operation were anything but obvious: Snow considered the intellectuals, and in particular the men of letters, Luddists «by nature» and, among them, explicitly quoted Ralph Waldo Emerson and David Henry Thoreau (two of the initiators of ecological thought) who, according to him, had devised fantasies of various kinds that in reality masked only «screams of horror» against industrial society (Snow 2005, pp. 34-39; McMurry 2003; Case, Johnson, Otterberg 2021). Since its origins, environmental history has been characterized by its closeness to the environmental movement and by the radical and anti-system approach (Armiero, Barca 2004, p. 26; Bevilacqua 2006, pp. 9-14; Radkau 2008, p. 3): this militant character has ended up with a strong ecocentric paradigm prevailing that on the one hand, it has weakened connections with anthropocentric stories (political history, social history, cultural history) and, on the other, it has failed to produce a real hybridization of knowledge (Paolini 2013, pp. 13-25; Bonan 2020, pp. 7-16).

Forty years later, Donald Worster acknowledged that the desired «vigorous hybridization between environmental history and the natural sciences» had not yet been achieved and that, until

that moment, environmental history had not helped overcome the division between «the two cultures» (Worster 2002, p. 142). In more recent years, Giacomo Bonan, inspired by an article by J.A. Thomas, wondered if, rather than «a hybridization between fields of knowledge so different», it was no longer desirable to opt for «a critical friendship» (Bonan 2020, p. 16).

In the international context, Daniel Lord Smail proposed a neuro-historical approach that involves the integration of history and biology in order to identify a new paradigm that can analyze, under a completely different light, the history of the genus Homo since the appearance of the species Homo ergaster 1.7 million years ago (Smail 2008). Dipesh Chakrabarty argued that intersecting «the history of the species with the history of capital is a process that tests the limits of historical understanding» and stressed «the growing gap in our consciousness between the global – an exclusively human history – and the planetarium, a perspective in which humans are incidental». Chakrabarty emphasizes the «shocking discovery of the otherness of the planet» and the «observation that humans – all humans, rich or poor – are the latest arrivals in the life of the planet and are in a condition more similar to that of temporary guests than exclusive masters» (Chakrabarty 2021, pp. 91-95, 136-137; Bonan 2018, pp. 129-143).

Within environmental history, those not many scholars who have dealt with science have ended up focusing their interest on functional scientific approaches to environmental thinking, in particular on those ecological theories believed to provide the scientific basis for the affirmation of a global environmental ethics (Fischer 2000; Lewis 2014, pp. 207-226; Bocking 2006, pp. 55-74).

This attitude – marked by a dichotomous vision that separates the friendly science (of the environment and environmentalism) from the harmful, anthropocentric and subordinate to the interests of economic growth – leads us to two issues of fundamental importance: the role of science in the affirmation of the western political-economic model and its relations with the multiple actors that control the public space.

Literature agrees in assigning to science (and its technological applications) a cardinal role in the affirmation of the West and its political, economic and social systems (Toynbee 2009; Hobsbawm 1995, pp. 605-644; Ponting 1999; Bayly 2007, pp. 378-392; Headrick 2011; Ferguson 2014, pp. 74-123; Harari 2019, pp. 307-378). It follows that scientific activities are, as Harari wrote, influenced and shaped by economic, political and religious interests because it is very rare for scientists to establish research programmes because research can thrive only by alliances with a given religion or ideology that justifies its costs and affects the scientific agenda and determines what to do with new discoveries (Harari 2019, pp. 337-341; Hobsbawm 1995, pp. 642-644).

This does not mean that scientific knowledge does not follow dialectic and autonomous dynamics – as, according to Kuhn's analysis, the succession of periods of normal science and extraordinary science determined by the crisis and then by overcoming the accepted paradigm (Kuhn 1978) – but that political, ideological and economic forces determine the relevance of a discipline (think of the predominant role assigned to physics, the consequence of the race to the possession of the atomic bomb and the conquest of space) or to push the complex of knowledge in one direction rather than another: from the seventeenth Century – when, in 1627, Francis Bacon wrote *The New Atlantis*, imagining a utopian society directed by scientists, committed to ensuring humanity an ever-increasing power over nature (Bierman 1963; Studer 1998; Kendrick 2003) – the direction taken was that of the idea of progress, understood as a constant advancement of knowledge aimed at improving the human condition in objectively measurable ways.

In England at the end of the 18th Century and then, gradually, in all the countries that today recognize themselves as economically developed, the idea of progress thus took the form of modern economic development, a sustained growth of population and wealth per capita that was triggered by science-based technological innovation and was accompanied by profound social and cultural transformations. Confidence in progress and development

has been at the heart of all the great ideological narratives and this, in the twentieth Century, has led to a growing politicization of scientists that the different regimes have tried to make organic to their policies. The politicization was maximum between the two world wars, but it continued also in the second twentieth Century (Hobsbawm 1995, pp. 625-633; Harari 2019, pp. 343-392): in the United States the link between political power and science was fueled by substantial public funding for research activities concentrated in a small number of prestigious universities that drained scholars from around the world, taking them away from the institutions of the countries of origin; in the Soviet Union, the Communist Party tried to use scientists to build an alternative science of which the most obvious example remains Lysenkoism which rejected the basic concepts of genetics proposed by Mendel, Weissmann and Morgan (Roll-Hansen 2005; de Jong-Lambert, Krementsov 2017).

The Italian case – in a context characterized by a marked antagonism between scientists and humanities scholars and by an enfeebled and self-referential university system, harshly and continuously criticized (for example, «Sapere» years are full of articles of this kind)[1] – does not undermine the interweaving of science, ideology, political interests and industrial issues. The 1950s saw

1. «The disconnect between the world of the sciences called "hard" and the rest of Italian culture is particularly serious [...]. In the second half of the century [...] mutual misunderstanding was clarifying, also because scientists, from absolute minority as they were before the war, begin to grow in number and to organize themselves in universities; in which, however, it is proposed (ideally and despite a seemingly quiet coexistence) a schematic opposition between two real factions: on the one hand, that of the humanists, individual thinkers, writers, philosophers, historians, scholars of various kinds bustling around their books or their era, sensitive to political passions and even to the so-called "fashion" issues; on the other hand, that of scientists, which are forming ever more numerous and close-knit groups, which are coordinating to request funds to the point of appearing like a corporation, are more attentive to integration into international research than to local problems, they care little about political events and even less about the traditional metaphysical anxieties of Italian intellectuality. The lack of strong and consolidated cultural precedents in the scientific field (the Roman school, "prepared" by Blaserna decades in advance, is a lucky and significant embryo) makes the Italian university landscape very different from that of the Anglo-Saxon countries, of France or Germany» (Bernardini 1998, pp. 282-321).

scientists caught between the scarcity of available resources and the distrust of political forces[2] that did not avoid interference by the Vatican, the Christian Democrats and some members of the Communist Party who tried to impose, also in Italy, a science «of the people for the people» inspired by dialectical materialism and based on empiricism (the model was the Soviet biology of Mičurin and Lysenko)[3].

The 1960s – in the context of the competition for the allocation of resources between different disciplinary sectors, both at the scientific and industrial level – were characterized by political interference that ended up bridging some institutions that dealt with strategic issues such as the Cnen (National Nuclear Energy Committee), the Iss (Higher Institute of Health) and the Ligb (International Laboratory of Genetics and Biophysics): the first two were overwhelmed by judicial events (the «cases» Ippolito and Marotta) requested by the intervention, respectively, of some members of the Social Democratic Party and the Communist Party, while the Ligb fell apart under the weight of the protest of 1968-1969 that, as Cassata wrote, stigmatized biology as the discipline «best suited to support US imperialist domination» and denounced the exploitation of technicians and aides by researchers (Pogliano 1995, pp. 587-608; Capocci 2011, pp. 283-293; Cassata 2013; Bernardini 1998, pp. 308-312). Towards the end of the decade, scientists began to express concerns about the marginalization of their public role and an increasing distrust of

2. On the chronic scarcity of resources of Italian science see the editorials of Buzzati Traverso published on «Sapere»: *Editorial*, n. 697, 1968, pp. 7-8; *Scienza e governo*, n. 699, 1968, p. 7; *Un meschino episodio*, n. 700, 1968, p. 5; *Caos e responsabilità*, n. 714, 1969, p. 3.

3. See Pogliano 1995, pp. 555-576; Capocci 2011, pp. 267-282; Scarpelli 1998, pp. 123-136; Cassata 2008. So wrote Buzzati Traverso: «During my career as a geneticist I have witnessed from afar the tragic story of the destruction of all scientific research in my field following the absolute domination exercised by Trofim Lysenko, under the political protection of Stalin first and then Khrushchev. [...] I may be wrong, but a system of scientific organization like the one in which a phenomenon like Lysenko can occur, and last for over two decades, is certainly not the best to stimulate scientific productivity, and indirectly the technological one», *Perché?*, «Sapere», n. 716, 1969, p. 3. See also *Monod e il caso Lysenko*, «Sapere», n. 736, 1971, pp. 4-6.

scientific knowledge. In an article titled *Gli esperti rifiutati* (*The rejected experts*), geographer Giampiero Cotti-Cometti, referring to the floods of 1966, denounced the absence of a single flood, «the most necessary», that «of the serious and surrounding studies of what [was] successful, of the clear and detailed projects to serve as a stimulus and guide for action to prevent the recurrence of similar events»; he then stigmatized the fact that «the administrators of public affairs, at various levels, had avoided soliciting the intervention of scholars»[4]. The greatest concern, however, was the discredit that scientists felt around them. In August 1968, «Sapere» hosted a speech by the Nobel Prize winner for Medicine, Jacques Monod, who wondered if suspicion of science was justified, complaining about «anxiety», «deep distrust» and «a sense of alienation» inspired by scientific research not only among the «less educated», but also within some «relevant trends of literature and philosophy»[5]. In November of the same year, Luigi Silvestri emphasized the spread of Marcuse's anti-positivism among Italian students and highlighted how science was gradually losing its prestige:

> There was a happy time, not too distant, when it was enough to deal with science to feel the conscience in place, certain of being on the right side of progress and truth. And I'm not referring to that sort of lost paradise that goes by the name of the era of positivism (the age of Spencer, to be clear) that was overwhelmed under the blows of the generation of '90, that is of that generation of intellectuals who reached maturity between 1890 and the First World War [...]. I refer rather to the cultural season that goes from the end of the First World War until today or at least until the day before yesterday. In those years, although scientific culture had been dethroned by the high prestige position it had enjoyed in the second half of the nineteenth Century, although the official culture, the other culture of

4. *Gli esperti rifiutati*, «Sapere», n. 686, 1967, p. 69.
5. *Etica della conoscenza*, «Sapere», n. 702, 1968, pp. 6-14.

> Snow, snubbed science as a producer of «pseudo empirical concepts» (Croce), although the mystical-irrational wave, of which the men of the '90 generation had been the apprentis sorciers, had set up fascist regimes in almost all of continental Europe, though we scientists, albeit in a defensive position, had no doubt. [...] And within Western culture there always existed an area where the tradition of empiricism had not been submerged by the anti-illuminatist wave. [...] But in recent years something has changed. It seems that for the younger generations the link between scientific culture and progressive ideals has been broken. One gets the impression that in the younger generations a divorce is taking place between cultural attitudes that from the Enlightenment onwards we had become accustomed to consider as joint. Behind the scientific culture it seems that young people can no longer see the ghost of Galileo persecuted, but only the inhuman profile of Dr. Strangelove. And from the younger the wave of doubt goes back to the less young, to those of them at least who are more sensitive to the debate of ideas.[6]

In order to counteract the anti-scientism, Silvestri believed that scientists should begin to contrast their rationality «with the distortions of the system» and argued that «the only way to keep open a relationship of a contentious type with the establishment» was the «possibility of opposing a rational project [...] to the use and abuse» that science was made «for the purposes of domination»:

> The consequent application of current knowledge and, where it is lacking, the application of the scientific method is able today to address and solve all the major problems of humanity. If this does not

6. *Scienza e ricerca tra integrazione e contestazione*, «Sapere», n. 706, 1968, pp. 12-16. So wrote Buzzati Traverso «Science and its products are often cursed by today's man, who wrongly holds them responsible for our current problems. But the study of them according to a scientific approach is the only alternative we have, compared to chaos, anarchy, and to make humanity fall back into a new, darker and probably more lasting Middle Ages», *Strategia scientifica*, «Sapere», n. 717, 1969, p. 3. See also *Un ordine della natura?*, «Sapere», n. 708, 1969, pp. 6-11; *La fine di un mito*, «Sapere», n. 719, 1969, pp. 48-49.

> happen it is because the use of science takes place within a different design.[7]

To strengthen this position, in June 1969 «Knowledge» published an article by Emilio Q. Daddario (a representative of Connecticut to the American Congress) in which the author stated that science should «learn to deal with politicians» and warned that, although the scientists «[warned with their noses that they [must] keep a good distance from the political game», the «times had changed» and therefore it was in their interest «to maintain contact with politicians and with public opinion» to offer the «citizen, on every occasion, the evidence that science and research significantly affect his everyday life»[8].

On the «Corriere della Sera» Adriano Buzzati Traverso reiterated his concern for the «irrational attitude» of «young people» and «less young people» that fed criticisms aimed at «slowing down, or even preventing, the progress of science»; for this reason he invited the members of the scientific community to «vigorously reaffirm» their confidence «in reason and science, understood as those distinctive elements of man» that were able to «allow the achievement not only of greater well-being but of a more satisfying vision of the world»[9]. He was even more explicit in an editorial published in «Sapere»:

> The 1960s opened in a climate of confidence and vigorous support for science. [...] But after 1965, roughly, and with increasing frequency as time progressed, voices arose which questioned the Enlightenment thesis that the expansion of knowledge could only be beneficial for humanity, asked whether man's happiness really depended on his material well-being, accused the consumer society, directly descended from the myth of progress, to destroy progressively and

7. *Scienza e ricerca tra integrazione e contestazione*, «Sapere», n. 706, 1968, p. 16.
8. *Punti di vista. I tre paradossi*, «Sapere», n. 713, 1969, p. 28.
9. *Ricerca e scienziati del '70*, «Corriere della Sera», 18 February 1970.

> without escape the natural environment of man [...] so we, scientists and advocates of reason, in a defensive position, almost had to justify our work. Foolish attitude this, in my opinion. What alternative? Return to superstition, magic, misery, to death at a young age? Do the protesters forget that if they are alive and active today they owe it to antibiotics, to the biological and medical research they so deprecated? [...] It is time to say no less science, but much more, and led to influence the decisions of ministerial cabinets, parliaments, parties, trade unions. It is too easy now, two hundred years after the era of the encyclopedists, to demonstrate how that attitude, if kept whole and true to itself, is the only one that has contributed to the well-being of man and to his greater freedom, to disperse us in exemplifications.[10]

Buzzati Traverso, however, remained convinced that science – possibly through a neo-Enlightenment movement and the compilation of a new Encyclopédie – would resist both the enslavement to political power (considered a «very recent phenomenon») both to the arguments of the counterculture that had not yet «brought any serious blow to the attitude of the Enlightenment».

The 1970s were marked by the progressive tightening of relations between policy makers (the direction of policies concerning scientific and technological development was assigned to Cipe, the Interministerial Committee for Economic Planning, established by Law n. 48 of 27 February 1967), academics and the two main public holding companies (Eni and Iri) who assumed the role – albeit in competition with each other – of facilitators of the meeting between academic and scientific circles, technicians and businesses. Historiography seems to agree in describing the decade as a period of crisis[11] in which the long wave originating from countercultural movements fueled an increasing anti-sci-

10. *È davvero nefasta la scienza?*, «Sapere», n. 720, 1970, p. 3.

11. On the difficulties of Italian science see: *Conferenza sulla politica della ricerca scientifica*, «Sapere», n. 741, 1971, pp. 10-15; *La ricerca scientifica. Dibattito sul progetto di legge presentato dal Pci alla Camera*, «Sapere», n. 776, 1974; *Problemi di una politica della scienza*,

entism that ended up undermining confidence in the progressive role of the sciences and crystallizing the debate on the dichotomy between scientific and irrationalist positions (Pogliano 1995, pp. 608-619; Capocci 2011, pp. 283-293).

In this scenario, scientists found themselves caught between the denunciation of capitalist appropriation of research results and the condemnation of scientific activities as such. The first position was that of those who recognized themselves in the most radical and moving left that, in 1976, found its most vibrant expression in the book *L'ape e l'architetto* (*The Bee and the Architect*) in which, to put it in the words of Carlo Bernardini, four theoretical physicists fed «the belief that science was completely conditioned by American capitalism and that everything had to be reinterpreted in the light of what Karl Marx had written about the interaction between man-nature and social relations of production» (Bernardini 1998, pp. 310-311; Cassata 2008, pp. 253-266). The authors of the book – later defined by themselves «almost illegible» as doctrinaire and «full of Marxian quotations» (Ciccotti, de Maria 2011, p. 228) – they belonged to a collective committed to building a model of proletarian science whose objective was to reveal the links between scientific research and capitalism, within which bourgeois science took the form of a mere instrument in the pay of the ruling class and imperialism[12]. This point of view could count on an important medium: the journal «Sapere», in the years in which it was led by Giulio A. Maccacaro (1974-1977) and then, after his death, by the editorial collective until the direction of the physicist Carlo

«Sapere», n. 789, 1976, pp. 14-15; *La ricerca pubblica nell'Università e nel Cnr*, «Sapere», n. 800, 1977, pp. 43-49.

12. See: *Una lezione dalla Cina: la scienza per il popolo*, «Sapere», n. 780, 1975, p. 3; *La scienza operaia*, «Sapere», n. 786, 1975, pp. 31-34; *Libertà e responsabilità della scienza*, «Sapere», n. 787, 1975, pp. 52-60; *Sul ruolo ideologico della scienza*, «Sapere», n. 790, 1976, pp. 14-18; *Libertà e responsabilità della scienza... in una dimensione sociale, sotto controllo popolare, con una cultura scientifica di massa, con una gestione collettiva della scienza*, «Sapere», n. 791, 1976, pp. 56-59; *Ambiguità nella popolarizzazione della scienza*, «Sapere», n. 795, 1976, pp. 27-32; *Scienza critica e diversamente prodotta*, «Sapere», n. 803, 1977, pp. 60-62.

Bernardini (January 1983). The program was well explained in the editorial published in the January 1974 issue:

> Our hypothesis is that science – two centuries from the Encyclopedia, from the bourgeois revolution, from the advent of the capitalist mode of production – is in the active or passive experience and in the implicit or explicit discourse of all men: because of science is now made the power and power men live and die. So that «making science» means, today and in any case, working «for» or «against» man and every man is reached by science to be made freer or more oppressed. The scientific organization of the work and the work of the scientific organization repeat and spread, from the factory and the laboratory, a single command that widens to reach every space and every time of life. [...] We will question ourselves, therefore, and we will question the sense, found or lost or found, to do science [...] but we want these pages particularly open and attentive to questions and proposals, experience and knowledge of «others»: those whom bourgeois hegemony has always excluded from the privilege of scientific knowledge. Because their political candidacy is also a scientific candidacy: as subjects of a science that is no longer the same in a different command but is different for a new liberation. Suffice it to say – from now on and clearly – that we reject together «scientism» and scientific luddism, because are equally alien to us the cult and exorcism of science.[13]

The group reiterated its perspective in the introductory pages to a monographic issue dedicated to *Ricerca e Società* (*Research and Society*), published in the year of the publication of the book *L'ape e l'architetto:*

> In summary, from the set of contributions transpires in a sufficiently documented way what many assumed at the level of intuition or working hypothesis: the political and productive subordination of

13. *Editoriale*, «Sapere», n. 768, 1974, p. 3.

> our country has produced a search for mere imitation of the dominant one at the international level (especially in America), with little relationship with direct production needs, more often in function of scientific cover of less noble speculative interests or even more generally profit as ideological cover for the system. [...] The prevailing reaction has been to recover positively the evolution of things in recent years; with a movement that continues to support and stimulate new ways of doing science. [...] Thus are intertwined moments that in certain stages and by some left were considered irreconcilable: alternative use of traditional science and construction of a new science, new client for the scientific product as for the economic and social and new producer of science. And therefore basic scientific experiences, born in and managed by the movement, together with a consolidation of the balance of power and the heritage historically acquired through reforms of scientific institutions for their use more incisive and politically qualified than in the past.[14]

Despite the declared rejection of irrationalism, this vision in which scientists appeared as pawns subordinated to a generic and sprawling capitalist power contributed to the deligittimation of science and opened the way to critical attitudes increasingly full of resentful distrust. The horizon of the 80s and 90s, rather than the dawn of the new Enlightenment hoped by Buzzati Traverso, revealed the descending trajectory of scientific research, held between two powerful tongs: on the one hand the chronic lack of adequate funding and long-term management policies; on the other hand an increasingly aggressive anti-science (Pogliano 1995, pp. 619-634; Capocci 2011, pp. 293-296; Cassata 2013, pp. 385-414; Bernardini 1998, pp. 315-319). This second vice was definitely the most worrying as it was fueled by the new social context that was emerging in those decades. In an article with an unequivocal title *Basta con l'antiscientismo!* (*Cut out the anti-science!*) the physicist Giuliano Toraldo di Francia noted that the «crisis of the image

14. *Ricerca e società*, «Sapere», n. 789, 1976, pp. 2-3.

of science» was an «exclusively "advertising" fact», which he explained in these terms:

> More than journalists, the main responsibility for a certain decay of the image falls on the society of great communications, of the image-show. To say that science within its limits leads us to know the world around us is a banality that certainly does not tickle the general public as, for example, the claim that research has no method, or that science is a fairy tale invented by scientists. It is therefore understandable that the journalist privileges this second thesis, certainly more spectacular than the other. [...] Faced with the overwhelming power of advertising that accustoms since children to choose and love false, scientists have the duty to reaffirm the existence of truth; a truth that, mind you, is such only within the limits of the various theories.[15]

Even Carlo Bernardini, commenting on three news released in the summer of 1988, stigmatized the spectacularization of communication that spread pseudo-truth and ended up transporting research in a pseudoscientific dimension:

> An American physicist around Italy said that in his country, for the first time, nuclear fusion processes were carried out using an X laser triggered by an atomic bomb. Indeed, he also added that such a laser is not likely in an energy-producing plant and that replacing it with something more practical will take a long time. Is this important news? No. God knows why he had so much space. Maybe it was Andreotti's sponsorship that made a big story. Obviously, that physicist, who belongs to the apparatus of American military research, knows very well that the operation of his inertial confinement device resembles more an H bomb than a reactor, and the H bombs are now forty years old. As for Newton's law, if I had noticed making the measurements that my data deviated by 20% from his forecasts, on

15. *Basta con l'antiscientismo!*, «Sapere», n. 911, 1988, pp. 16-17.

> just a kilometer and a half of depth below the Earth's surface (as newspapers wrote without batting the edge of doubt) I would have had a stroke, and if I survived, I would have spent the rest of my life looking for where I might have been wrong, even if I thought I was right. [...] Finally, the water of good memory. A good news with, behind, the whole market of homeopathic medicine and its products (fresh water, in fact, which remains only the opportunity to «remember» the compound or the solution that was). The only thing I'd like to know is the number of people who believed in it. Just out of curiosity.[16]

Over the years, Bernardini's disappointment and pessimism did not diminish: he continued to stigmatize the distorted narrative of scientific culture, the subordination of the sciences to the literary disciplines, the pseudo-popularizing operations that «ignited» the minds talking about «parallel worlds with multiple dimensions, reversals of time, omnivorous black holes, chaos and catastrophes, relations with the divinity» thus making us believe that science was concerned «with those cosmic torments on which so many [struggled] for free» (Bernardini 1998, p. 319).

In the 2011 re-edition, some of the authors of the book *L'ape e l'architetto* complained that the «historical left» had lost «all interest» in the problems of science, while the «left born from '68» had ended up exalting the «irrational impulses» replacing the topics on the role and limits of scientific knowledge with the «rather agitated and emotional themes of ecology» (Ciccotti, de Maria 2011, p. 230).

In the framework described above, the events of those scientists who found themselves collaborating with some institutional bodies responsible for studying ecological issues should be embedded. It is a numerically small group, led by some important fig-

16. *Balle non più spaziali*, «Sapere», n. 911, 1988, p. 3. About the «memory» of water, the reference is to the theories (fraudulent proved) of the French immunologist Jacques Benveniste.

ures: Vincenzo Caglioti (chemist, President of the Cnr from 1965 to 1972), Giovanni Battista Marini Bettòlo (chemist), Giuseppe Montalenti (biologist and geneticist), Mario Pavan (entomologist). During the 1950s and 1960s, environmental issues failed to emerge from their underground dimension and remained confined to two organisms (The Commission for the Defence of Nature and Its Resources and the Commission for Nature Museums and Ecology) which had a poor visibility in public space, not to mention almost go unnoticed[17].

The work of these scientists was brought to the surface, for a short time, in the first half of the 1970s when – in the wake of initiatives for the preparation of the European Year for Nature Conservation (1970) and the United Nations Conference on the Human Environment (1972) – the center-left governments (and, above all, Amintore Fanfani, President of the Senate) favored the publication of four reports: *L'uomo e l'ambiente* (*Man and the Environment*), *Il Libro bianco sulla natura in Italia* (*The White Paper on Nature in Italy*), *Problemi dell'ecologia* (*Problems of Ecology*), il *Rapporto italiano per la Conferenza di Stoccolma* (*The Italian Report for the Stockholm Conference*), to which was added the *Prima relazione sulla situazione ambientale del paese* (*First Report on the Country's Environmental Situation*). It was, in essence, an ephemeral conjuncture fueled by synergies between the Center-left (which was to guide the participation of Italy in supranational initiatives), the activism of some state companies (Eni, in particular) and this team of scientists who were assigned the task of outlining some embryonic form of environmental policy. Since up to that time Italy – at a crucial moment for its economic and social development – had ignored environmental problems and, as usual, sailed on sight following what was happening in the United States and, to a lesser extent, in northern Europe. Once the echo of the Stockholm Con-

17. The «Corriere della Sera» dedicated a few sporadic articles to the Commission for the Defense of Nature: *Piano difensivo per l'Italia. Un «libro bianco» del Cnr sulla salvaguardia della natura*, 21 August 1969; *Difendere la natura*, 11 February 1970; *Le carenze del sistema*, 27 February 1971; *La natura che abbiamo distrutto*, 16 March 1972.

ference had faded, very little was done in practice (the finalized projects of the Cnr, the establishment of the Ministry of the Environment), and the activities of scientists returned to be shrouded in indifference of politics and public opinion, the latter fascinated by the sirens of the apocalyptic predictions and captivated by the communicative dopamine of catastrophism, but very unwilling to follow the real trajectories of different scientific fields (especially chemistry, physics and biology).

The mass media and political parties occasionally remembered scientists in the event of a disaster (Seveso, Chernobyl) or election rounds (in 1983 the Pci nominated Giorgio Nebbia to the Chamber and the geneticist Nicola Loprieno to the Senate; in 1987 the chemist Enzo Tiezzi to the Chamber and Giorgio Nebbia to the Senate). Thus, the history of this group ended sadly in the 80s[18], with a parable very similar to that of the Ligb; the causes were, again, those already highlighted by Cassata (2013, p. 413), or the crisis of the innovative and reforming charge of the center-left and the absence of a serious policy on scientific research, to which must be added the declining role of Amintore Fanfani (their main political reference, as well as the Christian Democrat exponent most attentive to those ecological sensitivities that began to manifest themselves in the first half of the 1970s) and resistance within the Cnr.

There is another factor that needs a detailed discussion, namely the progressive rooting in the public space of environmentalism that produced that dichotomous evaluation of science to which we have already briefly mentioned: on the one hand knowledge useful for the ecological destiny of the planet, on the other those functional to progress and therefore, by extension, to economic growth. In essence, the institutional paths in which these scien-

18. *Si dimette la commissione di tutela dell'ambiente perché ignorata dal Cnr. Era l'unico organismo al quale Stato, Governo, Regioni, Comuni, e associazioni potevano far capo per avere un parere su questioni ecologiche*, «Corriere della Sera», 7 November 1980. In issue 896 of April-May 1987, «Sapere» published an article (*Storia di una commissione*) that briefly summarized the events of the Commission for the Defense of Nature.

tists found themselves involved also failed because their action was not perceived as organic to the environmental movement: they certainly dealt with environmental issues, but they did it prudently following the rationality of the scientific method and not the emotionality of the acolytes. Even more explicitly: they were scientists studying the environment, but not scientists-environmentalists (with the exception of Giorgio Nebbia who had a more marginal institutional role than those of Caglioti, Marini Bettòlo, Montalenti and Pavan). This caused their isolation because they found themselves in a middle position between those who opposed the affirmation of ecological awareness and those who, instead, were building a new form of knowledge deeply ideologized what was the political ecology. It is indicative that the scientists who worked within the main institutional bodies were completely ignored by the press of the time that, on the contrary, devoted ample space to foreign experts considered the main inspirers of the new ecological thought, starting with Barry Commoner. This was because – in cooperation with both the centre-left governments and the main State companies – the group of scientists had undertaken to find a synthesis between the needs of the protection of natural resources and those of social-economic development and therefore did not adhere to the alarmist tones of political ecology that much more titilated the sensationalist vein of the media. This also explains why, for example, the *Dizionario del pensiero ecologico* (*Dictionary of Ecological Thought*) by Della Seta and Guastini (2007, pp. 101-103, 240-241, 273-274) dedicates entries only to Marcello Cini (the most well-known of the authors of the book *L'ape e l'architetto*), Giulio Maccacaro (one of the inspirers and protagonists of bottom-up science) and Giorgio Nebbia (today considered one of the main inspirers of Italian environmentalism: Piccioni 2014; Ruzzenenti 2023): their adherence to the ecological point of view was ideological even before scientific. All the others (Caglioti, Marini Bettòlo, Montalenti, Pavan... but also Buzzati Traverso who had collaborated with Unep, the environmental agency of the United Nations) are ignored because, not being perceived as activ-

ists within the environmental galaxy are reduced to mere technical experts and, for this reason, remain outside the perimeter of «ecological thinking».

2. A Dichotomy That Cannot Be Overcome?

At this point it is necessary to return to the main turning point of history that we face in this chapter: the five-year period 1968-1972, the five years in which the positive perception of science and progress – until then decidedly dominant – was cracked by the rise of ecological ideas. The events that accompanied this change were the publication of some neomaltusian essays (Ehrlich 1968; Hardin 1968; Committee on Resources and Man 1969), the establishment of the US Environmental Protection Agency (1970)[19], the broad mobilization for the first Earth Day (22 April 1970)[20] the celebration of the European Year of Nature Conservation (1970)[21], the publication of the Limits to Growth report (March 1972)[22] and the United Nations Conference on the Human Environment (June 1972)[23]. The long wave generated by these events created an epoch-

19. *Nixon to Propose Pollution Agency*, «The New York Times», 6 June 1970; *Senate Confirms Ruckelshaus To Head Environment Agency*, «The New York Times», 3 December 1970; Barnes, Graham, Konisky 2021.

20. *Pollution Protests in April to Be Varied in Militance*, «The New York Times», 8 March 1979; *All Out for Ecology*, «The New York Times», 19 April 1970; *Nation Set to Observe Earth Day*, «The New York Times», 21 April 1970; *La "Giornata della Terra" negli Stati Uniti. Ecologia come partito*, «La Stampa», 28 April 1970; Rome 2013.

21. See Spring 1968 and Summer 1970 issues of «Nature in Focus. Bulletin of the European Information Centre for Nature Conservation»; *Difendere la natura*, «Corriere della Sera», 11 February 1970; *È l'«anno della natura», impariamo a rispettarla*, «La Stampa», 25 April 1970.

22. *L'utopia del progresso illimitato*, «Corriere della Sera», 20 February 1972; *The Limits to Growth*, «The New York Times», 2 April 1972; *Ci sarà un'apocalisse ecologica? Consensi e critiche alle teorie di Dennis Meadows sul «progresso» controllato*, «La Stampa», 7 April 1972; *Il mondo avviato al suicidio*, «Corriere della Sera», 18 July 1972; Neurath 1994.

23. *U.N. Group Offers Environment Plan, Asking Reorientation of Man's Values*, «The New York Times», 17 March 1972; *Il Convegno mondiale di ecologia a Stoccolma. Questo sporco sporco mondo*, «La Stampa», 4 June 1972; *Il mondo deve evitare il «disastro ecologico»*, 5 June 1972; *Environment Conference Will Offer Some Sideshows*, «The New York Times», 5 June

al rift: what had enabled human beings to advantageously walk the paths of progress and development – scientific research and its technological implications, up to that moment accepted with ossequiosa confidence – now it was accused of having produced immense damages to the Earth. As John mcneill noted, progress and economic growth had generated their antithesis (McNeill 2022, p. 430): to political-economic bipolarism was added a second that would have opposed the proponents of development to the defenders of the ecological balances of the planet.

The relevance of this shift was highlighted by Arnold Toynbee who in his *Racconto dell'uomo* (*Mankind and Mother Earth*) historicized the concept of the biosphere arguing that humans had become the first species to have acquired the ability to destroy the seat of life also producing the conditions for their extinction. This had become evident in the early 70's when it was understood that the biosphere was in danger of being «overwhelmed, polluted and finally made uninhabitable for all life by one of its creatures and inhabitants, Man». Toynbee identified the combination of scientific research/technological applications and the increasing use of energy sources as the two tools by which humans had mastered the biosphere. Furthermore, saw the most devastating symptom of the human impact in the process of urbanization that had taken the forms of «parasitic slums», of mechanical tentacles that enveloped the entire globe (railways, roads, air routes) and industrial effluents that polluted water and air. Humanity thus had two possibilities: to kill the «Mother Earth» with a wicked use of the «growing technological power», or to redeem it by defeating the «suicidal and aggressive greed» (Toynbee 2009, pp. 15-30, 582-583, 602).

Even Hobsbawm – much more lukewarm than Toynbee towards ecologist arguments – pointed out that, at the beginning of the 70's, the discovery that science-based technology could produce irreversible changes to the Earth began to affect scientific

1972; *Si vota una «carta delle Nazioni Unite» per creare un ambiente più pulito e sano*, «La Stampa», 16 June 1972.

environments by raising the demand for new limitations to scientific research, particularly genetics and biology. In his opinion, a very tense atmosphere was created because scientists who worked in the fields more akin to social disciplines (in particular ecology and ethology) transferred too superficially their knowledge to human beings and this fed tensions and conflicts. The result was the polarization of the debate between optimists and pessimists, the latter engaged in demanding the imposition of a hold on scientific research, judged no longer able to «control the powers in his possession», nor to «recognize the risks» that humanity was running (Hobsbawm 1995, pp. 637-641).

For Tony Judt (2017, pp. 601-605, 608-613), the emergence of environmentalism in the early 1970s had occurred in the context of the disintegration of the great ideological narratives and had to be considered as an aspect of the more general affirmation of a series of «monothematic» movements which had their roots in protest and counterculture, which had contributed to a growing unease with the epiphenomena of modernity; as far as the ecologist movement was concerned, However, he identified the seeds both in the new fears of the middle classes (nuclear accidents, the alienation of urban life, pollution...) and in a reactionary return to the nationalist and regionalist nature (the German *heimat*, the *France profonde*, the *feet in ancient times* of William Blake).

Armitage and Guldi remarked that the genesis of environmentalism has taken on a catastrophic dimension whose influence has transcended the boundaries of ecological debate to inspire, in the case of the United States, a new form of apocalyptic thought within popular religiosity. The two scholars noted that, despite the evolution of knowledge, the apocalyptic perspective has ended up colonizing scientific reflection, historical analysis and the collective imagination, the latter dominated by dystopias that tell the 21st Century as the «last Century» or «the last hour» of humanity. In their view, «the increase in available data» should instead «allow the elaboration of broader and more refined metanarratives» (Armitage, Guldi 2016, pp. 119-123).

I cite these historiographical interpretations – some of which are very far from the moment I write – because they have all grasped the two key issues that have also emerged from the consultation of the materials identified during the research. In other words, that the progressive affirmation of ecological ideas and environmentalism began to fuel a dichotomy between the advocates of economic growth and science to be able to support it and how many, Instead, they demanded a deep rethink of the relationships between humans and the biosphere starting to support anti-positivist and anti-scientist positions. The latter introduced into the debate a vehement criticism against the anti-ecological character of development, the commodification of science, the subordination of scientific research to technological innovation: this led them to believe that only science close to the principles of environmental ethics was the bearer of truth, but also to legitimize subcultures (animalism, vegetarianism, naturism...) and distinctly ideological and often Manichean attitudes that presented as truthful para-scientific knowledge (homeopathy, biodynamic agriculture, unconventional medicine...). While it is true that this dichotomy had already emerged since the last decades of the nineteenth Century, since the early seventies it has fuelled a mass of reductionist elaborations asserted both by supporters of development and by its detractors: the former have always ignored (or minimized) the impact of development on the biosphere, while the latter have robbed humanity of an unwelcome disturbing presence of the natural order of the Earth.

The supporters of the first position have continuously entrenched themselves behind the results, irrefutable, produced by development: that humanity that, at the beginning of the industrial era, was composed of an indistinct mass of individuals afflicted by extreme material and cultural poverty, in the second half of the twentieth Century it had transformed into a composite and stratified global community whose well-being had extraordinarily increased. Of course, there remained a clear imbalance between the industrialized countries and those emerging

from the colonial yoke, but the improvement brought about by the socio-economic dynamics of the golden age was evident, especially as regards socio-cultural aspects. Between 1820 and 1970 the global average life expectancy had increased from 29 to 56.1 years, infant mortality by the first five years of life had fallen from 42% to 14% and illiteracy had fallen from 87.95% to 44.38%; moreover, the share of the population living in conditions of extreme poverty had declined from 89.34% to 47.97%, while the gross domestic product of the world had grown from 1.18 to 21.94 trillion international dollars and that per capita had increased by 5.29 times (9.23 times in the western reaches; 7.97 times in Eastern Europe; 7.41 times in Western Europe; 6.47 times in Central and South America; 5.41 times in North Africa and the Middle East; 3.32 times in East Asia; 1.68 times in South and Southeast Asia, 1.66 times in Sub-saharan Africa)[24]. In the literature, the optimists of economic growth have been quite numerous, often authors of important volumes that for decades have been used as reference books in scientific debate and university courses. Some scholars have totally removed the ecological dimension from their analysis (Pollard 1981; Thomas 1994; Foreman-Peck 1995; Arrighi 1996), others have hastily dismissed critical positions (Roll 1973; Birdzell 1986; Cameron 1997), others – as far as they are aware of «collateral damages» – have continued to point to economic expansion as the main engine of civil progress (Friedman 2005).

Over the decades, critics' analyses of anthropocentric progress have ranged from neo-Malthusian (Paul Ehrlich, Garrett Hardin,

24. The data was processed using *Our World in Data* interactive tables (*GDP per capita, 1820 to 2022*; *World population living in extreme poverty, World, 1820 to 2015*; *Life expectancy*; *Global child mortality*; *Literate and illiterate world population*), https://ourworldindata.org/, last viewed on 17 May 2024. Since the 1980s, the globalization process has produced a further improvement in indicators: world GDP has reached 130.11 trillion international dollars (2022), GDP per capita 16,091 international dollars, life expectancy 71 years (2021; before the pandemic had reached 72.8 years in 2019); extreme poverty, infant mortality and illiteracy decreased to 9.98% (2015), 4% (2021) and 12.99% (2022) respectively. See Maddison 2008; Allen 2011; Ravallion 2016.

System Dynamics Group, Edward Goldsmith and Robert Allen), to radical political ecology (Serge Moscovici, Ivan Illich, André Gorz) passing through the ecological economy (Kenneth Boulding, Herman Daly, Nicholae George-scu-Roegen) to arrive at the most intransigent radicalism (primitivism, organicism, deep ecology, bioregionalism, anti-utilitarianism, rewilding, basic movements Lulu and Nimby, animalism, antispecialism, veganism, up to eco-terrorism and the Vhemt movement whose objective is to make the human species disappear).

It is worth dwelling on the most famous neo-Malthusian analysis, that of the report *The Limits to Growth*, given the impact it had in public space. In the book there are some passages that, in the opinion of the writer, show how the ideological dimension has deeply oriented the construction of mathematical models used by the writers: the catastrophic vision does not seem to be the logical consequence of the results produced by the mathematical simulations, but, on the contrary, the premise on which they were built; the plant of the work seems very similar to that of an empirical verification of some hypotheses of which the authors were initially convinced. The aim of the book appears to be much more political than scientific: in other words, it raises an alarm with the intention of bringing public attention to the ecological question. In this regard, it was noted that the engagement of scientists in favour of environmental arguments was encouraged by pressure from non-governmental organisations, of the citizens and also of the governments that saw in the scientific forecasts a solid support in order to facilitate the approval of the environmental policies, since the support of the scientists guaranteed the suffrage of the scientific truth. This attitude represented a significant novelty, as even the most likely scholars to intervene in support of political debate were (and are) aware that truth is a commodity that can belong to religious or politicians, but it is always denied to scientists (Funtowicz, Ravetz 1999; Allen, Tainter, Pires 2001; Steel, List, Lach, Shindler 2004).

In *The Limits to Growth*, the preponderance of ideology on scientific rigour is evident in the parts dedicated to the economy: the

report states repeatedly that the «state of global equilibrium» could only have become a reality when the developing countries had progressed both in the absolute sense and in relation to the already developed countries. The impracticability of this assertion was already revealed by the authors themselves, who pointed out that analysis did not depend on «political feasibility» because their «programme» was «as thorny on the social plane» as «simple in mathematical terms» (Meadows, Meadows, Randers, Behrens III 1972, pp. 128, 130-132). And mathematics confirms how the proposal to block the development of industrial capital at the values of 1985, imagining to reach a «condition of equality between the rate of investment and depreciation» in 1990, it would create a state of equilibrium characterized by the crystallization of global inequalities to the benefit of the West. Still in 1990 the Western countries (offshoots and Western Europe) held 46.99% of the world's wealth (56.59% including Eastern Europe), while Asia 28.41% (22.94% in 1980, before the take-off of the so-called Asian tigers); as for the other areas (Central-South America, Middle East/North Africa, Sub-saharan Africa) between 1980 and 1990 their economies had seen their percentage weight decrease (respectively -1.43%; -0.21%; -0.29%). The redistribution of world wealth began only in the 1990s, when globalization (understood as progressive liberalization and financialization of the economy) supported the growth of Asia, but also (more modestly) of Africa; in 2022, 43.72% of world GDP was concentrated in Asia, against 37.63% of Western countries, while the Middle East/North Africa (8.56%) exceeded Central and South America (6.98%) and even Sub-saharan Africa had quadrupled the value of its economy (from 905.42 billion to 4.04 trillion international dollars) reaching 3.11% of global GDP (it was 2.10% in 1990)[25].

In an attempt to find a compromise between the need not to halt economic growth and the need to protect natural resources,

25. The data was processed using *Our World in Data* interactive table, *Gross domestic product by world region 1820-2022*, https://ourworldindata.org/economic-growth, last viewed on 23 May 2024.

the United Nations, since the second half of the 1980s, has promoted the consensus of sustainable development, understood as an economic development that meets the needs of present generations without compromising the possibilities for future generations to meet their own. This notion was first affirmed by the Brundtland Report (1987) and then clarified by the United Nations Conference on Environment and Development (1992), the World Conference on Sustainable Development (2002) and, finally, the 2030 Agenda for Sustainable Development (2015)[26].

The progressive conceptualization of environmental sustainability has been entrusted to an institutional science managed by supranational agencies (and strictly dependent on UN and state funding programs) which has been recognised and endorsed by the international community, in particular by the industrialised countries. Around the agencies and specialized programs of the United Nations (UN Environment Programme; UN Human Settlements Programme; World Meteorological Organization) has been formed an increasingly large scientific community that, over the years, has developed a significant amount of studies and reports: the most important are the Global Environment Outlook and the Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), up to now in their sixth edition[27].

However, the concept of sustainable development has not mitigated – as policymakers probably expected – the dichotomy

26. World Commission on environment and development, *Our common future*, Oxford University Press, Oxford-New York 1987; *Report of the United Nations Conference on Environment and Development. Rio de Janeiro, 3-14 June 1992*, Volume I. *Resolutions Adopted by the Conference* (A/CONF.151/26/Rev.1), United Nations, New York 1993; United Nations, General Assembly, Fifty-fifth session, 18 September 2000 (A/RES/55/2), *Resolution adopted by the General Assembly: United Nations Millennium Declaration*; *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (A/CONF.199/20), United Nations, New York 2002; United Nations, General Assembly, Seventieth session, 21 October 2015 (A/RES/70/1), *Resolution adopted by the General Assembly on 25 September 2015. Transforming our world: the 2030 Agenda for Sustainable Development*.

27. United Nations Environment Programme, *Global Environment Outlook. Geo 6*, Cambridge University Press, Cambridge 2019; IPCC reports can be found at https://www.ipcc.ch/.

between proponents and detractors of economic growth: the debate has continued until the present time with increasingly harsh tones, They are also exacerbated by policies to promote ecological transition, which are multiplying conflicts between the centres and the peripheries, as well as between the upper and lower segments of the population. One of the reasons for the increasing polarization must be found in the fact that political decision-makers have increasingly urged science to generate indisputable truths to be used as new dogmas to support decision-making: In this way any critical observation can be depowered and silenced with the accusation of representing a mystification of the truth that, by its nature, can only be unique. Moreover, the progressive mediatization of the debate through social networks has pushed people to lock themselves in homogeneous groups that reject differences of opinion and hate everything that does not fit within their values.

This has led to a further polarisation of the debate on environmental problems. On the one hand we find the composite galaxy of ecoscepticism[28] animated by heterodox scientists, repentant environmentalists, supporters of an anthropocentric vision inspired by traditionalist Catholicism and conservative think-tanks (America Policy Center, Heartland Institute, Fraser Institute, Molinari Economic Institute...). On the other hand there are the advocates of degrowth and social models based on austerity and anti-consumerism (Latouche 2007; Pallante 2011 and 2022; Bonaiuti 2017 and 2023), as well as new manicheisms fueled by catastrophic and anxiety-inducing visions that find expression in mass media celebrities such as Greta Thunberg or in organizations such as The Last Generation or Extinction Rebellion (Spadaro 2020; Read 2020; Dave, Ndulue, Schwartz-Henderson 2020; Martone, Sciarrone 2023).

It is worth noting a fundamental contradiction inherent in these new fundamentalists: their supporters on the one hand de-

28. See Lomborg 2001; Larcher 2004; Moore 2010; Testa 2020; McCright, Dunlap 2000; Jacques, Dunlap, Freeman 2008; Paolini 2020, pp. 221-235, 269-296.

clare themselves convinced followers of science (one of the most cited sources are the IPCC reports), on the other hand, they are deeply wary of those fields of knowledge – chemistry, physics, pharmacology – which they consider irremediably colluded with the methods of production proper to financial capitalism and, therefore, incompatible with the ecological transition.

This strong polarization also persists within the literature. On one side of the fault line there are optimists, who believe that the development model can be amended thanks to the increasing attention to environmental aspects and the constant advancement of science and its technological applications. These include, for example, Giorgio Ruffolo and Fred L. Block. Ruffolo writes:

> The human hybris virus, however, does not manifest itself only «negatively», accelerating locally, in the world dominated by man, the universal tendency to the increase of disorder: entropy. Man is also the highest point of a process symmetrical to that of increasing entropy: the process of evolution. Symmetrical to the second law of thermodynamics is in fact what some scientists have defined the law of organization. If there was only the law of entropy there would be only chaos. [...] philosophies that challenge science and technology as idols of our servitude lead us on the opposite path to that marked by the law of organization that regulates the evolution of being. They lead us into the smoke of mysticism, while science and technology, at the service of knowledge, not of the market, are the paths open to our creative development. [...] Technical progress is not the cause of the disappearance of ends, but its subjugation to capitalist accumulation. That synthesis of technology and of the market, which was the secret of capitalist triumph, is today its prison. It is not true that technique prescribes to do all that is feasible. It prescribes to do all that is profitable. The problem, then, is not to escape from technology, but to remove the technique from the laws of the market, putting it at the service of knowledge. In this sense the ecological balance, the stopping of the economic growth of having, sterile and self-destructive, is the necessary premise of a transcendent hu-

> manism aimed at the existential development of the human species. (Ruffolo 2008, pp. 280-284)

For his part, Block is confident that quantitative growth can be replaced by qualitative growth:

> This book has treated the issue of growth and economic dynamism as something positive, to the extent that this implies an efficient use of natural resources to produce products that are increasingly better and on a larger scale without passing the costs of this on to workers, consumers or the environment. Today, however, there is strong support from many quarters that the historical goal of material growth is destroying the planet and that we must instead embark on a path of degrowth. Apologists for the decline are certainly right when they point out that the development model pursued over the past two centuries is unsustainable. But the theorists of degrowth do not understand that it is possible to improve people's living conditions without necessarily having to resort to that model of growth based on the destruction of natural resources that was typical of the industrial age. We can clarify the issue by distinguishing between quantitative growth and qualitative growth. [...] Qualitative growth tends to be compatible with the protection and safeguarding of natural resources and seeks to meet human needs without compromising the survival of the planet. We are faced with examples of qualitative growth whenever we make investments to clean a river from pollutants, or develop technologies that allow us to recycle materials. (Block 2021, p. 233)

On the other side of the fault line there are the proponents of a radical change, of a clear break with the past: the analyses of these authors are effective in explaining the causes (moreover, now well known to anyone who deals with environmental issues) but they are unable to propose alternative models through which they can concretely guarantee both the acquired well-being and the improvement of the quality of life of those who are in conditions of

scarcity and poverty. Two bishops of this approach are Christophe Bonneuil and Jean-Baptiste Fressoz:

> To think of the Anthropocene means to accept the data and the models of the sciences of the Earth system that envisage, in increasingly certain terms, an imbalance on the scale of the geological times such as to radically upset the conditions of human existence. It means realizing the telluric power of industrialization and the market, which has derailed the Earth from the stable parameters of the Holocene, as well as the need to give different material foundations to our freedom; It means putting in place new environmental humanities and new political radicalities (movements that promote buen vivir, the common good, transition, degrowth, ecosocialism and much more) to get out of the impasse of industrial modernity. Thinking of the Anthropocene also means distrust of the great official narrative, which tells us of a unified human species that can be saved only through science. It means bringing scientists among the people because they discuss step by step their results and their forecasts, not to fall into a geo-cracy that offers technical and commercial solutions useful to manage the whole Earth. [...] The history of the Anthropocene is a story of the disibinitions that have normalized the unsustainable: hygienism that bypasses the environmental medicine of the eighteenth Century, the technical norm that eliminates disputes and becomes the ontology of the administration of environmental harmfulness, the proliferation of objects that have shaped the liberal anthropological subject, the Gnp and the notion of economy that have imposed the idea of infinite growth, the solutions techno-scientific that in every age have claimed to improve the management of nature to bring it to the maximum sustainable yield and, today, the green capitalism, which integrates the environmental criticism in its financial utopia of the generalized compensation. (Bonneuil, Fressoz 2019, pp. 357-361)

The fault line also crosses contemporary Italian historiography, as demonstrated by the books *Miseria dello sviluppo* (*Misery of Develpment*) by Piero Bevilacqua and *Occidenti e modernità* (*West-*

ern Worlds and Modernity) by Andrea Graziosi[29]. Bevilacqua uses a narrative register that does not skimp on peremptory tones and flaunts a firm confidence in the truthfulness of his statements. The beginning is of those bewitching and cunning, at Moby Dick: «the development», the author sentences, «is over». The end of development would be demonstrated by the progressive gap between economic growth and well-being; by the appearance of «new forms of poverty, marginality, environmental degradation, insecurity, abysses of inequity»; from a conceptualization of economic growth that has mocked the temporal and spatial dimensions based on the dual fiction of the «pretense eternity of social phenomena» and the «supposed infinity of nature». In Bevilacqua's explanation, sustainable development becomes a further imposture that the «human mammal», after «at the top of the evolution processes» thanks to «technical development», used to take away from the Earth «its thousand-year history» that took «into its hands» believing that they «could rule it». Given the premises, the continuation of reasoning does not renounce to evoke the duplicity of science: on the one hand, in fact, there is science «above all suspicion», the one that discovered the ozone

29. Eugenio Capozzi's analysis is also interesting: this is harshly critical of the ecology that the author defines as the «utopia of environmental anti-humanism» and considers a product of the ideology of political correctness: «The environmental ideology is immediately "soluble", as a secular religion and set of rules of conduct. While dogmas that prescribe absolute equivalence between cultures or absolute coincidence between subjective desires and rights collide with events that can be interpreted in the opposite direction, and generate conflicts and tensions because of the controversial effects caused by their slavish application, the environmentalist worldview appeals to such a profound and general tendency, a psychological movement so widespread in public opinion that it is very easy to rely completely on it, accepting all its practical implications. [...] The generic ideal of a clean world against a "dirty" is too simple and attractive, the doctrinal myth of man prevaricating on nature is too strong and widespread, because so many belonging to the western educated neo-bourgeois classes, or aspiring such, do not let persuade, without standing to discuss the technical solutions and the choices of government aimed at that work of cleaning (although the critical voices on the ideological construction in this regard, especially outside Europe, have been growing). Environmentalism thus represents a precipitate, a synthesis of the diversionary program to abolish conflicts and bring humanity back to the original state of innocence» (Capozzi 2018, pp. 139-165, 164-1659).

hole and «[squaderna] scenarios of global upheavals as a result of global warming»; on the other there are the «knowledge» inept and prone to the economy that the author considers a «religious belief» and therefore a «knowledge without foundations». Bevilacqua fails to recall that that unsuspected science has established itself in parallel and consequently to the definition of the concept of sustainable development, because it constitutes the rib on which the aforementioned United Nations agencies graft their narrative. As for the proposal to escape the «poverty of development», the author resorts to the concept of degrowth, although he recognizes that some of his «most authoritative supporters» (like Serge Latouche) do not even try to translate into political practice «things theoretically easy» and that «to degrowth it would be necessary to give legs to walk» changing the name (Bevilacqua 2008, pp. 3-5, 12-14, 196-198). Moving from the perspective of degrowth, Bevilacqua comes to imagine a new messianism:

> We believe that a socialist perspective can be reopened in new forms, other than the collectivization of the means of production, but that – together with an intelligent taxation – passes through a redefinition of the links between public and private that the increasingly limited and common resources impose. Of course, an economy brought back into being through the collective common good must be based on an unprecedented wisdom of the balances and fragility of the living world. So far no science of nature has oriented the global use of resources without rules. The pure technique of plundering has triumphed. But it should be clear at this point what is perhaps the greatest achievement of this possible strategy. A new horizon, an unexpected possibility of planning the future are opening up before us, able to provide general purposes for our action. Politics, shattered and emptied by the loss of ideal prospects, is now offered a new opportunity to find meaning, universal motivations. An ethic of responsibility – the moral horizon advocated by Hans Jonas – can now find unexpected foundations in the pursuit of our own interests. In

> declining religions, ideologies and beliefs, or in their entrenchment in closed fanaticism, a new secular faith, aimed at the salvation of the common home, can refound the reasons for being together. (Bevilacqua 2008, pp. 201-202)

Diametrically opposite to Bevilacqua's is Graziosi's analysis. In his opinion, the rhetoric of Neo-Malthusian theories – which colonized public space in Italy as well – prevented us from fully understanding the important implications produced by the transition from a peasant to an urban society, beginning with the emptying of rural areas and the «self-liquidation» of the peasants who chose voluntarily and consciously not to remain such preferring the «call of comfort». The author also strongly stresses the impact of scientific progress on the lengthening of life expectancy that he attributes to its main corollaries (changing health care and systems, increasing well-being, changing lifestyles, improving individual opportunities). He considers the «green discourse» as part of the «landslide of the value system of the left that occurred between the sixties and seventies of the twentieth Century» which he explains in these terms:

> Its roots in fact lie in an apocalyptic approach linked to the fear of nuclear power or chemical poisoning (certainly worrying but denounced in a world where average life expectancy made giant leaps forward)and often based on engineering calculations – that is to say, given resources and knowledge – and not economic and even less «open to the unpredictable» on the future and the availability of resources. From this point of view, the green discourse, which also has strong antiscientist components, still has affinities with the predictions about the population explosion that accompanied his birth, as well as the predictive ambitions of economic planners or the more mundane versions of Malthusianism. For example, they are linked to the theories of the degrowth of Nicholas Georgescu-Roegen, which make up the aporia of green discourse compared to those of classical progressivism, which was ardent supporter of growth and devel-

> opment, but also to the Jewish tradition-co-Christian of «Be fruitful and multiply; fill the earth, make it subjected» which is closely linked to progressivism. (Graziosi 2023, pp. 170-171)

As for the future, Graziosi recognizes the scientific foundation of concerns about the ecological state of the planet, but is firmly convinced that the only possible path is that «indicated by rationality». In his opinion, the only applicable remedies are inspired by «technical-scientific progress» and any choice «must be pursued elastically, based on scientific knowledge and their advancement, which is by definition unpredictable». Finally, to try to see a new world concretely realized, he considers it appropriate

> abandon a moralism often counterproductive because, even when it is inspired by the best intentions, may seem elitist, paternalistic and even contemptuous especially to those who today feel hurt by the rapid changes of the modern world [...]; renounce binding plans in favor of open reasoning on the future; and finally abandon all apocalypticism and anti-scientism because only knowledge, technical progress and a wise use of prices and incentives can help us to cope with the problems created by development. (Graziosi 2023, p. 173)

In conclusion, this chapter attempts to sketch out the complex interpretative framework in which the relations between scientists and the environment must be inscribed.

The debate analysed here clearly reveals that, also with regard to environmental issues, behind the conflict between rationality (scientific knowledge) and irrationality (a span of attitudes ranging from mild scepticism to the radical rejection of science) conceals a strategic contrast between antithetical and irreconcilable socio-economic interests.

The hope is that this chapter will stimulate future research that will be able to arrange new and significant interpretative pieces in a scientific mosaic that, still today, remains fragmented, ambiguous and controversial.

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Time Lags of Environmental Issues

A Pollution History of Connections Across Japan, China, and Southeast Asia

Jingyuan Wu

1. Time Lags of Environmental Issues

1.1. *To Discover the "History from Between"*

History is the study of past events within the context of time. Historians unearth these crystalline moments and strive to string them together, revealing the flow of time as a tapestry woven from the threads of events. By rating contextualizing the nodal points within the history of the transmission of an idea, historians provide a narrative of causality and the dynamics of change and continuity across different eras and places (Mulsow 2017).

When historians introduce relative perspectives and apply comparative approaches, gaps, and cracks appear in the intricate weave of events. Questions arise: Why do people recognize a problem yet delay action for years? Why does one region face a challenge, only for another to encounter the same plight later? Understanding when and why different regions recognize environmental issues helps trace the evolution of environmental consciousness and reveals patterns in societal responses. This perspective offers a transborder view of environmental history, illustrating that what happens in a particular region and how people respond to it is both a local and global phenomenon.

By examining how scientific discoveries and philosophies move across borders and influence local actions, historians can investigate the mechanisms and impacts of transferring environmen-

tal knowledge. This approach highlights the intellectual interactions and how they happened under the effects of international dialogues, trade, and diplomacy. If ideas indeed travel together as "fellow travelers", as Renn and Malcolm (2012) suggest, historians must consider whether the practices and implicit knowledge of the travel "hosts" provide sufficient context for the ideas to remain comprehensible upon arrival. Thus, this perspective further reveals disparities in how different regions address environmental challenges, exposing global inequities shaped by economic, political, and social factors. These inequalities result not only from the more privileged position of the sender but also from the capacities of the receiving society. The recipient society must possess the intellectual spaces and capabilities necessary to assimilate and integrate new ideas (Mulsow 2017).

This chapter aims to deepen the comprehension of the global development and dissemination of environmental knowledge and the broader intellectual exchanges that shape our interaction with the environment. It explores the generating mechanisms and effects of time gaps in environmental issues, with a particular focus on Japan, China, and Southeast Asia – three regions intricately bound by deep economic, social, and environmental ties while also experiencing diverse development speeds.

1.2. *The Overlapped Timeline of Environmental Pollution in East Asia*

In Japan, pollution incidents related to mining and factories occurred well before World War II. One of the earliest and most significant examples is the Ashio Copper Mine incident in the late 19th and early 20th Centuries, where toxic discharge from the mine severely polluted the Watarase River, leading to widespread environmental damage and health problems among local residents (Shoji, Sugai 1992). Environmental concerns gained significant prominence in the post-war period, particularly during the 1950s and 1960s, when the country underwent rapid industrialization.

During this period, Japan faced four major pollution diseases that underscored the urgent need for environmental regulation and governance. Those widespread pollution diseases are the Minamata disease, the Yokkaichi asthma, the Itai-itai disease, and the Niigata Minamata disease (Hoshino 1992).

These four pollution diseases, along with other smaller-scale incidents, served as significant catalysts for Japan, prompting the establishment of its national environmental law system and governance institutions. In response to the environmental disasters and citizen movements for environmental rights, Japan enacted its first environmental law in 1967, marking a pivotal moment in the country's environmental policy landscape. This law aimed to regulate pollution and protect public health by setting standards for industrial emissions and wastewater discharge. Furthermore, recognizing the need for centralized oversight and coordination of environmental protection efforts, Japan established the Ministry of the Environment in 1971. This governmental body became responsible for formulating environmental policies, conducting research, and enforcing regulations to address pollution and mitigate environmental degradation. The establishment of the Ministry of the Environment signaled Japan's commitment to prioritizing environmental conservation and pollution control as essential components of its national agenda (Avenell 2017).

In China, pollution incidents and environmental degradation were notable occurrences during the two World Wars. During World War I and World War II, military-related industries intensified across coastal regions of China to support the war efforts. the rapid industrialization and urbanization driven by wartime demands contributed to air pollution and smog in major industrial centers, such as Shanghai (Mosley 2014). Moreover, the heightened demand for natural resources and raw materials led to a surge in mining activities to extract resources for military production, such as coal, iron ore, and rare metals. The expansion of mines and associated processing facilities led to widespread environmental contamination, including water and soil pollution from mine tail-

ings and industrial waste discharge. Additionally, the increased use of explosives and heavy machinery in mining operations further exacerbated environmental damage, causing soil erosion, deforestation, and habitat destruction in inland areas with mines and forests (Mosley 2014).

After the establishment of the People's Republic of China in 1949, state-led industrialization movements had a profound and widespread impact on the natural environment. The prioritization of economic development resulted in significant pollution and degradation of air, water, and land resources across the country (Economy 2011). It wasn't until 1973, following the UN Conference on the Human Environment in Stockholm, that the Chinese government took significant steps towards addressing environmental concerns (Qu, Peng 2011). In response to growing international pressure and internal recognition of the environmental crisis, the Chinese government convened its first national environmental conference, signaling a newfound commitment to environmental protection. Subsequently, in the late 1970s and early 1980s, China began to establish environmental governance institutions and enact environmental laws and regulations. One notable milestone was the adoption of the Environmental Protection Law in 1979. Further, the establishment of the State Environmental Protection Administration (SEPA) in 1984 marked a significant step towards centralizing environmental governance at the national level.

In Southeast Asia, economic development has heavily relied on natural resources, with significant funding from developed countries in the form of Official Development Assistance (ODA) and international trade. Japan has been a leading donor to countries such as Thailand, Cambodia, and other Southeast Asian nations (Rudner 1989). However, Japan's foreign investment and large-scale infrastructure projects by ODA, such as the dam development in the Mekong River Basin during the 1950s and 1960s, have raised both local and international concerns about environmental degradation, such as deforestation and loss of biodiversity. Also, when Japan's ODA grew rapidly in the 1970s, many factories built

with ODA funds did not implement adequate environmental protection measures, leading to severe air and water pollution in surrounding areas (JFBA 1991). The health of nearby residents also suffered, prompting widespread criticism of Japan for what became infamously criticized as the "pollution export".

Faced with increasingly serious environmental issues, Southeast Asian governments began to recognize the importance of environmental conservation and enacted laws and institutions to address environmental challenges. In the 1970s and 1980s, countries like Indonesia, Malaysia, and Thailand established environmental protection agencies and enacted environmental laws to regulate land use, forest management, and pollution control (Sato 2019). These efforts marked the beginning of formal environmental governance structures in the region, aimed at balancing economic development with environmental sustainability. Besides domestic endeavors, from the late 1980s, the growing environmental concerns in Southeast Asia shifted Japan to provide aid to support environmental conservation and pollution control efforts instead of causing more of it. Japan's aid initiatives include transferring technology, providing financial assistance, and facilitating capacity-building programs to help these regions address their environmental challenges (Mori 2009).

1.3. *A Typology of Environmental Time Lags*

From the above brief timeline, we can detect three types of time lag. The first type of time lag pertains to the gap between the occurrence of environmental problems and their recognition as political concerns warranting intervention. In many countries, environmental issues have deep historical roots, often dating back centuries. However, the development of modern environmental legislation and the establishment of regulatory agencies to address these problems emerged much later. This delay can be attributed to various factors, including a lack of scientific knowledge, insufficient public awareness, and competing economic interests. Even

in contemporary times, responses to pollution events often exhibit significant delays. Despite advances in environmental science and technology, the process of translating scientific findings into political action can be slow. Bureaucratic inertia, political resistance, and the influence of powerful industrial lobbies frequently hinder prompt and effective responses to emerging environmental threats (Brauch *et al.* 2011). This ongoing lag underscores the challenges of aligning environmental governance with the rapidly evolving nature of environmental problems.

The second type encompasses the time lag between countries that established their environmental governance institutions and those that did so at a later stage. Japan initiated this process in the late 1960s due to a nationwide lawsuit and citizen movement, while China and certain Southeast Asian countries, such as Thailand and Indonesia, began their efforts around the 1970s, with Cambodia following even later. Some scholars refer to this phenomenon as the "latecomer's advantage", an economic concept of industrialization development later extended to environmental governance by Japanese scholar Fujisaki (1993) from the JETRO and O'Connor (1994) from the OECD. According to Fujisaki (1993), developing countries have advantages in two respects: 1) Developing countries are less likely to overlook environmental issues, as they can recognize the detrimental impacts of industrialization based on the experiences of developed countries; 2) Firms in developing countries can acquire technologies from their counterparts in developed countries, while governments can adopt effective policies already employed by developed nations.

The third type of time lag occurs when an issue previously perceived as domestic is re-identified as having a transnational nature. Initially, environmental issues such as water pollution and air pollution may seem confined within the borders of a single country. However, due to the interconnectedness of the global environmental system, these pollutants can easily cross borders. Air pollution can drift with prevailing winds, affecting air quality and health in neighboring countries. Similarly, water pollution

can spread through rivers and oceans, impacting marine life and coastal communities far from the source (Hayakawa *et al.* 2018). Moreover, the dynamics of international trade and globalization exacerbate these environmental challenges. Economic activities and industrial processes often shift from countries with stringent environmental regulations to those with more lenient controls, transferring environmental risks to areas less equipped to manage them (Candau, Dienesch 2017). These natural and social connections are not inherently obvious until actors, including scientists, policymakers, and environmental advocates, create an international discourse, framing these issues as global problems, and emphasizing the need for collective action and coordinated policy responses. This shift in understanding became particularly evident in the late 1980s when Japan began providing substantial environmental aid to China and Southeast Asian countries.

The variations in the timing of these issues underscore the importance of understanding the specific historical and regional contexts when addressing environmental challenges. If environmental problems did not arise, time lag would not exist. Alternatively, if some environmental problems, such as deforestation, accumulate over many years, then the time lag will be difficult to perceive. Thus, how did the time lag emerge and become more pronounced or less pronounced? How did scientists and experts act in response to it?

2. From Happening to Political Attention: The Case of Minamata Disease in Japan

2.1. *The Difficult Journey of Scientific Proving*

Japan's modern environmental history is marked by several significant events, and the Minamata disease is one of the most infamous and impactful. The timeline of the Minamata disease reveals a protracted struggle in identifying it as a "pollution disease", taking the

government a staggering 12 years. Subsequently, it took decades for victims in Minamata city to secure legal victories and receive compensation, while those outside the city faced even lengthier battles to validate their victimhood. The significant delay stemmed from the necessity to establish causality scientifically.

The first reported case dates back to 1956, with the affliction of a five-year-old girl by a mysterious illness. Subsequent hospitalizations revealed symptoms including violent tremors, visual impairments, and loss of motor control among residents of fishing villages near Minamata city. It was reported as an "unknown strange disease" in the town of Minamata. This alarming discovery prompted the formation of research teams, including those from Kumamoto University, to investigate the cause and extent of the illness. It wasn't until 1968 that the government officially acknowledged Minamata disease as a "pollution disease" (Minamata Disease Municipal Museum 2000), recognizing its environmental origins. This acknowledgment came after years of denial and resistance. Subsequently, in 1970, the Japanese Diet enacted a series of environmental protection measures, signaling a legislative response to prevent similar tragedies in the future. Finally, in 1973, the Chisso Corporation, responsible for the industrial pollution that led to the disease, admitted guilt (Ui 1992). Victims within Minamata city faced years of legal battles before finally securing compensation, a process that stretched over decades.

What took so much time was "scientifically prove the causality". According to Matsubara (2002), a total of nine hypotheses were proposed to explain the malady. In the early stages when information remained limited and uncertain, the illness was labeled as a "strange disease". Some people even thought it was something infection or a type of epilepsy. However, later assertions by scholars from the Tokyo Institute of Technology, Toho University, and the Japan Chemical Industry Association – who have close relations with the industries – posited the cause as amine and high explosives, contradicting claims the Chisso Company is guilty of mercury emissions. Discredited hypotheses involving se-

lenium, cadmium, manganese, and Hunter-Russell syndrome further navigate the discourse, narrowing the focus to mercury and methylmercury. Chisso company, which was accused of causing the illness, admitted to using inorganic mercury but claimed that methylmercury causes the disease. Researchers, aligned with the victims, contended with Chisso's assertions, arguing the chemical transformation of inorganic mercury into methylmercury. Each hypothesis necessitated solid evidence and rigorous testing, delaying legal proceedings (Matsubara 2002). The affiliated locals faced the arduous task of scientifically substantiating the chemical pathways underlying their illness to secure compensation.

2.2. *The Stance of Japanese Scientists and Experts*

This protracted process catalyzed scholarly discourse in Japan on the impartiality of scientific inquiry. One of the pioneers of pollution studies in Japan is Ui Jun, an urban engineering scientist. Ui's seminal quote, «There is no third party that could stand between the victims and the perpetrators» (Ui 1973, p. 5), encapsulates his profound insights into the dynamics of environmental injustice. His perspective sheds light on the inherent power differentials and systemic injustices.

Ui embarked on his pioneering research in Minamata city as early as 1961, meticulously documenting the unfolding tragedy and gathering crucial evidence. By 1963, he began publishing a series of influential articles titled *Minamata Disease* in prominent journals like the «History of Technology and the Monthly Journal of Chemistry» (Tomozawa 2015). These articles not only delved into the causal mechanisms of Minamata disease but also interrogated the systemic barriers preventing victims from receiving just compensation and timely intervention.

From Ui's vantage point, the pervasive power disparity and social injustice between victims and perpetrators loomed large. Perpetrators, comprising not only polluting companies but also local and national governments, alongside complicit scientists, wielded

overwhelming influence. Ui contends that no intermediary entity could bridge this chasm between victims and perpetrators. Scientists, cognizant of these power differentials, who opt for purported neutrality effectively align themselves with the interests of the perpetrators (Ui 1992b). Therefore, Ui asserts that scientists have a moral obligation to advocate for victims and champion their cause unequivocally.

Ui further emphasizes that the victims themselves possess a unique form of expertise on pollution, as they intimately understand the profound impact of pollution on human lives. In his words:

> In the anti-pollution movement, a new type of expert and scientist has been born in many areas. Teachers, doctors, scientists, lawyers, and others have participated in the movement through their professions, and in the process have conducted their own 'pollution studies', and residents have made themselves into experts. (Ui 1972, p. 191)

To raise public awareness and facilitate dialogue on pollution issues, Ui organized a series of Independent Seminars from 1970 to 1985 at the University of Tokyo. For 15 years, the lecturers of the seminars were not only scholars, but half of them were pollution victims and local activists. By integrating academic expertise with firsthand accounts from affected communities, the seminars fostered collective action and empowered individuals across Japan to address local pollution concerns (Tomozawa 2015).

From then, along with the nationwide spread of pollution diseases and citizens' awakening, Japan saw the emergence of numerous organizations dedicated to supporting pollution victims. Among these were victim advocacy groups, interdisciplinary organizations, and legal associations. One victim-centered organization is the Aozora Foundation, established in 1995. Funded by compensation awarded to air pollution victims from Osaka, the foundation has extended its mission beyond national borders, engaging in transnational communication efforts. Its international exchange program aims to share the realities and lessons of Japan's air pollution issues

from the victims' perspective with regions in Asia and the world facing similar environmental challenges. Through this exchange of information and collaboration, the Aozora Foundation seeks to promote solutions to pollution problems, support for victims, and preventive measures against environmental disasters.

The Japan Federation of Bar Associations (JFBA 1991) has also been instrumental in addressing environmental issues. Its efforts date back to the 1960s, a period marked by severe pollution in Japan. Recognizing the connection between environmental degradation and fundamental human rights, a group of lawyers who had defended the pollution victims established the Committee for Pollution Control and Environmental Conservation in 1969. This committee has been a strong advocate for relief and preventive measures in response to the worsening pollution and environmental damage.

Moreover, the Japan Environmental Council was established in June 1979, with roots tracing back to the interdisciplinary Pollution Research Committee formed in July 1963 and Ui was one of the committee members. The inaugural meeting of the Japan Environmental Council brought together over 600 individuals, including prominent researchers, lawyers, doctors, journalists, and leaders of citizen and resident movements dedicated to solving pollution and environmental issues[1]. It now includes university researchers, experts, practitioners, lawyers, doctors, journalists, leaders of citizen and resident movements from across the country, general citizens, and graduate students, all working collaboratively to address environmental issues.

The case of Minamata disease serves as a stark reminder that entrenched power differentials within societal structures can impede timely interventions for victims. However, scientists and experts like Ui Jun, who unequivocally advocate for victims and galvanize collective action, play a pivotal role in hastening the path toward resolution. Through their concerted efforts, the clock

1. Nihon Kankyo Kaigi Toha, Japan Environmental Council Website, http://www.einap.org/jec/about (accessed on 31 May, 2024).

toward justice and environmental accountability is set in motion, offering hope for marginalized communities impacted by pollution-related crises. Further, as will be illustrated in the following sections, those organizations carry the mission of advocating for pollution victims and driving environmental conservation efforts in Japan. Their collective work has not only impacted domestic transformation but also fostered international dialogue and cooperation.

3. From Early Movers to Latecomers: Pollution Experience Transfer From Japan to China

3.1. *Early Contact Under the Political Tension*

As the two nations share similar Chinese character systems, the Japanese word for environmental pollution causing public nuisances is "Kōgai" (公害), and this word was exported to China in its original character with a different pronunciation as "Gonghai". The People's Daily – serving as the official voice of the Chinese Communist Party starting in 1971 – criticized Japan's Kōgai as an incurable disease of capitalism. These articles highlighted how, in capitalist societies, driven by the pursuit of wealth, monopoly capital disregarded the well-being of the people, leading to the release of pollutants such as exhaust fumes, wastewater, and waste materials (the Three-Waste) from factories[2]. Alongside its critique of capitalism, the People's Daily cautioned against Japan's relocation of polluting industries to Southeast Asia under the guise of mitigating Kōgai, naming it as a form of colonial invasion[3]. The of-

2. People's Daily on September 7 1971 "Zong he Li yong Yao Xing Li Chu Hai", February 22 1972 "Long Duan Zi Ben He Fan Dong Zheng Fu Jia Su Jun Guo Zhu Yi Hua He Zhui Zhu Gao E Li Run De E Guo", March 28 1972 "Chu Mu Jin Xin De Gong Hai Bing", June 7 1972 "Gong Hai Huo Ji Ri Ben Fu Shi Shan".

3. People's Daily on February 22 1972 "Long Duan Zi Ben He Fan Dong Zheng Fu Jia Su Jun Guo Zhu Yi Hua He Zhui Zhu Gao E Li Run De E Guo".

ficial narrative propagated the notion that since Kōgai stems from the capitalist system, and in other words, as a socialist country China need not worry about such problems.

Contrary to ideological propaganda, a sense of crisis permeated the Chinese government. From the early 1970s, Zhou Enlai, the Premier of China, repeatedly underscored the severity of Japan's Kōgai and emphasized the importance of safeguarding people's health in meetings with the related ministries. Zhou even invited a Japanese journalist, to brief Japan's Kōgai issue to the ministers (Qu, Peng 2010). Towards the 1972 UN Stockholm Conference, Zhou instructed the Chinese delegation to «understand the global environmental situation and the impact of environmental problems on economic and social development in various countries. See the conference as a chance to reflect on our own environmental issues» (Qu, Peng 2010, p. 468).

After the Stockholm Conference, an increasing number of government officials began to express concerns about environmental issues. The rising concern was also due to a series of pollution incidents that happened domestically (Qu, Peng 2010). In 1973, the year following the establishment of diplomatic relations between China and Japan, China held the first national conference on environmental protection and commenced the development of an environmental governance system.

As early as 1973, the Office of Three Waste Management from the Beijing Municipal Commission visited Japan and investigated the environmental standards for sulfur dioxide emissions. Their findings from this visit were published in Environmental Protection, which then also published several articles about Japanese measures to deal with air pollution, water pollution, noise, etc. Despite the ideological conflict, the sense of crisis concerning Kōgai prompted technocrats to reference Japanese experiences[4].

4. In Environmental Protection, there is one article in 1973, one in 1975, one in 1976, and three in 1977 introducing Japan's pollution countermeasures.

3.2. *Scientific and Governance Knowledge Transfer*

Following China's Reform and Opening-up in 1978, information exchange became more transparent and the reality of Kōgai in China came to the surface. In an interview with Asahi Shimbun, a staff from one of the biggest steel and iron makers in China, said Kōgai did not arise suddenly after 1978. However, due to limited information about Kōgai in Japan in the past, the Chinese were unaware that their own problem was actually more severe than Japan's Kōgai[5]. Their understanding was based on the information propagated by the domestic media outlets, which emphasized the grave nature of Japan's Kōgai under capitalism.

After 1978, under the changing situation, knowledge and experiences exchanges by state or non-state actors became more frequent, and the People's Daily began to report domestic environmental pollution problems and make positive references to Japanese experiences. Those reports claimed that through improvements in the environmental management system, promotion of technological and economic development, and enhanced oversight of private enterprises, there was hope for resolving Kōgai problems[6]. Just like Japan succussed in it:

> In the 1960s, Japan suffered from severe Kōgai. However, after over a decade of efforts, the chimneys of Japanese factories largely ceased emitting black smoke, the air became less foul-smelling, the ground relatively cleaner, and rivers and lakes gradually cleared [...] Thus, it is evident that although environmental pollution remains a signifi-

5. Asahi Shimbun on December 2 1979 "Chugoku Juoku Nin no Kindaika, Kogai Boushi no Michi Kewashi".

6. People's Daily on January 4 1979 "Ri Ben De Huan Jing Bao Hu De Cheng Jiu Shi Zen Yang Qu De De", September 10 1979 " Rang Ren Men Sheng Huo Zai Wei Lan De Tian Kong Xia", April 10 1980 "Hou Lai Ju Shang", April 16 1980 "Wai Guo Dui Gong Hai De Zhong Shi Yu Zhi Li", May 24 1980 "Fang Ri Guan Gan", July 1 1980 "Jian Quan Fa Zhi, Bao Hu Huan Jing", July 15 1980 "La Ji, Fei Wu Bu Fei", December 1 1980 "Ri Ben Bao Hu Huan Jing Huo Xian Zhu Cheng Xiao", June 22 1981 "Zhan Hou Ri Ben De Gong Hai Fa", May 15 1982 "Ri Ben De Huan Jing Bao Hu".

> cant concern, humans are not powerless. If we prioritize and implement effective measures, environmental pollution shall be reduced and ultimately eliminated.[7]

For China, which faced the imminent challenge of balancing rapid development with environmental protection at the beginning of a new era, Japanese experiences showcased the feasibility of achieving sustainable development.

More and more Japanese environmental knowledge was translated into Chinese. From 1982 to 1984, *Environmental Protection* published 15 consecutive translations of the *Japanese and English Glossary of Environmental Resources* (1981) edited by the Association of Kōgai Countermeasure of Japan. Furthermore, field trips provided the Chinese with a further emotional understanding of Kōgai. Professor Hou Zhaorong from Baiqiuen Medical University in Jilin Province, the leading scholar studying Minamata disease in China, was invited to Minamata City. In an institute for Minamata patients, Professor Hou tearfully said, «It is heart-wrenching to face the fetal Minamata disease patients that I had only seen in the literature thus far»[8].

However, what Chinese needed is not only the most advanced technologies. When Katsumi Yoshida, a professor at Mie University's Faculty of Medicine, visited China in 1982, he was surprised to find that many Chinese public servants had studied abroad, such as in Japan, Europe, and the United States. Although the Chinese were very interested in and knowledgeable about foreign technologies, progress in pollution control was difficult to achieve. Yoshida recognized that «what is needed is not to introduce and utilize the advanced technologies and facilities from the so-called developed Western countries as they are but to develop intermediate technologies that match local conditions»[9].

7. People's Daily on July 21 1980 "Ren Lei Zi You Hui Tian Li".

8. Asahi Shimbun on October 25 1981 "Chugoku no Gakusha Minamata wo Shisatu, Rogumi Daihyora to Koryu".

9. Asahi Shimbun on July 15 1982 "Gogai to Torikumu Tenshinshi, Yokkaichi Kankyo Senmondan to no Koryu Tougi".

Besides technologies, experience in legal practices was also scarce in China. In contrast, Japanese lawyers had experienced a series of lawsuits for the 4 big pollution diseases and more, hence more extensive experience advocating for victims' rights. The communication and learning between the two countries started with the Center for Legal Assistance to Pollution Victims (CLAPV), which was founded by a group of dedicated faculties, students specializing in environmental law from China University of Political Science and Law, and volunteer lawyers in 1999. Actively pursuing international exchange and cooperation, CLAPV developed deep connections with Japan (Otsuka 2007). In 2000, CLAPV collaborated with the Institute of Developing Economies (IDE) on a joint research project on environmental pollution disputes in East Asia, with findings published by Wang *et al.* (2001). From 2001 to 2008, the Japan Environmental Council, along with other Japanese organizations such as the Japan Federation of Bar Associations (JFBA) and the Aozora Foundation, held four Japan-China international workshops on environmental damage relief and dispute resolution. These workshops resulted in several significant publications, including the Japan Environmental Council's 2002 annual report and Wang's edited volume on the *Theory and Practice of Environmental Dispute Resolution* (2002) in Chinese.

The collaboration between Japanese and Chinese organizations had a certain impact on China's environmental law. In December 2004, China revised its Solid Waste Pollution Prevention and Control Law, introducing a significant amendment: the shift of the burden of proof in pollution damage compensation cases from the victims to the polluters. This change was influenced in part by drafts prepared by CLAPV, which incorporated insights from Japanese legal practices (Teranishi 2006).

In conclusion, the time lag between countries – where one country faces environmental issues earlier than another – creates learning opportunities. As illustrated above, the learning process extends beyond firms and governments. The tradition of Japanese scholars and lawyers advocating for victims, as well as the self-re-

liance of victims themselves, played a crucial role in facilitating communication with their Chinese counterparts. Beyond government-to-government cooperation, the cross-national learning and cooperation by citizen experts focused on the protection of pollution victims' rights.

4. From Domestic to International Issue: "Pollution Export" From Japan to Southeast Asia

4.1. *"Pollution Export" From Japan*

In contrast to the case of China, the connection between Japan and Southeast Asia shows how domestic industrial pollution called for more international intervention in the 1990s, in the form of official development aid.

Until the 1970s, the Japanese economy grew fast. From 1955 to 1973, the Japanese economy grew by an average of 10% per year (Sato 2002). Japanese policy and economic circles embarked on a quest for stable, low-cost raw materials to meet the growing demand for resources. To reconstruct postwar trade, Japan needed to secure raw materials from the Southeast Asian region and expand exports. Moreover, the demand generated by the Korean War, particularly for certain steel products, compelled Japan to seek more cost-effective and reliable sources in Southeast Asia (Ichimura 1980).

Besides the business needs, in the early 1950s, the Japanese government initiated economic cooperation and aid with Southeast Asian countries. At the time, Japan's GNP per capita was even lower than some recipient countries in Southeast Asia. Nevertheless, recognizing Japan's status as a resource-poor nation, policymakers saw the necessity of using aid and economic cooperation to reestablish trade links with Southeast Asia (Araki 2007). When Japan became one of the biggest donors in the world of ODA, its main focus was still Southeast Asia.

The growing Japanese ODA and investment in Southeast Asia raised environmental concerns for three reasons: Domestic policy spillover, Infrastructure-centered ODA, and the combination of ODA and trade. After the disastrous pollution events of the 1960s and the nationwide lawsuits mentioned before, the Japanese government tightened its domestic environmental regulations. Japanese companies were facing more and more pressure and seeking solutions. After the Japanese yen appreciated in 1985, the number of Japanese companies expanding into Southeast Asia increased rapidly. Japanese economic presence in Thailand, Malaysia, the Philippines, and Indonesia was significant. In those countries, manufacturing-type companies were under the conditions that there were no sufficient pollution regulations.

On the other hand, the Japanese style of ODA was also seen as problematic. Japanese ODA played a pivotal role in financing substantial infrastructure projects in Southeast Asian countries, including the construction of dams, roads, and ports. While these projects had the potential to stimulate economic growth, they also carried adverse environmental repercussions, including deforestation, habitat destruction, and alterations in water flow patterns.

With growing ODA and investment, consequently, during the 1970s, a mechanism combining ODA with trade took shape, gradually crystallizing to facilitate Japanese firms' overseas capital investments, technology exports, and the importation of vital raw materials crucial to Japan's economy. These activities have sometimes resulted in the depletion of local resources and the severe degradation of the environment, inflicting harm upon the livelihoods of local populations.

One of the notorious examples is Japan's ODA on an industrial park on Leyte Island in the Philippines. Since 1979, the rapid construction of factories and infrastructure in Leyte Island has been underway, with Japanese ODA and loans from the Export-Import Bank of Japan invested in the project. Japanese companies received a significant portion of the orders for this undertaking.

The Leyte Industrial Park raised concerns about pollution, with factories emitting flue gas seven days a week. Notably, Japanese companies involved in the industrial park, such as Furukawa Mining, Mitsui Mining & Smelting, and Marubeni, did not conduct an environmental assessment of the site when establishing the plants. They adhered to the standards set by the local government, which were notably less stringent than Japanese standards, rendering the anti-pollution equipment commonly used in Japan unnecessary (JFBA 1991).

Moreover, the so-called development dictatorship in Southeast Asia encouraged this situation. Although Southeast Asia's political landscapes are diverse, the 1980s witnessed the rise of developmentalist regimes under authoritarian rule. Leaders like the Philippines's former president Marcos, with military backing, suppressed political opposition and enforced economic development policies. The extensive modernization initiatives, largely dependent on infrastructure investments, were only feasible due to capital injections from entities like the World Bank and industrialized nations, including Japan. When Marcos came to power in the Philippines, the government changed its previous policy to export-oriented industrialization by introducing foreign capital, and in 1967 it created the Investment Promotion Act, which brought in a large amount of outside capital (Sato 2021). It is worth noting that this dictatorship of development aligned with the interests of multinational corporate capital expanding its footprint in Southeast Asia. In an interview with one of the major Japanese media, Yomiuri Shinbun, the President of the Philippines, Ferdinand Marcos acknowledged the pollution coming along with its economic effects, saying «Our hope is that the factories and machinery currently operating in Japan that are destined for closure in the future due to pollution problems, can be relocated to the Philippines. The Philippines is ready to accept it»[10].

10. Yomiuri Shimbun on January 29 1977 "Nihon ASEAN Taiwa ha Kinkyuji".

4.2. *The Japanese With the Locals*

Facing Japan's pollution export, the locals voiced their concerns, and notably, the Japanese also took action early on. Scientist Ui Jun initiated a journal titled *Don't Let Pollution Run Away*, meticulously documenting Japanese companies' activities from 1974 to 1986. Additionally, Japanese scholars penned books criticizing Japanese ODA for its environmental impact. For instance, Yoshinori Murai, a professor specializing in Indonesian studies, authored *The Irresponsible ODA: Top Donor Japan* (1989), while Kazuo Sumi, a law professor, wrote *The Reality of ODA* (1989). Professor Murai, when questioned about his prolific criticism of Japanese ODA, responded,«Not just what I criticized, but please try to understand the thoughts behind it» (Murai 1992). He stressed the necessity of viewing development from the perspective of marginalized communities, saying «See development through the view of people with no wealth and no power» (Murai 1982).

Besides the scholars, the JFBA, as mentioned before, also conducted field research and published a report titled «Japan's Pollution Export and Environmental Despoliation: Japanese Companies and ODA In Southeast Asia» (1991). The Committee for Pollution Control and Environmental Conservation under the JFBA had not only addressed domestic pollution lawsuits but also international concerns for years. It organized numerous international meetings, highlighting the importance of eliminating domestic pollution as a foundational step toward global environmental conservation. For instance, the International Human Rights Symposium in 1988 focused on *Legal Strategies for Global Environmental Conservation*, followed by the Symposium of *Contemplating the State of Environmental Administration* in 1989. The JFBA underscored the need to combat "pollution export", conducting extensive research in 1989 across Malaysia, Thailand, the Philippines, and Indonesia. The findings, presented in 1990 at the International Environmental Forum, emphasized Japan's pollution export and environmental exploitation in Southeast

Asia. Reflecting on Japan's history of pollution-related lawsuits, JFBA lawyers representing victims emphasized the importance of empowering citizens. They listed the following five as Japanese experiences for the global sustainability:

> 1) Remedying victims of pollution and restoring the environment to its original state incurs substantial costs and efforts. 2) Once nature is contaminated or destroyed, it is not easily restored to its original condition, and sometimes recovery is impossible. 3) Effective measures are those taken in advance to prevent pollution and environmental destruction. 4) Relying on government, local authorities, or corporations for pollution control and environmental conservation is insufficient. Citizens must participate and oversee these activities. 5) To substantively ensure citizen participation, transparency in information disclosure is essential. (JFBA 1991)

Under mounting domestic criticism and evolving international norms, the Japan International Cooperation Agency (JICA) established a sector-specific (environmental) aid research group in 1988. The major concern was how Japan's ODA projects could avoid unforeseen environmental degradation and adverse effects on local communities during the project planning stages. From then, JICA and the then Overseas Economic Cooperation Fund (OECF), now Japan Bank for International Cooperation (JBIC), developed and implemented environmental consideration guidelines. They also created dedicated departments to address environmental issues systematically, marking a significant step towards strengthening environmental ODA (JICA 2001).

Further, in 1992, the same year of the Rio Summit, Japan formulated its most fundamental ODA policy, the *Official Development Assistance Charter* (1992), which highlighted "environmental conservation" as a universal challenge requiring joint efforts from both developed and developing countries. The charter emphasized the principle of balancing environmental preservation with development, underscoring support for the environmental efforts

of developing nations as a key focus area. This commitment was further reinforced in the «Medium-Term Policy on Official Development Assistance» established in August 1999, which also prioritized environmental conservation.

Along with policy frameworks evolved, the quantitative expansion of aid for environmental conservation followed. At the 1987 World Commission on Environment and Development (WCED) Tokyo Declaration, Japan committed to doubling its ODA within seven years, a goal achieved two years ahead of schedule, raising the ODA to over $6.7 billion by 1980. By 1990, JBIC was providing over 100 billion yen annually in environmental loans, and by 1999, the total annual amount had surged to over 450 billion yen (JICA, 1996). In Southeast Asia, this significant increase in funding was particularly directed toward projects aimed at biodiversity conservation, forest protection, and sustainable resource management.

5. After the Time Lags

The historian McNeill (1992) stressed that «the principal factor promoting historically significant social change is contact with strangers possessing new and unfamiliar skills». In this chapter, the so-called "new and unfamiliar" is defined through three types of time lags. From the occurrence of environmental issues to gaining political attention, scholars acted as interpreters of victims' voices, amplifying them sufficiently for society and government to confront these issues. From early adopters to latecomers, Japanese individuals with experience in combating pollution enlightened their Chinese counterparts. Lastly, transitioning from viewing environmental issues as purely domestic to recognizing their international connections, civil organizations constructed an international narrative that influenced foreign policies. These trans-temporal experiences and ideas have emerged, combined, interacted with, and counteracted across borders through the ef-

forts of multiple actors. Such multi-level international cooperation empowers societies to develop their own capacities to resist the adverse effects of development and environmental policies.

Observing the time differences in environmental problems also reveals regional disparities and inequality. While Japan's pollution exports to Southeast Asia have attracted attention, China, as Japan's largest recipient of aid and foreign investment, has not received as many "pollution exports" as Southeast Asia. While differences in Japan's foreign aid policies may be responsible for this, differences in the national strength of China and Southeast Asian countries are also likely to be significant. In this era of global issues, what is required of environmental history research is a focus on the impact of the transboundary nature of environmental issues and regional linkages on environmental problems.

Through multi-level cooperation, knowledge and financial resources traverse national boundaries, progressively narrowing time gaps. Our world seems like it is converging into a unified timeframe. Beyond traditional environmental concerns like deforestation and industrial pollution, global climate change has emerged as a paramount issue, dominating discussions in international forums. Consequently, the global community has rallied around a common vision encapsulated in the Sustainable Development Goals (SDGs), supported by ODA and other green funding mechanisms.

Yet, as our world dances to the rhythm of convergence, a poignant question lingers in the ether: Will this integration facilitate collective action in confronting global-scale problems, or will it risk silencing dissenting voices, leading to covert policy spillovers and the emergence of new time lags? The answer lies not in the grandeur of global proclamations, but in the local whistleblowers who are trying to make some noise. Scholars have been telling us through the past decades: to see from the perspective of the local people who are experiencing environmental issues.

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Bridging Science and Local Knowledge/Perception

A Case Study of Manila Bay Coastal Provinces (Philippines) After the 1988 Red Tide Episode

Ma. Luisa De Leon-Bolinao

1. Introduction

1.1. *What Is Red Tide?*

Red tide is a common term used for *Harmful Algal Blooms* (HABs). They occur when these plant-like, single-celled organisms multiply uncontrollably while producing harmful toxins that kill fish and make shellfish dangerous to eat (NOAA 2013; *Ocean Treasures*, par. 1). The concentration of algae causes the water discoloration – hence the name "red tide" – but «may also appear yellow, brown, green, blue, or milky, depending on the organisms involved» (MB-MU-FRMD, no date, p. 2). It occurs globally and has been reported in several countries of Southeast Asia and Oceania – from Australia to Thailand – since the 1970s and has been closely correlated with the El Niño-Southern Oscillation (ENSO) events (Maclean 1989a, pp. 304-307; Maclean 1989b, p. 1).

In the Philippines, red tide was first reported in June-September 1983 in Samar in Central Philippines. After several deaths and cases of hospital admissions, it was discovered that the cause of the outbreak was paralytic shellfish poisoning (PSP) after eating mussels containing the organism *Pyridinium bahamense var. compressa* (Hartigan-Go and Bateman 1994, p. 825; Gonzales 1989, pp. 42-44). The second red tide occurrence happened in Zambales in Western Luzon Island in 1987, where the illnesses were diagnosed as mere

food poisoning due to the lack of knowledge on red tide and PSP by the local physicians (Gonzales 1989, p. 44). The third occurrence, the 1988 Manila Bay episode, is the topic covered by this case study.

1.2. *The Locales: Manila Bay and Bataan Province*

Manila Bay is a natural harbor which serves the Port of Manila and is strategically located as a gateway to the National Capital Region (NCR) of the Philippines. With an area of 1,994 km^2 (769.9 sq mi), and a coastline of 190 km (118.1 mi), Manila Bay is situated in the western part of Luzon and is bounded by Cavite and NCR on the east, Bulacan and Pampanga on the north, and Bataan on the west and northwest. Red tide had affected more than 35,000 fisherfolks and approximately 4,400 shellfish cage owners in the Manila Bay area (Aggie Trends, p. 1; Figure 1).

Bataan Province (where most of the fieldwork were done) is in the southwestern part of Luzon Island. It is a peninsular province with a total land area of 1,372.98 sq. km. and a coastline of approx. 177 km from Hermosa to Morong (Figure 2).

1.3. *The Hazards: Dinoflagellates and Paralytic Shellfish Poisoning (PSP)*

In the Manila Bay area, two kinds of dinoflagellates cause red tide: *Pyrodinium bahamanse var. compressum* and the *Gymnodinium catenatum* – the latter discovered in 1992 and was the cause of the red tide ban in 1997 (Gonzales 1997). *Pyrodinium* was first discovered in the Bahamas in 1906 and has two varieties: var. *bahamense* and var. *compressum* (Azanza 1997, p. 1). The Pyrodinium species in the Philippines bloom regularly from May to September (the southwest monsoon months) and are dormant during the Northeast monsoon months of November to February (Azanza 1997, p. 4) (Figure 3).

Figure 1. *Manila Bay and surrounding provinces. Source: National Mapping and Resource Information Authority Administrative Map. Available at: https://www.namria.gov.ph/download.php (accessed on 29 February 2024).*

Figure 2. *Bataan province and its coastal towns. Source: https://en.wikipedia.org/wiki/Bataan#Geography (accessed on 4 March 2024).*

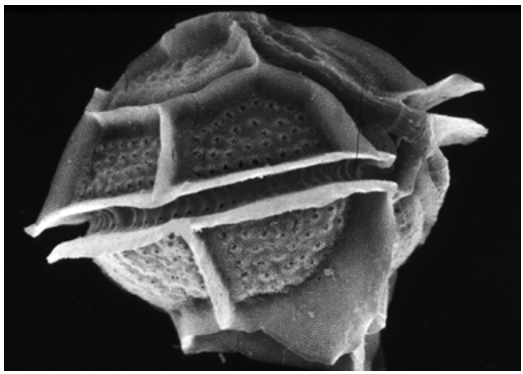


Figure 3. Pyrodinium bahamense *var.* compressum. *Source: https://en.wikipedia.org/wiki/Pyrodinium (accessed on 4 March 2024).*

One effect of the consumption of contaminated bivalves harvested from red tide areas is Paralytic Shellfish Poisoning (PSP). Maclean (1984) describes PSP as:

> [T]he result of eating bivalve shellfish (oysters, mussels, cockles, etc.) that have been harvested during or soon after red tides in the shellfish grounds. Symptoms are tingling around the lips and face; sometimes nausea, vomiting, and diarrhea; weakness, incoordination; in severe cases, paralysis of muscles and vocal cords; death usually within 12 hours due to respiratory failure; no antidote known.

2. The Outbreak

2.1. *Manila Bay, 1988*

When the initial reports of the Paralytic Shellfish Poisoning (PSP) hit Metro Manila news in August 1988, there was arguably a scarcity of knowledge among scientists, government officials, and the public, despite its earlier occurrences in Samar and Zambales. Not only were PSP cases turning up in the Bataan towns of Orion (9 cases) and Limay (28 cases), but more victims were also being reported in other Manila Bay coastal towns. In all, a total of 121 PSP cases were reported in Bataan, Navotas, and Cavite from 19 Au-

gust to 30 September, although the Department of Health (DOH) validated only 65 actual PSP cases (Gonzales 1989, p. 45).

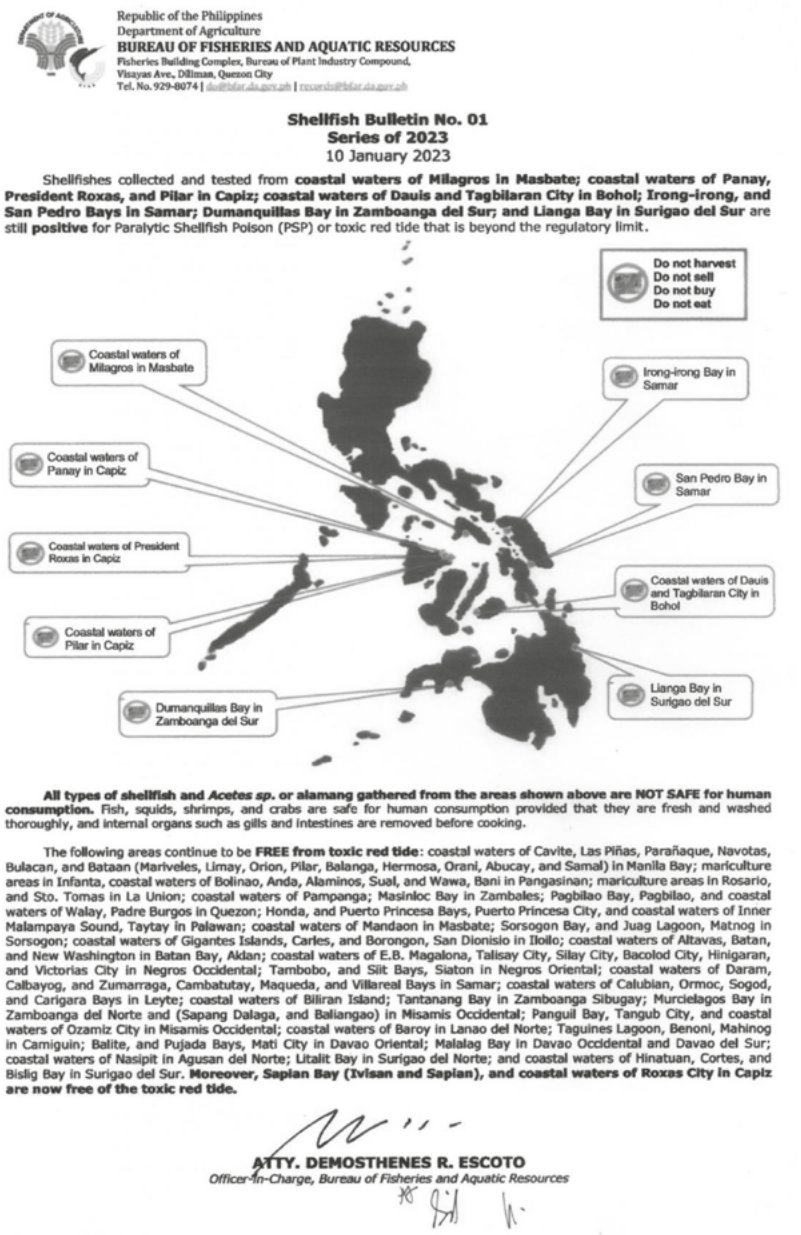
An initial assessment by local officials offered no clear source of the outbreak, explaining that probably the victims ate half-cooked or improperly prepared mussels. But according to an August 29 report of the Bureau of Food and Drugs (BFAD), as per mouse bioassay test, the sample mussels obtained from Limay had a very high toxin level of 1,005 microgram (mg) toxin/100g of shellfish meat (*Status Report* 1988; Gonzales 1989, p. 45). This is exceedingly over the 80 mg/100g toxin limit for shellfish meat as determined by the US Association of Official Analytical Chemists (AOAC), the US Food and Drugs Administration (FDA), and the World Health Organization (WHO) (*Report on the "Red Tide"* 1989).

The crisis was met with immediate action from the national government. The Department of Agriculture (DA), through its sub-agency the Bureau of Fisheries and Aquatic Resources (BFAR), was given the mandate to closely monitor the levels of red tide toxin. Concurrently, the Department of Health (DOH) was assigned the role of overseeing and administering treatment to those affected by Paralytic Shellfish Poisoning (PSP). Eventually, these two agencies merged to form the Red Tide Task Force (RTTF), which assumed full control over all matters pertaining to this hazard.

Time was crucial for the RTTF, with a primary focus on promptly sharing information about the crisis. The public began receiving the Red Tide Update newsletter on a weekly basis starting in October 1988 (RTTF 1988a).

Later newsletters contained a report of the red tide toxin levels gathered from mussel samples from several bodies of water in the Philippines, not just in Manila Bay (Figure 4).

Initially, monitoring was done by BFAR as follows: hydro-biological and aerial survey of Manila Bay, follow-up sampling, stomach content analysis, and mouse bioassay toxicity test of select bivalves within Manila Bay. The monitoring was done from August to September 1988 ("Status Report" 1988). Meanwhile, the DOH



Republic of the Philippines
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BUREAU OF FISHERIES AND AQUATIC RESOURCES
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Shellfish Bulletin No. 01
Series of 2023
10 January 2023

Shellfishes collected and tested from **coastal waters of Milagros in Masbate; coastal waters of Panay, President Roxas, and Pilar in Capiz; coastal waters of Dauis and Tagbilaran City in Bohol; Irong-irong, and San Pedro Bays in Samar; Dumanquillas Bay in Zamboanga del Sur; and Lianga Bay in Surigao del Sur** are still **positive** for Paralytic Shellfish Poison (PSP) or toxic red tide that is beyond the regulatory limit.

All types of shellfish and *Acetes sp.* or alamang gathered from the areas shown above are NOT SAFE for human consumption. Fish, squids, shrimps, and crabs are safe for human consumption provided that they are fresh and washed thoroughly, and internal organs such as gills and intestines are removed before cooking.

The following areas continue to be **FREE from toxic red tide**: coastal waters of Cavite, Las Piñas, Parañaque, Navotas, Bulacan, and Bataan (Mariveles, Limay, Orion, Pilar, Balanga, Hermosa, Orani, Abucay, and Samal) in Manila Bay; mariculture areas in Infanta, coastal waters of Bolinao, Anda, Alaminos, Sual, and Wawa, Bani in Pangasinan; mariculture areas in Rosario, and Sto. Tomas in La Union; coastal waters of Pampanga; Masinloc Bay in Zambales; Pagbilao Bay, Pagbilao, and coastal waters of Walay, Padre Burgos in Quezon; Honda, and Puerto Princesa Bays, Puerto Princesa City, and coastal waters of Inner Malampaya Sound, Taytay in Palawan; coastal waters of Mandaon in Masbate; Sorsogon Bay, and Juag Lagoon, Matnog in Sorsogon; coastal waters of Gigantes Islands, Carles, and Borongon, San Dionisio in Iloilo; coastal waters of Altavas, Batan, and New Washington in Batan Bay, Aklan; coastal waters of E.B. Magalona, Talisay City, Silay City, Bacolod City, Hinigaran, and Victorias City in Negros Occidental; Tambobo, and Siit Bays, Siaton in Negros Oriental; coastal waters of Daram, Calbayog, and Zumarraga, Cambatutay, Maqueda, and Villareal Bays in Samar; coastal waters of Calubian, Ormoc, Sogod, and Carigara Bays in Leyte; coastal waters of Biliran Island; Tantanang Bay in Zamboanga Sibugay; Murcielagos Bay in Zamboanga del Norte and (Sapang Dalaga, and Baliangao) in Misamis Occidental; Panguil Bay, Tangub City, and coastal waters of Ozamiz City in Misamis Occidental; coastal waters of Baroy in Lanao del Norte; Taguines Lagoon, Benoni, Mahinog in Camiguin; Balite, and Pujada Bays, Mati City in Davao Oriental; Malalag Bay in Davao Occidental and Davao del Sur; coastal waters of Nasipit in Agusan del Norte; Litalit Bay in Surigao del Norte; and coastal waters of Hinatuan, Cortes, and Bislig Bay in Surigao del Sur. **Moreover, Saplan Bay (Ivisan and Saplan), and coastal waters of Roxas City in Capiz are now free of the toxic red tide.**

ATTY. DEMOSTHENES R. ESCOTO
Officer-in-Charge, Bureau of Fisheries and Aquatic Resources

Figure 4. *Sample BFAR Bulletin. Source: https://www.bfar.da.gov.ph/red-tide-archives/ (accessed on 5 May 2024).*

tasked its sub-agency, the Research Institute for Tropical Medicine (RITM) to conduct investigations into the causative agents of red tide in Manila Bay (Crisostomo and Garcia 1988).

During the RTTF's monitoring phase, an additional four individuals succumbed to PSP. The lack of information from the government understandably caused heightened anxiety among the public. Moreover, the situation was exacerbated by the announcement that unless Manila receives substantial rainfall soon, the red tide could persist for several months (*Red Tide* 1988b).

As a result, the market witnessed a decline in the prices of fish, shrimps, and shellfish due to the public's reluctance to purchase any seafood. The entire fishing industry, including commercial fishing vessels, individual fishermen, and fish sellers, experienced significant financial setbacks, with an estimated total loss of approximately 50 million pesos (Robles 1988; Gonzales 1989, p. 47). Amidst the growing concern over the red tide, meat vendors saw an opportunity to increase their profits and subsequently raised the prices of their merchandise. Responding to the RTTF's request, the Philippine Navy intervened to prohibit fisherfolks from harvesting mussels and vendors from selling them to the public. This intervention allowed the RTTF to continue their research without risking the public's health (Montano 1988).

According to then Bataan Vice-Governor Serafin Roman, also the president of the Fishpond Owners Association of the Philippines, the fishing industry of Bataan and Central Luzon suffered at least a 75% drop in income due to the red tide scare, citing as example the price of one tub of fish falling from P800 to P200 (Villamin 1988).

To alleviate the severe plight of common fisherfolks, the government has tasked the Department of Agriculture to distribute P50,000 to three non-government organizations (NGOs) for the purpose of extending loans to those affected by the red tide ban. The NGOs will be responsible for identifying suitable candidates, screening applicants, and allocating the funds accordingly. The

loan must be repaid within 18 months, with a potential 6-month extension, and incurs a 12% annual interest rate (*Press release* 1988).

The fisherfolk community expressed their dissatisfaction towards the government's loan proposal. PAMALAKAYA-Pilipinas, or the National Strength of the Philippine Fishers Movement, promptly organized a rally and demanded the immediate declaration of Manila Bay as a calamity area (PAMALAKAYA-Pilipinas, 1988).

By the time the weekly bulletins were published in October 1988, the red tide was already dissipating in Manila Bay. However, the red tide ban was kept in place to ensure that the shellfish was totally clear of any remaining toxins (Calleja and Izon 1988; *Red Tide* 1988a).

By November 1988, the RTTF announced that most towns were no longer affected by red tide, with only two exceptions: Barangay Luz, Limay, Bataan and Barangay Kapunitan, Orion, Bataan. With the acquisition of additional information, the RTTF was able to definitively determine which seafood was safe for consumption. Firstly, freshwater fish, prawns, shrimps, and crabs sourced from freshwater were deemed safe. Secondly, all saltwater seafood could be consumed as long as the gills and innards were removed. Lastly, all seafood was considered safe if it was not obtained from Manila Bay, Maqueda Bay, and Samar Sea. Two weeks later, the RTTF declared that shellfish harvested from Manila Bay-adjacent provinces such as Cavite, Paranaque, Navotas, Bulacan, and Pampanga were also safe to eat (RTTF 1988b).

The public, perplexed by the announcement pertaining to the "distinction" of the seafood's origin, maintained a sense of caution and persisted in their refusal to purchase or consume any seafood. The question arose: how can a buyer discern whether the fish is sourced from freshwater or saltwater once it is available in the market? Similarly, how can one ascertain if the mussel hails from Cavite or Bataan? Consequently, the advisories intended to address these concerns proved to be ineffective and were disregarded by the public.

3. Reaction and Response

3.1. *Bataan Fisherfolks' Reaction and Response to Red Tide*

The lack of government intervention to assist Bataan fisherfolks in coping with the sudden loss of livelihood has been strongly condemned. PAMALAKAYA president Rodolfo Sambajon (Interviews 1997) pointed out that the government's response has been limited to monitoring casualties. Urgent appeals have been made to President Corazon Aquino to promptly enforce pollution laws, declare Manila Bay as a calamity area, initiate the long-delayed comprehensive rehabilitation, provide a P100 million calamity fund for income loss compensation, and utilize the $25 million loan from the Asian Development Bank (ADB) for the rehabilitation of Philippine bays, mangroves, and sewers. The Nationwide Coalition of Fisherfolk for Aquatic Reform (NACFAR) has given its full endorsement to the proposal of declaring Manila Bay as a calamity area. Additionally, they have urged the government to allocate P20 million towards the implementation of alternative livelihood programs for the fisherfolk in Bataan (De la Cruz 1991).

A two-part special report on red tide by the newspaper Philippine Daily Inquirer in 1991 published the plight of the Bataan fisherfolk who were affected by the red tide ban, citing the lack of response from the government. Based on the report, the decrease in prices and the reluctance of the general population to purchase seafood have significantly impacted their means of living, making it extremely challenging to sustain their households. To provide for their families, their wives were compelled to take up laundry services or sell goods (Villadiego 1991a).

The fisherfolks highlighted several issues regarding government inaction. These include the delay in notifying them about the red tide ban, the neglect of Bataan fisherfolks impacted by the 1991 red tide incident due to the government's focus on the Mt. Pinatubo eruption, the continuous pollution in Manila Bay, the absence of consultation with affected fisherfolks, the insufficient assis-

tance from the local government in providing alternative sources of income, the unaccomplished rehabilitation programs for Manila Bay, and the failure to enforce fishing regulations (Villadiego 1991b).

3.2. *Academe and Government's Assessment and Response to Red Tide*

In 1989, the Inter-Agency Committee on Environmental Health (IACEH) was formed to coordinate all government programs related to solving the problems brought about by red tide occurrences. Three government departments were tasked to be the lead agencies in this Committee – the Department of Health to address concerns of PSP; the Department of Agriculture and its attached agency, BFAR, to monitor all Philippine waters for possible red tide episodes; and the Department of Science and Technology (DOST) and its attached agency, the Philippine Council for Aquatic and Marine Research and Development (PCAMRD) to conduct research on harmful algal blooms (HABs), dinoflagellates, and other environmental factors causing red tides (Dueñas 1994; Hartigan-Go and Bateman 1994, p. 826). Four more government agencies were designated by President Aquino to be part of the Committee: The Department of the Interior and Local Government (DILG), the Department of Environment and Natural Resources (DENR), the Philippine Information Agency (PIA), and the Philippine Coast Guard (PCG).

In December 1989, Dr. Rhodora Azanza from the UP Marine Science Institute (UP-MSI) suggested the establishment of a Red Tide Research Center for Southeast Asia in the Philippines, a proposal that received full support from the BFAR ("Letter" 1990). And to coincide with the World Health Day Celebration, BFAR was tasked with releasing a Red Tide Primer to aid in the dissemination of information regarding red tide (Abuso 1990).

Laws on the red tide hazard were also drafted in the Philippine Congress. As a result of the investigations and public hearings, the

Senate Committee on Health issued in February 1990 the following recommendation in response to red tide occurrences:

> [...] declare a state of emergency to all areas affected by red tide; continuous monitoring of the situation and immediate dissemination of information to the public; inclusion for inspection of fish, shellfish and vegetables by the National Meat Inspection Service; and allotment of a sufficient budget for the research on the red tide phenomenon. (Borje, De Castro 1990)

In 1991, Dr. Niño Ismael Pastor from the DOH released the result of his studies on the red tide toxin. He stated that the 80 mg/100g shellfish toxin limit set by WHO is not appropriate for the Filipino population, as evidenced by the cases of PSP caused by shellfish toxins at this level. He emphasized the necessity of revising the standard to better suit the Filipino physiology (RTTF 1991).

In 1992, Manila Bay experienced yet another occurrence of red tide, which led to Congress criticizing the DOH and BFAR for their inability to resolve the ongoing crisis. This criticism came despite the ongoing research conducted by marine scientists to understand this phenomenon (DOH, BFAR 1992). One result showed that there was an effort made to decontaminate shellfish using a method known as "depuration", which was carried out at UP Los Baños (DOST project 1992). A joint effort was undertaken by the BFAR and the ASEAN-Canada Cooperative Programme on Marine Science for a different project. This particular initiative aimed to gather essential data to assist in shaping policies aimed at reducing the negative impacts of red tide. One of the recommendations put forth by this project was to prohibit the dumping of industrial waste into water bodies by the year 1995 (Castro 1992).

Dr. Azanza mentioned the potential of red tide being a recurring concern in July 1992. This speculation stemmed from the research conducted by Japanese scientists, who identified two additional microorganisms, *Alexandrium sp.* and *Gymnodinium sp.*, as

contributors to red tide in Manila Bay (Mapagu 1992). She likewise suggested the establishment of monitoring centers in Zambales, Bataan, Cavite, Parañaque, Samar, Leyte, Cebu, and Davao. This initiative would necessitate a budget of P25 million (De la Cruz 1992). The BFAR, despite its primary responsibility of monitoring Philippine waters, lacks a marine laboratory and possesses only a single research boat that occasionally becomes stranded because of mechanical issues (*No escape* 1992).

All these studies and recommendations were realized in 1993. By January 1993, the first red tide monitoring center in Orion, Bataan was established (*Red tide* 1993). The PCAMRD initiated a long-term research initiative on red tide in February, centered at UP Los Baños and supported by a two-million-peso fund. The program aims to create a comprehensive database on red tide studies, develop effective purification techniques for tainted shellfish, and implement sustainable livelihood projects for fisherfolk impacted by red tide occurrences (Orig 1993).

To address the issue of pollution contributing to the proliferation of harmful algal blooms (HABs), several suggestions were made by government officials. Dr. Cielito Gonzales, the chair of IACEH, recommended the implementation of seaweed cultivation beneath the waters of Bataan to deprive HABs of their nutrient intake. Rafael Alunan, the Secretary of the DILG, also proposed that local officials in Manila and Pasay take the lead in organizing campaigns to discourage the disposal of trash in Manila Bay (Villadiego 1993).

Further research results were disclosed in 1994. Dr. Emilio Rosario, a scientist affiliated with DENR, put forward the idea of cultivating mangroves along the Manila Bay coast. His suggestion was influenced by his studies in provinces such as Palawan, Quezon, and Mindanao, where red tide outbreaks never occur (Fernandez 1994b; "Mangrove trees" 1994). Conversely, officials from red tide-affected regions such as Cavite, Bataan, Zambales, Northern Leyte, and Western Samar have recommended the formation of local task forces to effectively monitor and address red tide-related matters (*5 Affected Provinces* 1994).

Scientist Rafael D. Guerrero III was cited in a PCAMRD report regarding red tide. Whether deliberate or not, he articulated the government's perspective on red tide as communicated to fishermen: «Red tide has no definitive solution; it is a permanent occurrence. The public should acknowledge that red tide is a natural calamity. At present, it happens on a yearly basis and persists for a prolonged duration» (Fernandez 1994a).

4. Discussion

4.1. *Local Knowledge and Perception*

The comprehensive data collected during our fieldwork in the coastal towns of Manila Bay, including interviews and focused group discussions, has provided us with valuable insights into the general perception of the Manila Bay red tide among the fisherfolks.

Among these are the following:

1. A handful do not believe there is red tide in Manila Bay.
2. Many believe that red tide is a natural hazard like the regular typhoons.
3. The fisherfolks agree that red tide is not the problem; the real disaster is the red tide ban; and,
4. There are some who believe that the government is using red tide to reduce fishing and shellfish collecting in Manila Bay as part of the development plan for the area.

4.2. *«A handful do not believe there is red tide in Manila Bay»*

Red tide is not true. We ourselves consume our own catch, yet no one has died. Because of red tide, we cannot sell our catch. All they want is to drive us out of Manila Bay (KLD and NAMAMANGKA, Interviews 1997).

The fisherfolk's outlook on red tide seems to stem from their personal experiences as residents of Manila Bay's coastal areas, severely affecting their way of life. Dismissing red tide as a danger, they tend to underestimate its implications on public health. Despite government cautions, they persist in consuming their catch without adverse effects. Nevertheless, when a red tide ban is declared, all fisherfolk are adversely affected as it directly impacts at their livelihood.

Fisherfolks are familiar with fish kill caused by poor water quality, typically occurring after heavy rainfall in dry months. The sudden temperature change and influx of runoff materials disorient and kill the fish. While this initially leads to a bountiful harvest for the fisherfolks, it is followed by weeks of minimal catch. Fisherfolks view this as a necessary recovery period for the fish to grow larger. They adapt by seeking alternative sources of income without disrupting their way of life.

The occurrence of red tide seldom leads to extensive fish mortality. Fisherfolks have reported witnessing occasional water discoloration in Manila Bay prior to 1988, but it had little impact on their activities. They would temporarily halt fishing or shellfish harvesting until the water returned to its normal state. However, due to the subsequent red tide scare and the government's implementation of a red tide ban, this recurring phenomenon has now become a constant threat to their livelihood. The fatalities resulting from poisoning could be attributed to improperly prepared shellfish, possibly already dead prior to cooking and consumption. They therefore dismiss RTTF's advisories as mere «red tide toxin propaganda» (Avendaño 1996).

Additional evidence of their skepticism towards the red tide ban can be seen in the sporadic occurrence of «shellfish-eating festivals» in Cavite and brunches organized at the Navotas Fish Port complex by local government officials and fishing operators. Although these events are not common and only take place when certain areas of Manila Bay are deemed safe from the red tide toxin, they contribute to the perception that red tide is a fabricated

issue. Consequently, fishermen often demand that government officials and scientists provide concrete evidence to the contrary[1].

4.3. *«Red tide is a natural hazard like the regular typhoons»*

Despite extensive research conducted over the years, a scientist's inadvertent pronouncement of red tide as a natural disaster has led the fishing community to simply acknowledge it as a recurring threat without considering other potential factors like pollution. One drawback of this viewpoint is the hindrance it poses to proactive measures aimed at reducing the negative consequences of the hazard. Additionally, it dampens the motivation for bold and critical actions to address the challenge as a community.

Fisherfolk have frequently pointed to pollution as a factor contributing to the presence of toxins in the towns of Limay and Orion in Bataan. The National Power Corporation (also known as NAPOCOR, NPC, or National Power**)**, the Bataan Refining Company (BRC), and other industrial facilities located in these municipalities intermittently shut down their operations for equipment cleaning and maintenance, leading to the discharge of wastewater into Manila Bay (Peña 1993). A resolution has been filed by the Alyansa ng Mangingisda sa Bataan (ALYANSA/*Alliance of Bataan Fisherfolks*), requesting the local government to temporarily close the thermal power plant of NPC due to its hot water discharge in Manila Bay (*Resolution n. 22*, 1996)[2].

The National Power Corporation (NPC) is a Philippine government-owned and controlled corporation (GOCC) that is mandated to provide electricity to all rural areas of the Philippines by 2025 (known as «missionary electrification»), to manage water

1. Dr. Rhodora Azanza of UP-MSI shared her experience on this issue during public seminars. She finds herself engaged in constant debates over her explanation on the presence of red tide in Manila Bay (Azanza R., Interviews 1997).

2. Interview with Board Member Rogelio Roque of Bataan, who suspects that due to the regular hot water discharge from the NPC thermal plant, the red tide toxins in Limay remain for a long time. He suggests that the government require NPC to cool down its wastewater temperature before dumping it in Manila Bay (Roque R., Interviews 1997).

resources for power generation, and to optimize the use of other power generating assets (NPC, no date, *Vision and Mission*). Thus, meeting the demands of the fisherfolk may prove to be challenging. Furthermore, pollution could be a contributing factor, but it is not the primary cause of the red tide toxins[3]. Regarded as a natural hazard, red tide poses a dual challenge for the fisherfolk. On one hand, they must rely on the government to designate their province as a calamity area and then endure a three-day wait for financial support (Esconde D., Interviews 1997). This support typically includes 2 kilos of rice, 2 cans of sardines, and 2 packets of noodles, or 285 pesos per fisherfolk. While this aid provides sustenance for two days, it proves inadequate for the prolonged duration of the red tide ban, lasting five to eight months[4].

While waiting for the red tide ban to be lifted, fisherfolks seek temporary employment opportunities to enhance their income. Men often take up construction work or become tricycle drivers, while women engage in tasks such as collecting laundry, providing ironing services, selling homemade food, or temporarily working as housemaids[5].

On the contrary, if red tide is viewed as a typical natural phenomenon, shouldn't fishermen anticipate it and make adequate preparations? As a result, the government would no longer be required to provide assistance, as the onus of mitigating the impact of red tide would be placed on the local residents[6].

3. Interview with Dr. Rhodora Azanza of UP-MSI, who said that it will be difficult to pin the red tide toxic blooms to pollution as red tide also occurs in clean waters, like Davao. It may, however, contribute to the proliferation of HABs (Azanza R., Interviews 1997).

4. According to Cesar Bautista, they are occasionally given substandard rice grains, the kind they feed to pigs and chicken. They deplore the government's view that consider them "beggars that can't be choosers" as long as they are receiving calamity assistance (Bautista C., Interviews 1997).

5. Danilo Helison recalled that the fishermen in Rosario, Cavite, were engaged in shoveling sand and retailing it for five pesos per sack (Helison D., Interviews 1997).

6. As narrated by Pablo Rosales in an interview, the only time they received assistance from the government is during the initial occurrence of red tide. With subsequent episodes, the fisherfolks are left to fend for themselves as a red tide occurrence was

4.4. *«Red tide is not the problem; the real disaster is the red tide ban»*

At the start of this research, it was assumed that the red tide toxins were the root cause of the challenges faced by fisherfolks and shellfish farmers in the Manila Bay fishing grounds. However, our interviews have proven this assumption to be incorrect. The destruction of their livelihoods is not caused by harmful algal blooms (HABs), but rather by the government's ban that is imposed during red tide episodes. Paralytic shellfish poisoning (PSP) only affects those who have consumed contaminated shellfish, making it a selective and voluntary occurrence. Conversely, the blanket red tide ban affects all fisherfolks and shellfish farmers, making them victims regardless of their individual circumstances. In effect, the ban is all-encompassing and non-discriminatory.

To express their opposition to the red tide ban, the fisherfolks sought well-defined guidelines regarding the specific seafood affected and the contaminated areas within Manila Bay. Their assessment indicated that only sea creatures that are slow-moving, stationary, or located near the water's surface in the shallow portion of the Bay have the potential for contamination. This category includes mussels, clams, oysters, crabs, and whitings, as they can serve as carriers of the dinoflagellate toxins. Conversely, salt-water fish that swim or inhabit deeper parts of the water are not impacted by red tide toxins. Given these circumstances, they questioned the rationale behind implementing a blanket red tide ban (Tiongson 1998)[7].

To be fair, the marine scientists have already refined their information materials after the initial 1988 red tide episode pre-

no longer adequate to declare Manila Bay coastal towns as calamity areas (Rosales P., Interviews 1997).

7. In an interview with Pablo Rosales, he stated that scientists presumed that algal blooms rests at the bottom of bodies of water and only surfaces once disturbed or affected by external factors causing it to surface. As to the extent of the depth where the algal blooms are found, this cannot be determined (Rosales P., Interviews 1997).

cisely to avoid a comprehensive red tide ban. For example, since 1988, RTTF has already clarified which seafood could be consumed during a red tide occurrence as long as they follow the proper procedure of cleaning fish and crustaceans – remove the gills of fish, the heads of shrimps, and avoiding consumption of crab fat. Another renovation to the ban is by dividing Manila Bay into three sectors to isolate the areas where the toxins are heaviest[8]. Furthermore, the RTTF has switched the usage of the term from «red tide ban» to «shellfish ban», thereby heightening awareness that only shellfish are to be avoided during a red tide episode (Figure 5). A final significant refinement to avoiding PSP was when the RTTF adjusted the safe toxin levels standard for Filipinos from 80 mg/100g as approved by WHO to 40 mg/100g, as determined by several months of testing and research results (RTTF 1991).

The information presented highlights the importance of adhering to the RTTF guidelines to effectively avoid PSP. However, our interviews with fisherfolks and local government officials have revealed that this vital information had not been adequately disseminated to its intended recipients. As a result, there is a prevailing belief that the national government agencies are not actively working towards resolving the problem.

It is evident that the main problem lies in communication. The fishermen claim that they are consistently the last to receive any information regarding the occurrence of a red tide, and typically, this information is relayed to them only after the red tide ban had been enforced. Their awareness of the matter usually arises when one of their fellow fishermen is apprehended for «violating the fishing ban», a rule they were not even aware of, or when someone tragically falls victim to PSP.

8. In January 1998, the RTTF imposed a shellfish ban only in Navotas because its samples showed the highest amount of toxins, while it only gave warnings for the rest of the coastal towns of Manila Bay (RTTF, 1998).

PHILIPPINE HEALTH ADVISORIES

Food Safety

Paralytic Shellfish Poisoning (Red Tide)

Red tide poisoning is a life-threatening syndrome associated with eating contaminated shellfish.

Cause
Red tide microorganisms in shellfish (*tahong, talaba, halaan*)

Signs and Symptoms
The symptoms are purely neurological and the onset is rapid that it can be felt within 12 hours.
Neurological
- Sense of numbness around the mouth or the face
- Dizziness
- Pricking sensation and/or paralysis of hands and feet
- Body weakness
- Rapid pulse beat
- Difficulty in talking, swallowing, breathing
- Headache

Gastrointestinal
- Abdominal pain, vomiting, and diarrhea

Treatment
- Supportive treatment, especially ventilatory support/artificial respiration, is given in severe cases.
- Fluid therapy may be administered.
- Detoxification (e.g., coconut water and brown sugar) may be done.

Prevention
When there is a red tide warning:
- Do not eat shellfish.
- Avoid eating *alamang* and small fishes.
- Wash thoroughly and remove gills and intestines of fish, squids, and crabs.
- Remove heads of shrimps.

Reference
DOH Philippines. (2005). Health Advisory on Paralytic Shellfish Poisoning (Red Tide).

Image from http://topnews.net.nz/content/29184-health-warning-all-shellfish-tairua-whakatane

Figure 5. *Sample government health advisory. Source: https://www.officialgazette.gov.ph/downloads/2014/05may/Philippine-Health-Advisories.pdf (accessed on 5 May 2024).*

4.5. *«The government is using red tide to reduce fishing and shellfish collecting in Manila Bay as part of the development plan for the area»*

Individuals knowledgeable about the Manila Bay development plan might easily speculate that the government has hidden intentions given its failure to address the problem. A prevailing per-

ception among fisherfolk is that the government is exploiting the red tide threat – possibly magnifying its detrimental consequences – to force the fisherfolk and shellfish farmers out of Manila Bay, with the aim of eventually eradicating their livelihoods to make way for clearing the area[9].

This perception is not without basis. The interviewees cite the Manila Bay Master Development Plan which was prepared by the Public Estates Authority (PEA) in 1993. At its planning stage, it was clear what the overall concept of a Manila Bay Development Plan would look like, to wit:

> [T]he development plan seeks to create a bustling urban coastal megalopolis, with close affinity to water-based or aquatic activities, recreation, and means of livelihood; a megalopolis that is an outgrowth of the conceived industrial-port nodes. (PEA 1993a)

The Development Plan's execution is clearly observable in both the east and southeast zones of Manila Bay (MBCB 1993). Within the eastern zone, the Regal Bay City Reclamation Project is actively reclaiming land, spanning an extensive area of 15,390 hectares (PEA 1993b). The Twin Towers of Tan Yu in Parañaque loom prominently over the inhabitants of Freedom Island and its surrounding areas. Meanwhile in the southeastern zone province of Cavite, the shellfish farmers are facing displacement because of a road-widening project, which is being carried out in preparation for the forthcoming relocation of the Philippine Navy headquarters (KABISIG, Interviews 1997). The fisherfolks can clearly discern that red tide was being utilized by vested interests as a means of spreading false information to harm the livelihoods of the local residents (Avendaño 1996)[10].

9. Based on separate interviews and focused group discussions done with the members of KLD, Cavite; Januario Mellona of SAMAKA, Cavite; and Pablo Rosales of LAMBAT, Bataan. (Interviews 1997).

10. Interview, Januario Mellona and members of KABISIG of Cavite. The researchers

4.6. *The Fisherfolks and the Scientists*

Within the fisherfolk community, scientists are often viewed as outsiders, particularly when compared to NGOs like the Philippine Rural Reconstruction Movement (PRRM) whose members are integrated and reside within the community. The scientists do not naturally belong to the fisherfolk's environment, and they do not share common experiences. Despite this, the fisherfolks acknowledge the expertise and authority of the scientists, showing respect and willingness to listen to their insights, regardless of their level of understanding or agreement. Building trust between the fisherfolk and the scientific community is a gradual and significant process, akin to any relationship.

When scientists express views that contradict the beliefs held by fisherfolk, the latter group tends to be more critical of the former, particularly when the scientists are representing the government, such as officials from BFAR or DOST. In such cases, fisherfolk often display hostility and may even challenge the scientists to substantiate their claims. For instance, a fisherfolk leader once confronted the head of BFAR's division, who had announced the presence of red tide in the waters of Cavite, stating that it was not safe to harvest mussels from that area for consumption. The fisherman challenged the official, stating that if he consumed the mussels and did not fall ill, the BFAR official would have to retract his declaration. To further express their doubts, fisherfolk insisted on accompanying the official to ensure that no contaminated sample would be taken from their laboratory (Mellona, Interviews 1997).

Obviously, this is a challenge that will not be entertained by the scientists. Consequently, this rebuff of the challenge would only heighten the distrust of the fisherfolks[11]. As researchers, we

got the same response from *Mga Pamunuan ng Mangingisda sa Karagatan ng Manila Bay at Bacoor Bay* (Fisherfolk Leaders of Manila Bay and Bacoor Bay) (Interviews 1997).

11. Dr. Rhodora Azanza from UP-MSI shared a comparable incident from her interaction with mussel farmers in Cavite and mayors in Bulacan during an interview. Following a red tide seminar, she faced lengthy questioning and scrutiny regarding her

comprehended the reasons behind scientists' reluctance to engage with the challenges presented by the locals. However, we felt it was necessary to directly confront these questions by presenting counter-arguments, rather than dismissing the challenges outright. It is of utmost importance for scientists to exhibit patience and clarify scientific terminology using simple, and preferably, using the local language, enabling fisherfolks to comprehend the nature and ramifications of the red tide, dinoflagellates, and PSP. This is particularly crucial as this specific hazard poses a direct threat to their means of sustenance, their families, and their community.

This is another instance that there exists a communication issue at hand. Moreover, the disposition of certain scientists towards the fisherfolks, along with the stark contrast between their worlds, further exacerbates the problem as they fail to comprehend the everyday challenges faced by ordinary individuals. Consequently, the scientists perceive the fisherfolks as obstinate and unyielding, while the fisherfolks view the scientists as unreliable and untrustworthy due to their reluctance to substantiate their claims with empirical evidence.

5. Bridging Science and Local Knowledge/Perception

5.1. *The Bataan Red Tide Testing Center (BRTTC)*

In response to the initial outbreak of red tide in the Philippines and the tragic deaths resulting from PSP in 1983, the Bureau of Fisheries and Aquatic Resources (BFAR) promptly established monitoring centers.

The BFAR organized a team consisting of a marine biologist, a chemist, a fishery technologist, and a microbiologist to investigate

perspectives on red tide. Despite her reluctance to demonstrate the presence of toxins, she acknowledged the inevitable challenges faced when the livelihoods of the community are in jeopardy (Azanza R., Interviews 1997).

the circumstances of the poisonings. Three monitoring stations were set up by BFAR at the areas where red-brown patches were observed. Pyridinium bahamense var. compressa was identified as the causative organism infesting the green mussels (Hartigan-Go and Bateman 1994, p. 825).

In 1988, when red tide struck Manila Bay, the Bataan Red Tide Testing Center (BRTTC) swiftly emerged as a monitoring center under the leadership of Rosalie Roman. Its primary aim, as outlined in a 1995 report, was to furnish timely and accurate reports on the red tide situation in the western zone of Manila Bay (BRTTC 1995).

In the same 1995 Terminal report, the following were listed as accomplishments of the BRTTC:

1. Enhancing collaboration with the Alyansa ng mga Mangingisda sa Bataan (*Fisherfolks Alliance in Bataan*), Bigkis-Bisig Mangingisda ng Bataan (*Fisherfolks-in-Arms of Bataan*), and local government units (LGUs) to boost knowledge and promote awareness regarding red tide.
2. Collecting and examining samples from additional towns beyond the regular monitoring area of BRTTC such as Morong, Orani, Samal, Abucay, and Pilar.
3. Providing support to the Department of Health (DOH) in organizing forums and discussions on the topic of red tide.
4. Ensuring the upkeep of the original sampling stations located in BRC, Planters, and Barangay Luz in Limay, as well as at Puting Buhangin and Kapunitan in Orion.

After the specified achievements, the technical report detailed the outcomes of the samples analyzed and the concentration of toxins detected. The report closed with the subsequent assertion:

> In contrast to the earlier years when the occurrence of red tide was observed in the waters of Bataan, we have now enhanced our pre-

> paredness and developed a greater sense of assurance in dealing with this crisis. Presently, we possess knowledge regarding the specific microorganisms responsible for the red tide phenomenon and the months during which these dinoflagellates pose a threat to the shellfish industry in the province. While there may still be certain aspects of this hazard that remain unclear, it is imperative to entrust certain technical matters to the scientists working within the government. (BRTTC 1995)

5.2. *Bridging the Gap*

5.2.1. Involve the Locals in Scientific Activities

The technical service provided by BRTTC to the residents of Bataan holds immense value. The center ensures swift communication of red tide poison monitoring results to both the local government and fisherfolk organizations. This is a notable departure from the previous practice of sending samples to Manila for analysis, which resulted in a prolonged waiting period of several days. Now, the results are immediately accessible and effectively communicated to the local community.

A crucial outcome of this initiative was the enhanced proximity between science and the people. It is important to highlight that the fisherfolks and the local government, being the immediate beneficiaries of the center, played a pivotal role. As a result, close coordination between these stakeholders should almost be a certainty. This coordination was demonstrated through the center's provision of regular reports on their weekly monitoring activities, while the fisherfolks were entrusted with the task of gathering samples for testing. This arrangement necessitated a substantial level of trust from both parties, as it was essential for achieving optimal outcomes in addressing the situation. The center's integration into the community was crucial, as the fisherfolk found value in participating in the monitoring process, which directly affected their means of livelihood.

5.2.2. Use of Visual Publicity Materials/Posters to Disseminate Information

BFAR utilized visual posters as an alternative approach, rather than relying on written primers or guidelines, which proved to be highly effective. The use of visual information aids offered a distinct advantage as it made the information more accessible and comprehensible to the public. showcases a sample of the poster employed by BFAR sourced from the internet.

One observation made about the posters was that usually the texts were in English. Although many locals were able to grasp the message conveyed by the illustration, it posed a difficulty for certain fisherfolks who felt that it would have been more beneficial if the texts had been written in Filipino (or in the vernacular for other region) (Figure 6).

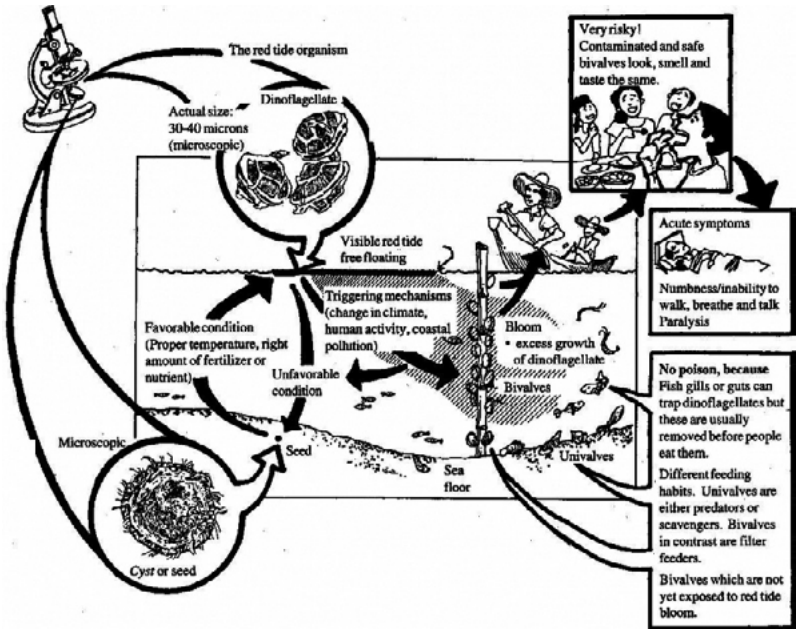

Figure 6. *A sample visual information poster. Source: "Ocean Treasures" Memorial Library. "What is Red Tide?". Available at: https://otlibrary.com/what-is-a-red-tide (accessed on 18 March 2024).*

5.2.3. Coordinate With the Philippine Rural Reconstruction Movement (PRRM)

The Philippine Rural Reconstruction Movement (PRRM) is a non-governmental organization (NGO) whose mission is «to enhance the capacity of rural communities in the planning, advocacy, and implementation of sustainable development, through an integrated program of education, livelihood, health, habitat, environment, and self-governance» (PRRM, no date, *Vision and Mission*). Founded in 1952, the PRRM, «a movement committed to the cause of the Filipino peasant, began as a small group of prominent Filipinos led by Conrado Benitez of the University of the Philippines. It was the first NGO to send its workers to the villages to implement its integrated, fourfold program of education, livelihood, health, and self-governance» (PRRM, no date, *Beginnings).*

The PRRM's strong presence and credibility within the fishing community in Bataan enabled them to effectively bridge the gap between the government and the locals. Through their active involvement in the community, the organizers, coordinators, and members of PRRM have gained the trust of the fisherfolks, who recognize their commitment to serving their best interests. Collaborating with PRRM in government initiatives like information dissemination, monitoring of Manila Bay during red tide outbreaks, and creating new livelihood options would be a mutually beneficial approach for all stakeholders involved.

6. Conclusion and Recommendations

In preparation for this project in 1997, the historian-researchers were under the impression that we already had the required expertise and knowledge to carry out fieldwork and interviews on a topic of a scientific nature. We had dedicated almost a year to collecting data by studying technical papers, journal articles, news reports, and engaging with scientists and experts on red tide. Giv-

en that red tide had first appeared in Manila Bay nearly a decade before the project began, we were convinced that scientists had conducted sufficient research on this specific threat. Surprisingly, our fieldwork uncovered a significant gap between scientific research, and the knowledge and perceptions held by the local community.

Initially, we were under the impression that the Harmful Algal Blooms (HABs) were solely responsible for the economic displacement of the fisherfolks and the unfortunate demise of innocent consumers. This belief was primarily influenced by the extensive media coverage surrounding the red tide outbreak in Manila Bay, which was first reported in August 1988. The significant number of fatalities resulting from Paralytic Shellfish Poisoning (PSP) led the researchers to conclude that red tide was the primary hazard affecting the fisherfolks. However, as time progressed, we discovered that while PSP could be fatal if one consumed contaminated shellfish, it could be entirely prevented by adhering to the appropriate guidelines provided by the authorities. Surprisingly, it was the comprehensive red tide ban that was actually responsible for jeopardizing the livelihoods of the fisherfolks.

In addition, it is worth noting that fisherfolks have their own perceptions regarding the problem, despite the actual threats that PSP poses to public health. Their responses encompass a wide range of attitudes, from outright denial of the existence of red tide to a sense of indifference, considering it a regular occurrence akin to typhoons, and believing that there is no solution to the issue. Some even harbor conspiracy theories against the government, alleging that red tide is a mere ploy to displace fisherfolks from Manila Bay, facilitating the implementation of the Manila Bay Development Plan without any obstacles. Unfortunately, the efforts of government agencies, including scientists and officials, to address this matter have been ineffective. Despite issuing numerous advisories and organizing public discussions on red tide, they have been unable to persuade the local population that harmful algal blooms are a genuine threat.

It is not difficult for us researchers to comprehend the mistrust that exists. The fisherfolks perceive the scientists as outsiders, unlike the members of non-government organizations who are part of the community and can empathize with their struggles. Conversely, scientists reside in urban areas and do not have any shared experiences with the fisherfolk. Nevertheless, the fisherfolk attentively listen to the scientists' public lectures on red tide and PSP, showing due recognition and respect for their expertise on the matter. However, whether they truly accept, agree, or comprehend the scientists' perspectives remains uncertain.

Contradictory views between scientists and fisherfolk are not uncommon, particularly when fisherfolk question or oppose the claims made by experts. Nevertheless, there is a necessity for a change in mindset and a reexamination of how professionals regard the community affected by a specific hazard. Fisherfolk have a unique understanding of their environment, shaped by their daily experiences. It is essential for authorities to acknowledge and possibly integrate this local knowledge as an alternative approach to addressing the ongoing crisis that fisherfolk encounter.

In conclusion, the researchers emphasize the importance of prompt and efficient communication between authorities and the community to connect scientific findings with local knowledge and perceptions. Given the significant impact of red tide on their daily lives, regular updates would be highly valued and beneficial. Engaging the locals and their trusted sources, such as NGOs, in the monitoring efforts would further enhance their understanding of the scientific aspects of the threat, enabling them to respond effectively and fostering proactive measures in seeking alternative sources of income during the crisis.

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Organizations

Kabisig ng Lamang-Dagat ng Cavite (KLD/Strength of the Sea Resources of Cavite).

Lakas ng Mangingisda ng Bataan (LAMBAT/Power of Fisherfolks of Bataan).

Mga Pamunuan ng Mangingisda sa Karagatan ng Manila Bay at Bacoor Bay (PMK/Fisherfolk Leaders of Manila Bay and Bacoor Bay).

Nagkakaisang Maliliit na Mangingisda ng Kabite (NAMAMANGKA/United Small Fisherfolks of Cavite).

Sandigan ng Maliliit ng Mangingisda ng Orani (SAMMO/Reliance of Small Fisherfolks of Orani).

Individuals

Azanza Rhodora. Professor, UP Marine Science Institute (UP-MSI).

Banzon Rolando. Bataan provincial health officer.

Bautista Cesar. Chairman, SAMMO.

Bernal Reynaldo S. President, NAMAMANGKA, Cavite.

Beroyon Concordio. Freedom Island, Paranaque.

Carangalan Ricardo. Fisherman, Cavite.

Casas Paterno. Samahan ng Maliliit na Mangingisda sa San Dionisio, Parañaque. (Association of Small Fisherfolks of San Dionisio, Parañaque).

Cayanan Carlos. KLD, Cavite.

David Lydia. Office of the Provincial Agriculturist, Bataan.

Esconde Danilo. Vice President for the First District, Alyansa ng Mangingisda sa Bataan (ALYANSA/Fisherfolks Alliance of Bataan).

Gatdula Cesar. President, Kapisanang Magdaragat ng Barangay Landing (KAMBALAN/Association of Seafarers of Barangay Landing), Landing, Limay, Bataan.

Gonzales Cielito. Chairperson, National Red Tide Task Force, Bureau of Fisheries and Aquatic Resources (BFAR), Quezon City.

Guinto Reynaldo. Former president, Samahan ng mga Bangka sa Lusungan (SABALU/Boat Organization of Lusungan) and former president, Samahan at Ugnayan ng Pangisdaan ng Orion (SUGPO/Organization and Alliance of Orion Fishing Areas), Lusungan, Orion, Bataan.

Helison Danilo. Fisherman, Rosario, Cavite.

Jimenez Enrico. Damayan Multipurpose Cooperative, Freedom Island, Paranaque.

Macapagal Rosauro. Vice President, Kabisig ng Lamang Dagat (KLD), Cavite.

Magaan Rosauro. Sta. Maria Homeowners Association, Freedom Island, Parañaque.

Makarulay Edgardo. Director, NAMAMANGKA, Cavite.

Mellona Januario. Adviser, Samahan ng mga Mangingisda ng Kawit (SAMA-KA/Association of Fishers of Kawit), Kawit, Cavite.

Melo Renato R. President, Kabisig ng Lamang-Dagat (KLD), Cavite.

Perez Laudico. Vice Chairman, ALYANSA, and former president, SUGPO, Kapunitan, Orion, Bataan.

Purugganan Joseph. Philippine Rural Reconstruction Movement (PRRM), Cavite.

Rodriguez Armando. External Coordinator, NAMAMANGKA, Cavite.

Roman Rosalie O. Project Leader, Bataan Red Tide Testing Center (BRTTC), Orion, Bataan.

Roque Rogelio. Bataan Provincial Board Member and Chairman, Bataan Red Tide Task Force (BRTTF), Kapitolyo, Balanga, Bataan.

Rosale Pablo. Secretary-General, Lakas ng Mangingisda ng Bataan (LAMBAT Bataan), Balanga, Bataan.

Salundaga Nardito. LAMBAT member and fisherfolk leader, Bacong, Limay, Bataan.

Sambajon Rodolfo. President, PAMALAKAYA.

Santos Villamor. Chairman, ALYANSA, Balanga, Bataan.

Suelo Amador. Shellfish vendor, Cavite.

Timoro Carlos. Purok 2, Freedom Island, Paranaque.

Tria Crispin. Orion Area Coordinator, Philippine Rural Reconstruction Movement (PRRM), Bataan.

Verzosa Alfredo. Member, Katipunan ng Mangingisda sa Freedom Island (KATIPUNAN/Alliance of Fishers of Freedom Island), Freedom Island, Parañaque.

Viray Arnel. Secretary-General, NAMAMANGKA, Cavite.

The Damned Fate of the Bontok and Kalinga Ethnic Groups

A History of their Resistance Against the Chico River Hydroelectric Dam Project, 1973-1986

Ma. Florina Orillos-Juan

1. Introduction

In the 1970s, the Philippines faced the impact of the oil crisis and realized the need to look for ways by which the country can be self-sustaining in terms of generating power. In the eyes of government decision-makers and policymakers, the revitalization of the plans to construct large dams in the Cordillera could be a long-term solution to the problem of having to purchase oil from the world market at exorbitant prices. These mega infrastructures could also possibly fuel national development, with emphasis on economic growth. The government targeted to impound the Chico River and build four large dams that were expected to supply 1,010 megawatts of electricity to the Cordillera region, and even the entire island of Luzon. The Bontok and Kalinga who traditionally lived on both sides of the river stood to lose their farmlands, properties, sacred sites, and sources of livelihood when their communities are submerged in water. As soon as they learned about the proposed project, they launched a protracted struggle against the construction of these large dams along the Chico River.

This paper aims to recount the history of the Chico River Hydroelectric Dam Project, from 1973, when the Philippine government bared its plan to build four massive dams along the Chico River, up to 1986 when the newly elected President Cora-

zon Aquino cancelled the project. Moreover, this study intends to elucidate how the indigenous people of the Cordillera – the Bontok and Kalinga opposed its construction, despite the adversities that they faced as they continued their struggle for their land. Inasmuch as the government was firm in implementing the dam project to foster national development, its social and environmental cost clearly out shadowed its purported benefits and gains.

2. Dam-Building in the Post-Second World War

The control of surface water could be traced back to the world's early civilizations like the Tigris and Euphrates rivers in Mesopotamia, the Nile River in Egypt, Indus River in India and Huang He in China, among others. As most of these early communities essentially practiced agriculture, the damming of rivers was a way to control, manage and maximize the use of their water resources to regularly produce crops that sustained a steadily growing population. In the course of time, the paramount purpose of impounding rivers changed – these mega infrastructures were built to spur economic growth, ensure food security (for example, irrigation of rice paddies, aqua farming, etc.), provide water supply for domestic and industrial consumption, prevent flood (or at least contribute to flood control efforts) and to serve recreational purposes (Berga *et al.* 2006; Tortajada 2014; Ahmadzai 2021, p. 2). Amidst the sweeping changes taking place globally in the nineteenth until the first half of the twentieth Century, «water became a critical component of development… so large dams had to be built to satisfy the ever-increasing demand for it for various purposes» (Biswas and Tortajada 2001, p. 10).

After the conclusion of the Second World War, there was a profusion of large dams (defined as those measuring over 15 meters in structural height, from the lowest foundation to the crest, impounding 3 million cubic feet of water and generating over 100

megawatts of power)[1] that were supposed to provide irrigation and most importantly, to supply power needs. This dam-building trend was particularly true amongst the developed countries like the Unites States, Canada, Australia, Western Europe, etc. Mega dams were seen as the «quintessential development project… and powerful technological symbols of modernist development» (Sheppard, Porter, Faust, Nagar 2009, pp. 161-162). The underlying philosophy behind the boom in the dam industry was the human's ability to conquer, control and dominate nature (Steinberg 1993, pp. 401-402).

For the nation states who became independent after war up until the 1950s, the paramount goal was to promote national development with its main thrust, economic growth. A vital key to achieve this objective was to tap hydropower to boost energy supply and accelerate development, thus, the need to build large dams. By the 1950s, these large infrastructures that control surface water «became symbols of nation-building, national pride, and often contributed to national unity» (Biswas and Tortajada 2001, p. 11). This dam-building spree reached its peak from the 1960s throughout the 1970s with funding coming from multilateral agencies like the World Bank. This unrestrained construction of large dams was consistent with a prejudiced vision of development that saw it «as a large-scale, top-down, and technocratic pursuit of economic growth through the intensive exploitation of natural resources» (Khagram 2004, p. 4).

3. A Short History of Dam-Building in the Cordilleras

In the Philippines, the construction of big dams was dictated by the need to rehabilitate and reconstruct the country after the war, while trying to stand on its own after the grant of independ-

1. Cf. International Commission on Large Dams at https://www.icold-cigb.org/GB/dams/definition_of_a_large_dam.asp.

ence by the United States. Two years later, in 1948, the National Power Corporation recommended to the Philippine government that the major rivers in the Cordillera be dammed to supply the much-needed energy to the neighbouring regions.

The Philippine government launched a project dubbed as the Agno River Basin Development project. The Agno River, which originates from the southern slope of Mount Data and runs through eastern Benguet province was dammed at Barangay Ambuklao in the town of Bokod and at Barrio Binga in the town of Itogon. The Ambuklao and Binga, two of the «biggest dams in Asia» – as they were known at that time, were constructed starting 1948. The Ambuklao dam (also known as Agno I) was completed in 1958 and two years later, the Binga dam (also known as Agno II) was finished. Both dams were in Northern Luzon, in the Cordillera region. Succeeding plans for the construction of more dams in the Cordillera were under way but these plans were met with tenacious opposition coming from the indigenous groups whose lands were threatened to be usurped by the state. Many of the indigent population who fought against the building of more dams in the Cordillera learned from the tormenting experiences of the Ibaloy ethnic group who were displaced with the construction of Ambuklao and Binga dams. For example, when the Philippine government renewed its interest to continue damming the Agno River with the construction of Tabu dam (to be known as Agno III) situated in Barangay Dalupirip, Itogon, Benguet, the Ibaloy indigenous group continued their resolute struggle against the project.

In the 1960s, the Philippine government drafted plans for the Chico River basin – four dams would be constructed, and it was envisaged to be the biggest hydroelectric dams in Southeast Asia. However, due to several problems, the project was shelved, only to be revived a decade later when they saw the necessity of doing so to augment the power supply in key economic regions of the country.

4. Geography of the Chico River

The Cordillera Mountain range, located in Northern Luzon, Philippines sustains the major river systems in the region. The Mount Data Forest reserve sustains five major rivers that traverse the Cordillera: Chico, Ahin, Siffu, Abra and Amburayan. The Chico River is the longest and most extensive of these five rivers, and its headwaters originate from the northern slopes of Mount Data – it flows eastward across Mount Data, turns towards the northeast in the town of Bontoc in Mountain Province. Its course runs through the province of Kalinga, where it is fed by the Tanudan, Pasil, and Saltan rivers. From Kalinga, it flows into Cagayan province, where it drains into the Rio Grande de Cagayan[2].

The Chico River basin has a total drainage area of 1,049,400 hectares. Philippine government planners estimated early on that this can be tapped to supply both irrigation and energy requirements of Northern Luzon region. As a step towards ensuring the viability of these kinds of "development projects", several watershed reservation areas had to be declared by the government. One of these was the Chico River Basin Forest Reserve that encompassed 351,762 hectares.

Two indigenous groups of Northern Cordillera, the Bontok and Kalinga people dwelt on both sides of the river and had always relied on it for irrigation and other domestic needs.

5. The Chico River Basin Development Project (CRBDP)

The Chico River Basin Development Project was part of a grandiose development plan for the Philippines put forth by President Ferdinand E. Marcos during his first term in office in 1965.

2. Cordillera People's Alliance, *Dams in the Cordillera: The River Systems in the Cordillera and their Watersheds*, originally published in 2001 by the Cordillera People's Alliance Public Information Commission and retrieved from http://www.internationalrivers.org (accessed on 23 February 2015).

This project was tentatively put on hold because of the high cost of construction. However, in 1973, the initial plan was revitalized when the government bared its plans of constructing a massive hydroelectric dam along the Chico River. The government's decision was influenced by the global oil crisis in the early 1970s which caused oil prices to spike in the international market. The envisaged construction of the dams was a key towards self-sufficiency in power production by harnessing the potential of rivers in the country. Harnessing the waters of the Chico River would ensure a stable supply of power in the entire Luzon grid. The initial plan was to construct a total of five dams: four large impoundment dams that would generate power and a diversion dam that was supposed to provide irrigation in the lowlands (Drucker 1985, p. 149). In 1972, the Philippine government, through the National Power Corporation (NPC) employed an overseas consulting firm that specialized in dam building – Lahmeyer International GmBH based in Frankfurt, West Germany, to conduct a technical pre-feasibility study. The following year, Lahmeyer International, in collaboration with the Engineering and Development Corporation of the Philippines (EDCOP) submitted the Technical Pre-Feasibility Study of the Hydroelectric Development in the Chico River. Four prospective sites were identified, where the dams would be built: Chico I in Sabangan, Mt. Province that was estimated to raise 100 MW; Chico II in Sadanga, Mt. Province with a potential capacity of 360 MW; Chico III in Basao, Kalinga expected to produce 100 MW and Chico IV in Tomiangan, Kalinga to generate 450 MW (Licuanan 1978, p. 6; Cariño 1980, p. 3). The estimated 1,010 megawatts of electricity it was envisioned to generate would benefit not only the Cordilleras but the entire Luzon, the Philippines' largest island[3]. It was also recommended to the Phil-

3. Drucker posits that inasmuch as thousand-megawatts thermal and nuclear plants are fairly commonplace in industrialized nations, hydropower projects are rare. See Drucker 1985, p. 150.

ippine government that these dams be used for other purposes, especially for irrigation so that it was estimated that 50,000 hectares of agricultural lands downstream would be irrigated. The World Bank was set to finance the construction of the project, pegged at around 100 million US dollars[4]. In terms of costs and viability, the planners were able to decide on the construction sequence: to prioritize Chico II, followed by Chico III, Chico IV and Chico I. The government stressed that Chico IV will be constructed first, and it was estimated to cost around 2.9 billion pesos (Villaba 1979, p. 29). It would encompass 1, 400 square kilometres that would submerge the following in water: 10 Kalinga and 6 Bontoc villages, 2,000 *payew* (rice fields) and 2,500 hectares of coffee and fruit plantations. Other collateral damage would be the loss of forest resources, which was the major source of livelihood of at least 100,000 indigenous Kalinga and Bontok people (Fiagoy 1988). Privately-owned lands in the villages of Lubuagan, Dangtalan, Guinnang and Naneng that were estimated to cost at least 38,250,000.00 pesos would likewise be affected (Doyo 1980, pp. 24-30).

6. Reaction of the Bontoc and Kalinga People

Starting in 1974, the NPC deployed their survey team to the areas at the dam sites of Chico II, III and IV. The problem, however, was that this was the very first time that these ethnic groups knew about the proposed project – they were never consulted about the plans of the government to impound the Chico River and so naturally, they resented it. The Bontoc ethnic group sought help

4. «The Chico River Dam project was linked to then-World Bank President Robert McNamara's highly technocratic approach to alleviate poverty. He made support for top-down development in the Philippines a priority, lending 2.6 billion US dollars through 61 projects between 1973-1981». See Gray 1998, p. 269. Gray quoted Walden Bello, David Kinley and Elaine Elinson, *Development Debacle: The World Bank in the Philippines* (Philippine Solidarity Network, Manila 1982), p. 24.

from the mayor (town leader) and governor (provincial leader) but the hands of these local officials were tied as well, because the national government insisted that this was an infrastructure project that would bring about sweeping changes not only in the Cordillera region but to the entire country as well. The Bontoc people acted swiftly and with the help and support of some clergy people from the Cordillera, sent five delegations composed of village elders and leaders to Manila from February to December to relay to President Ferdinand Marcos that they vehemently oppose the dam project. However, their pleas for an audience with the President were denied and instead, the government promised that it would give a just compensation to the affected communities. Meanwhile, the NPC field staff continued their survey in the target sites of the dams, and the ethnic groups in the affected communities acted accordingly by setting up a stakeout. For at least three times, members of the ethnic group prevented the NPC field personnel to unload their equipment and set up their barracks. On the fourth time, the work camps of the NPC located in Tomiangan, Kalinga were demolished by the natives and around two hundred fifty men, women and children carried the tents and equipment twenty-eight kilometers away to the Philippine Constabulary camp in Bulanao, Kalinga (Fiagoy 1988, p. 14; Cariño 1980, p. 8). There were also reports that several women bared their breasts before the field personnel to shock them, before they proceeded to dismantle the NPC staff barracks and work equipment (Castro 2000, p. 172).

The Bontoc and Kalinga people found an ally in the religious clergy who clearly understood their plight and helped them vent their grievances against the personnel of the NPC and Philippine Constabulary (PC) who encroach on their territory and committed abuses to the people. It is unfortunate that the mainstream media, whether periodicals-broadsheets, radio or television did not take up the events than were then happening in the Cordillera. Even the local-based newspaper, *Baguio Midland Courier* was censored by «higher authorities because of some limitations stip-

ulated in Presidential Decree 576 which regulates standards and ethics in mass media»[5]. It was Mariflor Parpan, an anthropologist who was then doing fieldwork in Kalinga for her dissertation, who wrote an open letter on 15 January 1975 that was published in the Jesuit-run periodical *The Communicator*. Parpan appealed to a high-ranking Catholic priest who was then serving as a Bishop of Malaybalay Bukidnon, Mindanao, Fr. Francisco Claver, SJ, also a native of Bontoc, Mt. Province. The prelate heeded the call and rallied his fellow religious to intervene on behalf of the Bontoc and Kalinga people in their fight against the building of the dams along the Chico River. On February 15, 1975, Bishop Claver wrote to Reverend Pacifico Ortiz, SJ who served as the Secretary of Justice and Peace of the Catholic Bishops Conference of the Philippines (CBCP), essentially to call his attention to the fact that the clerics seemed to be complacent and silent with how the national government was mistreating the ethnic groups by insisting on building the mega structures along the Chico River. He posited that as a Bontoc himself, he understood why his townsfolks tenaciously opposed the dam project because it meant that their entire communities would be submerged in water, including the farms they tilled and the sacred lands where their ancestors were buried. The real threat of displacement and dislocation of the Bontok and Kalinga from their lands would mean «their death as a people… it is genocide» (Claver 1978, p. 126).

7. *Vochong*: A Tool of Resistance for the Bontoc and Kalinga People

The Bontoc and Kalinga people, along with other ethnic groups in Northern Cordillera evolved an indigenous institution known as

5. Cf. Presidential Decree n. 576, s. 1974 retrieved from https://www.officialgazette.gov.ph/1974/11/09/presidential-decree-no-576-s-1974/ (accessed on 26 April 2024). See also Cariño, Cariño and Nettleton 1979, p. 51.

vochong (Kalinga word) or *bodong* (its equivalent in the Ilocano language), *pechen* (Bontoc word) and *kalon* (Tinguian word) which all refer to a peace pact that cements alliances and forges solidarity amongst these groups (Castro 2000, p. 173).

In February 1975, an assembly of village elders and leaders from different ethnic communities was held in Barrio Tanglag, Lubuagan town, Kalinga. The agenda of this meeting was to sign a *vochong* – a peace pact amongst these people that they would resolutely oppose the construction of big dams along the Chico River. Delegations of Kalinga and Bontoc were sent to Manila to see if they can all meet President Ferdinand E. Marcos and personally appeal to him to halt the plans to dam the Chico River but they never had that opportunity. Three months later, on May 12 to 13, 1975, a Conference on Development, sponsored by the Share and Care Apostolate for Poor Settlers (SCAPS), which was then headed by a Catholic prelate, Bishop Mariano Gaviola was held at St. Bridget's School along Aurora Boulevard in Quezon City. One hundred fifty Bontoc and Kalinga attended this conference, with church-based groups such as Association of Major Religious Superiors in the Philippines (AMRSP), the National Council of Churches in the Philippines (NCCP), the Justice and Peace Commission of the National Secretariat for Social Action, Justice and Peace (NASSA), the Asian Social Institute (ASI), the Institute of Social Order (ISO), the National Social Action Council (NASAC) providing moral and actual support to the ethnic groups' fight against the dam[6]. This was a turning point in the Bontoc and Kalinga's struggle against the dam because they agreed to sign a *vochong/bodong* and drew up its *pagta* (terms) which stipulated their obligations, responsibilities, and accountabilities. A letter of protest that reflected a solid and unified stand of the indigenous peoples was personally delivered by Bishop Gaviola to then Defense Secretary, Juan Ponce Enrile.

6. Committee for the Conscientization of the Youth, *The Chronicle of Resistance*, «The Conscientizer», vol. 1, n. 4, 1978, p. 16.

8. Government Response to the Chico Dam Opositionists

Shortly after the Vochong Conference in Quezon City, Executive Secretary Alejandro Melchor issued an order on May 22, 1975 for the NPC to suspend its operations for Chico II. The planned projects at Chico I and Chico III were scrapped. Apparently, this was just a ruse because the national government had to buy time to recast its plans for the project while trying to appease the indignant ethnic groups and the civil society that supported them. The government still wanted to push through with the construction of Chico IV in Tomiangan, Kalinga.

On May 19, 1975, which was three days before the official announcement that the NPC must suspend its operations in the Chico valley, President Ferdinand Marcos issued Presidential Decree n. 705 (Revised Forestry Code) that declared «all lands 18 percent in slope or over are classified as forest lands and therefore part of the public domain»[7]. When applied to the topography of the entire Cordillera, almost all the lands in the region were construed as public domains. This implied therefore, that unless the ethnic groups could show ownership titles, they were just squatting on public land. Obviously, this was a scheme of the government to dupe the Bontok and Kalinga people that it had every right to build these mega dams because these were public lands.

Another tactic employed by the government was the creation of the Kalinga Special Development Region (KSDR) through Presidential Decree 848 issued by President Ferdinand E. Marcos on December 12, 1975. The KSDR was subsumed under the Presidential Assistant on National Minorities (PANAMIN) that was then led by Manuel "Manda" Elizalde. It stipulated that the municipalities of Lubuagan, Tinglayan, Tanudan and Pasil will be subsumed under the KSDR. According to the Philippine govern-

7. Presidential Decree n. 705, series of 1975 retrieved from https://mirror.officialgazette.gov.ph/1975/05/19/presidential-decree-no-705-s-1975/ (accessed on 30 April 2024).

ment, the KSDR would resolve the never-ending tribal conflict in the region. Obviously, this step taken by the government was just a cunning plan to pacify the growing anti-dam sentiment of the Bontok and Kalinga ethnic groups who would be affected by the Chico IV project.

The officials, staff and even the head of PANAMIN – Manda Elizalde actively worked in the dam site – they used bribery and deception to convince the ethnic groups to give up their resistance against the dam. Some one hundred and fifty Kalinga delegates were brought by Elizalde to Manila in December 1975, purportedly to meet with President Marcos but when they were billeted in a hotel, they were hoodwinked into signing blank papers. Statements of support for the dam project were encoded to these blank papers – in short, the government forged the documents just so they could show these as evidence to the World Bank, to convince the institution to continue funding the dam project (Guyguyon 1978, pp. 112-113; Finin 2015, p. 246). The spokesperson of the united Bontok and Kalinga whose voice stood out in the 1975 Vochong Conference on Development, Macli-ing Dulag, *pangat* (village chief) of the Butbut tribe from Barrio Bugnay, Tinglayan was tested several times. The first time was when Elizalde offered him the position of KSDR head. In another instance, he was handed with an envelope. Sensing that it was a bribe to silence him, he purportedly retorted «there can only be one of two things in an envelope: letter or money. Since I am illiterate, this is hardly a letter. As for money, it is given only to someone who has something to sell. I have nothing to sell» (Doyo 2015, p. 30). On another occasion, he was invited to the PANAMIN barracks in Basao and was told that he was free to sleep with any woman that he liked (Villanueva 1980, p. 7).

When the surreptitious efforts of the PANAMIN failed, the government thought that it had no choice but to resort to brute force – forces from the Philippine Constabulary (PC) from Kalinga-Apayao were sent first. Afterwards, reinforcements from the 5th PC Battalion, 60th PC Battalion, 51st PC Battalion and 44th Infantry

Battalion followed. Members of the constabulary, who were referred to by the Kalinga as "*chuchacho*" (a pejorative Kalinga term for soldier) purportedly harassed the Kalinga people in whatever way they could – using the farm animals owned by the natives for target-shooting, raiding and looting of entire villages, setting rice granaries on fire, random and arbitrary beating of men and raping of women (Villanueva 1980, p. 7). The Kalinga had to put up with this situation for quite some time since the *chuchacho* arrived in the Chico valley.

The story of the dam oppositionists changed dramatically with the entry of the New People's Army (NPA), the military arm of the Communist Party of the Philippines (CPP) in the area in the latter part of 1976. While being pursued by the military, a small squad of NPA, led by a man who goes by the alias Ka Sungar (real name Ernesto Garado) belonging from the *Pangkat sa Dulong Hilagang Isabela* (PDHI) reached the dam site of Chico IV by accident (Castro 2000, p. 175). They became aware of the protests and consequently offered to help the Kalinga people in their bid to stop the construction of the dam. Many Kalinga youth eventually joined the NPA because they realized that they had a common enemy, which is the national government. Clashes between the PC troops and the NPA often occurred. This provided the pretext for the militarization of the Chico River valley. By October 1976 until April 1977, several resistance leaders, most of them *papangat* (village chiefs), while some are even women, the elderly and children were arrested because of absurd charges like obstruction of government projects, subversion. Many of them were detained in the stockade of the PC in Bulanao. Some leaders of the resistance group were even transferred to Camp Olivas in Pampanga (Cariño 1980, p. 9.). Raids in the villages were carried out if the PC suspected that the people were giving out information or aiding the NPA. Soon thereafter, the civil society that supported the dam oppositionists came to the rescue of those who were incarcerated: the Catholic Church, through the CBCP and its Apostolates, the Free Legal Assistance Group (FLAG) lawyers who worked tirelessly for the

release of the detained and Amnesty International (AI) that undertook investigations on possible human rights violations committed by the state to the indigenous peoples. Even after exposing to the whole world the excesses of the government, punitive actions against the ethnic groups who continued to oppose the construction of Chico IV went on. In 1978, the PANAMIN personnel pulled out of from the project area, reforms were laid out for the NPC who had a new chief – all of these conditions paved the way for the 60th PC Battalion to take full control of the situation in the Chico River valley. When they were pulled out, the 51st PC Battalion was assigned to the project area. In October 1979, the 44th Army Battalion was sent in, purportedly because they were more adept and trained in jungle warfare and more focused on pursuing the NPA (Cariño 1980, p. 10). By this time, the NPC had continued drilling and bulldozing activities which affected much of the farmlands owned by the people of Tomiangan. The NPC staff and their activities were closely guarded by the Army troops.

The year 1980 was an eventful year – first, because on February 3, 1980, various *papangat* (village leaders) of Kalinga met with the new president of NPC, Gabriel Itchon who decided to bring them to the Binga dam site in Itogon Benguet so the indigenous groups could directly witness the purported gains of building a dam. This meeting was momentous in the sense that it validated the suspicion of the Kalingas that even if they continue to oppose the dam project based on its negative impact to their communities, the Philippine government will still push through with the hydroelectric dam project because of its projected benefits in terms of self-sufficiency in power generation. The ethnic groups resolved from thereon that they won't give up their fight and hurried back to their communities to further talk about their next steps to oppose the mega dam. The harassment, maltreatment, and assault of the Kalinga people in Tomiangan committed by members of the army continued to be unabated. On April 24, 1980, the spokesperson of the dam oppositionists, Macli-ing Dulag, the *pangat* of the Butbut tribe from Barrio Tinglayan was murdered by men under

the command of Lieutenant Leodegario Adalem of the 44th Army Battalion (Doyo 1980, p. 24; Castro 2000, p. 177; Fiagoy 1988, p. 18; Delina 2020, p. 6). The gunshots that the Army men fired were lethal – his left breast and the right side of his pelvis were hit. Another leader of the oppositionists, Pedro Dungoc was more fortunate because he was just wounded in the wrist when he was fired upon while sleeping. Those who were complicit in the murder of Dulag – Lt. Adalem and Sergeant Angeles Tañag were arrested and incarcerated in August 1980. Two draftees identified as Francisco Garcia and Robino Galleno were nowhere to be found. Sergeant Jamie Pastorin, the officer who was charged with manhandling Dungoc suffered the same fate. Three years later, the court martial proceedings began and, in the end, Adalem and Tañag were found guilty (Doyo 2015, p. 37).

In October 1981, President Marcos made a pronouncement that the Chico hydroelectric dam project would be shelved. In the previous year, the World Bank took cognizance of the outcry of the Bontok and Kalinga people and withdrew its initial commitment to finance the project (Gray 1998, p. 267). In 1986, as soon as President Corazon Aquino assumed office, she declared that the Philippine government is committed not to push through with the dam project. The Bontok and Kalinga people's tenacious opposition to the Philippine government's plan to build mega dams along the Chico River basin was a landmark case not only because they were able to expose their predicament to the world, but their protests influenced the World Bank to review and recast its policies vis-à-vis indigenous peoples and forced resettlement in the face of development projects (Gray 1998, p. 269).

9. Collective Dissent: The Indigenous Mass Movement vs. the Chico River Dam Project

The hapless story of the Bontok and Kalinga related in the foregoing paragraphs exposed the misery and agony they experienced at

the hands of the state who put forth national interest, i.e. progress and development of the country over the well-being and survival of the indigenous groups. In that moment in Philippine history, as the country was under an autocratic leader, the discourse on development was conceived unilaterally by government policymakers and decision-makers, including the ways by which progress could be achieved. When oil prices skyrocketed in the early 1970s because of the oil embargo imposed by the Oil Producing and Exporting Countries (OPEC) to the United States, the Philippines was severely affected, which also prompted the government to revisit and revitalize the plans that were conceived in the 1960s to build multipurpose hydroelectric dams in the Cordillera. The target was the longest and most complex river in the Cordillera, the Chico River. The mega dams were critical projects of the state to accelerate power generation which would drive a fast-growing economy. However, the plight of the ethnic groups who lived in the communities that would be affected by the dam projects were overlooked and ignored by the state. These indigenous groups would lose their ancestral lands, farmlands and other properties – all because the government said that they should make the ultimate sacrifice for the sake national development that do not have a positive bearing in their lives. But these people could not just sit back and allow the government to trample on their rights and underestimate their will to defend their territory and ethnicity. The Bontok and Kalinga people registered their fierce objection against the hydroelectric dam project that would impound the Chico River – they decided to come together, mobilize and use the indigenous mechanism of *vochong/bodong* (peace pact) to build alliances between different sub-groups. A *vochong/bodong* was signed in 1975, another one in 1978 and the following year, in 1979, where the ceremony was attended by an estimated 2,000 Bontok and Kalinga people – they came together to make a coherent and collective stand against this dam project.

The *papangat* (village leaders) held field visits and exposure trips to the actual dam sites in Ambuklao and Binga located in Benguet Province that were completed in 1958 and 1960, respec-

tively. Moreover, a learning exchange took place when Macli-ing Dulag, the designated spokesperson of the resistance movement together with some village elders and leaders were able to hold a dialogue with the indigenous groups who were dislocated by the aforementioned dam projects, including the residents of Pantabangan, Nueva Ecija who were resettled when the dam construction commenced in 1971. From this exchange, they were able to have a broader perspective on the complex issues of displacement, resettlement and relocation that would surely result to abject penury and massive disruption on the lives of the ethnic groups.

Another interesting aspect of the indigenous groups' resistance to the dam project was the involvement of women who were directly instrumental in dismantling the tents and equipment of the NPC when its personnel resumed surveying the dam sites[8]. The ethnic groups believed that it was strictly forbidden to hurt women, much more if they were unarmed. It was a calculated step on the part of the Kalinga because had they sent men to do the task, things would surely have gotten out of hand that might result to bloodshed[9]. Furthermore, groups of women who were tasked to tear down the camp sites of the field personnel performed the *lusay*: «elderly women disrobed and displayed their tattooed torsos and limbs in front of government surveyors and soldiers to protest the dam construction – this would bring extreme harm and bad luck to men observing them»[10]. The act was also embarrassing for

8. Cf. Wangdali-Kolin 1998 and chapters two and three of Melisa Casumbal, *Unintelligible Bodies: Gender, Time and the Political in the Philippines* (PhD Dissertation in Political Science, University of Hawaii at Manoa 2012); Leticia Bula-at, Handwritten account of the People's Resistance Against the Chico River Dam in Kalinga 1970s-1980s. Screenshots of the handwritten notes published by Gantala Press on 13 September 2021 retrieved from https://gantalapress.org/2021/09/13/mother-tining-a-narrative/ (accessed on 10 May 2024).

9. Karlston Lapniten, *The river will bleed red': Indigenous Filipinos face down dam projects*, Mongabay.org published on 26 February 2021, retrieved from https://news.mongabay.com/2021/02/the-river-will-bleed-red-indigenous-filipinos-face-down-dam-projects/ (accessed on 10 May 2024).

10. Analyn Salvador-Amores, *Honoring Macli-ing Dulag, Defender of the Cordillera*, «Philippine Daily Inquirer», April 22, 2015 retrieved from https://newsinfo.inquirer.

the NPC staff that the elder women confronted – the initial result was utter shock and disbelief until the men decided to retreat. The *kulap* – the act of baring one's self (called *lusay* in Kalinga) was also a practice amongst the Bontok people – it is a form of insult and a protest to express contempt of a person, usually an outsider who might take advantage of the indigenous group. The use of these type of traditional institutions by the indigenous women who chose to be in the frontlines at the height of the opposition to the dam clearly shows their steadfast commitment to work tirelessly, albeit adopting a non-violent approach – they performed the *lusay* or *kulap* to incite shame to their opponent.

10. The "River of Life": Environmental Awareness of the Bontok and Kalinga Ethnic Groups

The hydroelectric dam projects proposed by the Philippine government in the 1970s were bound to engulf the traditional homeland of the people of Northern Cordillera – the Bontok and Kalinga people. Vast tracts of lands – those planted with fruit-bearing trees, the centuries-old *payew* (rice fields), the ancestral homes where the forebears of these ethnic groups were buried, the forests that served as their hunting ground and source of various forest products, including fuel wood, would be submerged in waters. The *Kayakayyam* (vernacular term for the Chico River), also called the "river of life" and considered as the umbilical cord of the Kalinga, is a major source of livelihood for them so erecting embankments on it and impounding its waters would essentially cause their death as a people. It is quite clear for these indigenous groups that the issue of the dam project transcends politics and economics: «People, I say to you, the question of the dams is not a political one. The question is life, our Kalinga life» (Doyo 2015). Their resistance to the project is

net/686979/honoring-macli-ing-dulag-defender-of-the-cordillera (accessed on 10 May 2024).

deeply rooted on their affinity to the land, which they believed was entrusted to them by the supreme deity, Apo Kabunian. This was eloquently articulated by *pangat* Macli-ing Dulag in the first *vochong/bodong* assembly in 1975: «You ask us if we own the land. And mock us, "Where is your title?" Such arrogance of owning the land when you shall be owned by it. How can you own that which will outlive you?»[11]. These words of wisdom, enunciated by the *pangat* underscore the indigenous belief of the Bontok and Kalinga that humans are an integral part of nature – they are stewards of the land and water that surround them. Their survival as a people is anchored on how well they can sustainably harness nature's resources, while protecting and caring for it as its custodians here on earth.

The spiritual life and practices of the Bontok and Kalinga ethnic groups also revolve around the land that was entrusted to them by the gods and deities. The people honor and respect the spirits and deities that dwell in nature, as well as the spirits of their dead ancestors whose mortal remains were buried in these lands. Generations of Bontok and Kalinga people nourished these lands through their blood, sweat and tears – these are sacred grounds that should never be defiled and desecrated because these make up the very fabric of their society. If these lands are encroached upon by outsiders, even by the state so it could utilize the resources therein in the name of progress and development, the indigenous groups must continue to defend their land, their ethnicity, their well-being, and survival.

11. Conclusion

Clearly, the Philippine government's concept of national development in the 1970s was paradoxical. The state continued to push development projects to propel the country towards a state

11. *The Wisdom of Our Ancestors (from the Words of Macli-ing Dulag)*, «Alternative Futures» (n.p., 1986). An epigraph also appears on page 5 of Doyo, *Macli-ing Dulag Kalinga Chief Defender of the Cordilera*.

of modernization and industrialization. But while the government ostensibly talked about projects that promote progress, that would essentially benefit the people, there were sectors that were left out, whose voices were unheard, whose agonies and distress were ignored. In the case of the Bontok and Kalinga people, they were accused by the Philippine government of being sentimental. Moreover, they were treated as obstacles to development because they fiercely opposed the dam project. The threat of dislocation was real, including its associated implications like cultural disintegration and disruption of social ties. The long-term impact of this development project to the ethnic groups were loss of properties and livelihood, environmental destruction, alienation from their ancestral lands, and the massive disruption of lives.

The protracted struggle of the Bontok and Kalinga peoples against the Chico River hydroelectric dam project were local forms of protests to safeguard their resources and means of livelihood, but these fundamentally broached valid concerns about the prevailing notions about "development", "growth", and "prosperity" advanced by the Philippine government.

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Pop Culture and Circulation of Ideas

Counterculture, Environmentalism, Anti-Science, Healthism in the Musical Narratives of The Kinks and Alberto Camerini (1968-1978)

Federico Paolini

1. Introduction

Over more than twenty years of research on environmental issues, I have found that the explanations based on *centres* (supranational organizations, central governments, leading groups of political parties and associations, scientific institutions, scholarly circles) do not clarify the complex dynamics that have taken place in the many peripheries, where the phenomena appear much more nuanced and, not infrequently, contradictory. This evidence has also been confirmed by the activities carried out for the research project *Science, technology and international relations: case studies in Italian foreign policy*, in our case for the part concerning the role played by scientists in the formation of an environmental awareness within the public space. We have seen (Chapter I) how science neutrality is an illusory and misleading concept: behind the debate on the environmental crisis there were very intricate interests that intertwined with equally complicated scientific issues.

Starting from these reflections – considering that in the decades of the spreading of the ecological crisis, only a small number of activists knew the theoretical elaborations of political ecology and that there was not even terminology to indicate the issues (for example, *hygiene* or *public health* were used predominantly, while the term *environment* was not yet used in its current linguistic

meaning) – I have asked myself what mechanisms have been used to transmit awareness and concern for what we now call *environment*. Among these, it seems reasonable to assume a significant role of *pop culture* (Paolini 2021) as a vector able to capture the attention of a part of the individuals by prompting them to adopt a cultural model and lifestyles centered on the values of what we call today *environmentalism*.

Since the late 1960s, pop culture seems to have played a role in a system of top-down circulation of ideas. In the case of ecological thoughts, pop culture appears to have been an influential linkage between scientific theories and international audiences. This article deals with musical narratives, focusing on two cases: one of the most influential English rock bands (The Kinks)[1] and that of Alberto Camerini[2], an Italian songwriter who represented a singular exception in the Italian music scene (Hasted 2011; Jovanovic 2014; Dal Maso 2020). In particular this essay examines two works of the Kinks and the first three lps of Alberto Camerini, all characterized by a significant attention to social and ecological issues[3].

These albums were written at a time when most young people were realizing that the movements of the '60s had been a naive and utopian experience, and this awareness was fueling disillusionment and anger.

1. Formed in London in 1963, the original line-up consisted of Ray Davies (singer and guitarist), his brother Dave Davies (guitarist), Mick Avory (drums and percussion) and Pete Quaife then replaced by John Dalton in 1969. They released 23 studio albums between 1964 and 1993.

2. Alberto Camerini is an Italian guitarist and songwriter born in São Paulo (Brazil) in 1951. His most artistically interesting period is that with the record label Cramps for which he has released three lps: *Cenerentola e il pane quotidiano* (1976), *Gelato metropolitano* (1977), *Comici cosmetici* (1978). The great public success came between 1980 and 1982, with 3 works recorded for the CBS: *Alberto Camerini* (1980), *Rudy e Rita* (1981), *Rockmantico* (1982).

3. *The Kinks Are the Village Green Preservation Society*, Pye/Reprise 1968; *Muswell Hillbillies*, Rca Records 1971; *Cenerentola e il pane quotidiano*, Cramps 1976; *Gelato metropolitano*, Cramps 1977; *Comici cosmetici*, Cramps 1978.

2. The Socio-Political Context

Both the Kinks and Alberto Camerini moved within that generational dissidence characterized by the rapid internationalization of pop(ular) culture thanks to the progressive diffusion of television and consumption linked to youth sub-cultures (music, cinema, fashion)[4]. They were all part of that generation which accused both capitalism and communism of being repressive and hostile to social transformation, and which focused its criticism on the repressive tolerance of Western societies. As Tony Judt wrote (Hobsbawm also proposed a similar interpretation), young people rejected collectivism and the social pact that had until then accepted regulation and control from above because it was considered a fair price to pay for better and more widespread social justice.

On the contrary, young people considered institutional control too intrusive and called for a new society that would protect everyone's right to maximum private freedom. In this way, according to Judt, individual claims replaced the idea of collectivity with that of identity and this entailed an unavoidable cost: the decline of the sense of a shared purpose. This new individualism did not respect either the collective purpose or the traditional authority but rested on the subjectivism of private interest and desire,

4. Youth culture is characterized by the adoption of particular attitudes and leisure behaviors as well as lifestyles that become typical of many young people and distinguish them from other age groups. Not all young people, however, share the most widespread youth culture and this brings out countercultural attitudes and subcultures. Subcultures are defined as a set of cultural elements that distinguish a particular social segment or group from the rest of society. Typically a subculture provides systems of thought, customs, codes of social interaction and lifestyles that can be transformed into counterculture or, depending on their capacity to be absorbed and reconverted into mass consumption, into expressions of style and fashion. Often the subculture category has been associated with marginality and deviance, but there are different cultural subsets such as youth cultures, underground movements, movements that emerged in metropolitan immigration... These very complex topics are not covered in this article, but some interesting bibliographical references are: Keniston 1965, 1968, 1971; Hebdige 1979; Ynger 1982; Frith 1984; Gelder 1997; Muggleton, Weinzierl 2003; Bennett, Kahn-Harris 2004; Doggett 2007; Gelder 2007.

and, points out Judt, measured in a completely personal way. All this had shattered the consensus based on social pact between the ruling class and subordinate classes and was bringing about a new type of social contract focused on the primacy of individual interest. The mask of counterculture meant that young people did not describe in these terms the society they imagined and desired, but, according to Judt, was precisely the clear distinction between the commendable private freedoms and the unsuitable public limitations to move the political action of the new generation (Hobsbawm 1995, pp. 377-403; Judt 2012, pp. 63-68; Id. 2017, pp. 483-522)[5]. What Hobsbawm and Judt observed – especially the impatience towards social control exercised by bureaucratic apparatuses – is evident from the lyrics of the Kinks' song *20th Century Man*:

> Girl, we gotta get out of here
> We gotta find a solution
> I'm a twentieth Century man but I don't want, I don't want to be here
> I was born in a welfare state
> Ruled by bureaucracy
> Controlled by civil servants
> And people dressed in grey
> Got no privacy, got no liberty
> 'Cause the twentieth Century people
> Took it all away from me
> Don't want to get myself shot down
> By some trigger happy policeman
> Gotta keep a hold on my sanity
> I'm a twentieth Century man but I don't want to die here

5. The pages refer to the Italian editions mentioned in the bibliography. The first editions of the cited works are: Hobsbawm E.J. (1994), *Age of Extremes. The Short Twentieth Century 1914-1991*, Michael Joseph, London; Judt T. (2005), *Postwar: A History of Europe Since 1945*, The Penguin Press, New York; Id. (2010), *Ill Fares the Land*, The Penguin Press, New York.

My mama says she can't understand me
She can't see my motivation
Ain't got no security
I'm a twentieth Century man but I don't want to die here.[6]

In another song, public officials are depicted as obtuse and dangerous executors of the orders imposed by political power, so that the lyrics express feelings torn between the urge to escape from control and the craving to react violently:

Here come the people in grey
They're gonna take me away
To Lord knows only where
But I'm so unprepared
I got no time to pack
And I got nothing to wear
Here come the people in grey
To take me away
Me and my baby gonna get on a train
That's gonna take us away
We're gonna live in a tent
We're gonna pay no more rent
We're gonna pay no more rates
We're gonna live in a field
We're gonna buy me gun
To keep the policemen away
I'm gonna pass me a brand new resolution
I'm gonna fight me a one man revolution, someway
Gonna beat those people in grey
But here come the people in grey
To take me away
Here come the people in grey
To take me away

6. *20th Century Man* (*Muswell Hillbillies*, 1971).

People in grey have gone and taken away
My right to voice my complaint
Her Majesty's Government have sent me a form
I must complete it today
But it's making me blue
Don't wanna tell all my secrets to
The people in grey
Gonna pass me a brand new resolution
Gonna fight me a one man revolution, someway
Gonna start my rebellion today
But here come the people in grey
To take me away
Oh, Lord, those people in grey
I gotta get back at those bad people in grey.[7]

In a third song, the pressure exerted by social control – together with the tensions due to the Cold War (the reference to the Soviet secret services) – is indicated as the cause of the onset of a psychiatric disease such as schizophrenia:

I'm too terrified to walk out of my own front door,
They're demonstrating outside I think they're gonna start the third world war,
I've been to my local head shrinker
To help classify my disease,
He said it's one of the cases of acute schizophrenia he sees.
Well the milkman's a spy, and the grocer keeps on following me,
And the woman next door's an undercover for the K.G.B.,
And the man from the Social Security
Keeps on invading my privacy,
Oh there ain't no cure for acute schizophrenia disease.
I've got acute schizophrenia paranoia too [...]

7. *Here come the people in grey* (*Muswell Hillbillies*, 1971).

They're watching my house and they're tapping my telephone,
I can't trust nobody, but I'm much too scared to be on my own
And the income tax collector's got his beady eye on me,
Oh there ain't no cure for acute schizophrenia disease.
No there ain't no cure for
Schizophrenia disease.[8]

Alberto Camerini builds a dichotomy between the young people engaged in protest movements and traditional society that at first ignores them, then demonizes them and finally represents them as dangerous deviants, whereas according to the songwriter they are only carriers of the desire for a truly free society:

Nessuno fece caso nessuno li notò
Non era mai successo, nessuno ci pensò [...]
Approfittarono del lusso della
Civiltà avanzata
Si nutrivano di scarti della società privata
Riciclavano le macchine e i vestiti non usati, si vestivano di niente,
Di stracci colorati
Vivevano in bande in case occupate
Non avevano famiglia o tradizioni antiquate
Comunicavano tra loro con nuovi segnali
Tu li avresti detti diversi
Invece erano tutti uguali
Li chiamavano marziani, animali
Fuorilegge, briganti, guerriglieri [...]
I giornali che all'inizio ignoravano
La cosa, adesso l'attaccavano
Diventava più pericolosa
Ma improvvisamente come erano arrivati
Nessuno più li vide, sembravano dileguati

8. *Acute Schizophrenia Paranoia Blues* (*Muswell Hillbillies*, 1971).

Nessuno seppe come, nessuno seppe dove
Tornarono invisibili o irriconoscibili
O forse sono ancora qui
E aspettano il momento
Non vedono che l'ora per ritornare ancora.[9]

In the discourse of the Kinks we also find the deep disillusionment with traditional forms of association, represented as entities that only aim to enliven individuals to obtain their support:

He was just a workin' man,
Simple rules and simple plans,
Fancy words he didn't understand,
He loved with his heart,
He worked with his hands.
Liberals dream of equal rights,
Conservatives live in a world gone by,
Socialists preach of a promised land,
But old uncle son, was an ordinary man. [...]
Unionists tell you when to strike,
Generals tell you when to fight,
Preachers tell you wrong from right,
They'll feed you when you're born,
And use you all your life.[10]

9. *La ballata dell'invasione degli extraterrestri* (*Cenerentola e il pane quotidiano*, 1976): «Nobody noticed, no one noticed them / It had never happened, no one thought [...] / They took advantage of the luxury of / Advanced civilization / They fed on waste from private society / They recycled cars and unworn clothes, dressed in nothing / Coloured rags / Lived in gangs in occupied houses / Had no family or old-fashioned traditions / They communicated with each other with new signals / You would have said them different / Instead they were all the same / They called them martians, animals / outlaws, robbers, guerrillas [...] / The newspapers that at first ignored / the thing, then attacked it / It became more dangerous / But suddenly as they had arrived / No one saw them anymore, they seemed to be gone / Nobody knew how, nobody knew where / They returned invisible or unrecognizable / Or maybe they are still here / And wait for the moment / They don't see that the time to return again».

10. *Uncle Son* (*Muswell Hillbillies*, 1971).

In the view of the Kinks and Alberto Camerini, rebellion and rejection of traditional society represent an attempt to escape from the pressures of social conventions and the obligations imposed by the post-war development model based on the search for a continuous increase in individual and collective well-being. It is a kind of defense against the alienation caused by the loss of individual identity imposed by industrialized society. It is a set of feelings due to both a purely subjective and historical-social dimension.

At the centre of their criticism are three types of alienation. The first is that of citizens forced to live in increasingly depersonalized cities where the will of people is manipulated by mass media, advertising and the commodified organization of leisure. The second is that of workers who are forced to become increasingly integrated into a work organization which imposes tasks which are purely repetitive and depersonalized. The third is that imposed by the spread of technique and technology which creates social systems which weaken solidarity and sense of community. In these reflections, it is evident the influence of popular philosophers within youth protest movements such as Herbert Marcuse and Jean-Paul Sartre who criticized the repressive nature of work and the depersonalization of individuals controlled by anonymous bureaucratic apparatuses that forced people to becoming part of processes over which they could have no control (Marcuse 1955; Sartre 1960). The critique does not only involve the capitalist model or the fordist labour system, but it extends to science and technology that are considered integral parts of the bourgeois model of production.

Both Kinks' and Camerini's lyrics portray the alienation and anxiety that arise from urban living. For the Kinks, life was *complicated* and heavy to bear:

> Well I woke this morning with a pain in my neck,
> A pain in my heart and a pain in my chest,
> I went to the doctor and the good doctor said,

You gotta slow down your life or you're gonna be dead,
Cut out the struggle and strife,
It only complicates your life.
Well I cut down women, I cut out booze,
I stopped ironing my shirts, cleaning my shoes,
I stopped going to work, stopped reading the news,
I sit and twiddle my thumbs cos I got nothing to do,
Minimal exercise,
To help uncomplicate my life,
Gotta stand and face it, life is so complicated [...]
Life is overrated, life is complicated,
Must alleviate this complicated life.
Cut out the struggle and strife,
It's such a complicated life.[11]

In the narrative of Alberto Camerini, although he uses a register closer to a caustic irony, the atmospheres recounted are very similar:

E se sono un po' aggressivo, un po' violento ed invadente
E se parlo troppo forte e non ascolto mai la gente
E se non me ne frega niente di chi sta vicino a me
E se mi arrabbio poi per niente e poi do la colpa a te
E voglio sempre aver ragione e non lo riconosco mai
Ma non cerco comprensione, tanto so che non ne hai
E mi domandi cosa cerchi e mi domandi cosa vuoi
Forse cerco la certezza che invece non si può aver mai [...]
Lavori il giorno e poi la sera, sei stanco e non ne puoi più
E vuoi soltanto riposare e guardare la TV
È che non riesci a fare niente, pensare un gioco anche per te

11. *Complicated Life* (*Muswell Hillbillies*, 1971). In *Alcohol*, the hasty pursuit of social ascension and success is cited as a factor predisposing to addiction to toxic substances: «Here is a story about a sinner, / He used to be a winner who enjoyed a life of prominence and position, / but the pressures at the office and his socialite engagements, / and his selfish wife's fanatical ambition, / It turned him to the booze, / and he got mixed up with a floosie / and she led him to a life of indecision» (*Muswell Hillbillies*, 1971).

Ed immaginare il mondo come vorresti e come è
Ma tu non puoi cambiare niente, non vuoi nessuna novità
A te tutto così va bene, tanto sai già che finirà
Col tuo stipendio assicurato, che qui niente cambierà
Nel tuo futuro programmato, paura della libertà.[12]

It is interesting to note that both the Kinks and Camerini emphasize the role of technology as a factor of alienation; in particular, the English rock band highlights the destructive role of military technologies and stigmatizes the pervasive presence of machines in everyday life (probably, the term *machinery* suggests that the reference is mainly to workplaces):

This is the age of machinery
A mechanical nightmare
The wonderful world of technology
Napalm hydrogen bombs biological warfare
This is the twentieth Century
But too much aggravation
It's the age of insanity.[13]

The Italian songwriter, on the other hand, points out the role of consumer technology. Camerini's focus on consumption of technological goods is probably explained by his proximity to alternative intellectual circles such as the one gathered around «Re

12. *Sicurezza* (*Cenerentola e il pane quotidiano*, 1976): «And if I am a little aggressive, a little violent and intrusive / And if I speak too loud and never listen to people / And if I don't give a damn about who's next to me / And if I get mad for nothing then I blame you / And I always want to be right and I never recognize it / But I don't seek understanding, so I know you have not / And you ask me what you want and you ask me what you want / Maybe I seek the certainty that instead you can never have [...] You work day and night, you're tired and you can't take it anymore / And you just want to rest and watch TV / It's that you can't do anything, think a game for yourself / And imagine the world as you would like it to be / But you can't change anything, you don't want any news / You're all right, you know it's gonna end / With your salary assured, that nothing here will change / In your planned future, fear of freedom».

13. *20th Century Man* (*Muswell Hillbillies*, 1971).

Nudo», the most authoritative Italian alternative journal (Guarnaccia 2022). He probably came into contact with the critique of affluent society and with the post-materialist cultural vision (Inglehart 1977), then introduced within his songs. In particular, Camerini stresses the role of television as a tool for alienation and social control, as a means to shape minds according to what is desired by political and economic power:

> 1951 un milione di apparecchi, io ero appena nato, il tempo della sensazione
> La nuova invenzione era nata la televisione
> Tutti volevano, tutti adoravano
> Tutti compravano
> Tutti credevano alla televisione
> Poi vengono anche gli anni della grande
> Ambizione, il boom del benessere
> La corsa alle illusioni
> Si vendono milioni di apparecchi
> Un'antenna trasparente nutre tutta la nazione,
> L'Italia, Sophia Loren si è moltiplicata sugli schermi
> Ogni città è conquistata
> Esplosioni di risate i varietà, show di lustrini, lo sport [...]
> Ma dopo 25 anni in bianco e nero
> Di demagogie falsità a 2 dimensioni
> Forse per avere un altro sogno da sognare
> O per avere un trucco in più su cui contare
> Perché l'hanno voluta loro, i padroni
> Per uscire dalla crisi
> Vendendo altre televisioni
> Arriva finalmente anche il colore nell'immagine
> A colori anche il sogno come la realtà.[14]

14. *La straordinaria storia dell'invenzione della televisione a colori* (*Cenerentola e il pane quotidiano*, 1976): «1951 a million devices, I was just born, the time of feeling / The new invention was born television / Everyone wanted, everyone loved / Everyone bought / Everyone believed in television / Then come the years of great / Ambition, the boom

In a second song, Camerini describes the *awakening* of a child who realizes that he has been deceived by television heroes and says that he will no longer believe those stories:

Ma un giorno come tutti i bambini
ho voluto saperne di più
E come con tutti i giocattoli ho
fatto a pezzi la mia tv
Che bello il giocattolo elettrico
che arma l'elettricità
Ma adesso ho imparato ho capito
adesso non mi imbrogliano più no!
adesso io non ci casco più
Da grande voglio fare tutto
quello che voglio
senza farmi imbrogliare dagli eroi della tv.[15]

To stigmatise technology, its all-encompassing power to tame people's lives, Camerini goes on to tell a surreal story in which a worker falls in love with a washing machine:

Lui era un tipo regolare, che dal troppo lavorare
Non aveva tempo per pensare a sé
Un impiegato un po' alienato, senza troppa convinzione
Uno fra tanti, si chiamava Nembo Kid

of well-being / The race to illusions / Millions of devices sold / A transparent antenna feeds the whole nation, / Italy, Sophia Loren has multiplied on screens / Every city is conquered / Explosions of laughter, variety, glitter show, sport [...] / But after 25 years in black and white / Demagogy falsehoods 2 dimensions / Maybe to have another dream / or have an extra trick to count on / Because they wanted it, the capitalists / To get out of the crisis / selling other televisions / Finally the color in the image arrives / In color also the drea m as reality».

15. *TV Baby, gli eroi della televisione* (*Cenerentola e il pane quotidiano*, 1976): «But one day like all children / I wanted to know more / And as with all the toys I / shredded my tv / How beautiful the electric toy / what strength has electricity / But now I have learned I understand / now they don't cheat me no! / now I don't fall for it / When I grow up I want to do everything / what I want / without being cheated by the heroes of TV».

Ma un giorno all'improvviso, senza avviso né perché
Venne l'amore, il paradiso o quel che l'è
Lei era splendida, invitante come la pubblicità
Senza difetti e con tante qualità
S'incontrarono un giorno in una via della città
Piena di luci, di vetrine e novità
Piena di gente soffocante, un caos abbagliante
Di consumi, spese, neon, pubblicità
Lei era bella, scintillante, elegante, ben pulita
Appena uscita, era il sogno della vita
Lui la vide e lì per lì se ne innamorò
E la sera stessa fuori a cena la portò [...]
Baby è di marca e poi fa poco rumore
Ha un motore indistruttibile e in più è in garanzia
Sette programmi, consuma poca energia.[16]

3. Nature as an Antidote to the Alienation of Mass Society

To escape the pressures of urban life and social control, both Kinks and Camerini identify in nature the symbol of a condition of arcadian happiness and consolation (that has never really existed) and convey the paradigm of a benevolent mother-nature violated

16. *Nembo Kid & Baby lavatrice* (*Gelato metropolitano*, 1977): «He was a regular type, who from too much work / He had no time to think of himself / A somewhat alienated employee, without too much conviction / One of many, his name was Nembo Kid / But one day suddenly, without warning or because / Love came, heaven or whatever / She was gorgeous, inviting as the advertisement / Without defects and with many qualities / They met one day in a street of the city / Full of lights, windows and news / Full of suffocating people, dazzling chaos / Consumption, expenses, neon, advertising / She was beautiful, sparkling, elegant, well-cleaned / As soon as I came out, it was the dream of life / He saw her and fell in love / And the same evening he took her out to dinner [...] Baby is a brand washing machine and then makes little noise / It has an indestructible motor and in addition is in warrant / Seven programs, low energy consumption». The use of the name *Nembo Kid* to indicate the employee protagonist of the song is strongly ironic, as in Italy *Nembo Kid* was actually Superman: *Nembo Kid* was chosen by publishing house Arnoldo Mondadori to issue (from 1954 to 1970) the adventures of the hero created by DC Comics (cf. Bottero 2013).

Figure 1. *Back cover of the album* Gelato metropolitano *(Cramps, 1977) in the reprint on cd On Sale Music.*

by the arrogance of human beings. In this way their narratives become a sort of megaphone of the ecocentric vision of nature according to which the ecological crisis arises from the fact that humanity has progressively separated itself from the rest of living beings. In this way they adhere to a real reversal of what has been the common denominator between the different epochs of history: the evolutionary path of *Homo sapiens* that since ancient times has constantly tried to become other than its primeval biological nature (the only species of the genus Homo that belongs to the family of hominids and the order of primates).

In their narratives is also present the strongly dichotomous vision that opposes *Homo sapiens* (the maleficent species) to animals (the virtuous species, submitted to anthropocentrism). For the Kinks, animals are part of that rural context in which they long to take refuge, while Camerini transforms them into characters who oppose the destruction perpetrated by human beings.

So the Kinks imagine a return to the countryside whose lifestyle is presented in an almost fairytale form: the tranquility and slow life of the village represent the salvation from the chaos and the dehumanising life of the urban areas; simple people living in

the countryside are the antidote to social conflicts produced by individualism; the presence of animals helps to recreate a connection with nature. Within the narrative of the Kinks, it is evident that the true habitat of human beings should be the rural context and certainly not the urban one, understood as an artificial reality created by capitalism:

> Out in the country,
> Far from all the soot and noise of the city,
> There's a village green.
> It's been a long time
> Since I last set eyes on the church with the steeple
> Down by the village green. [...]
> I miss the village green,
> And all the simple people.
> I miss the village green,
> The church, the clock, the steeple.
> I miss the morning dew, fresh air and Sunday school.
> And I will return there,
> And I'll see Daisy,
> And we'll sip tea, laugh,
> And talk about the village green.[17]

> This world is big and wild and half insane.
> Take me where real animals are playing.
> Just a dirty old shack,
> Where the hound dogs bark,
> That we called our home.
> I want to be back there,
> Among the cats and dogs,
> And the pigs and the goats
> On Animal Farm, my animal home. [...]
> Girl, it's a hard, hard world,

17. *Village green* (*The Kinks Are the Village Green Preservation Society*, 1968).

If it gets you down.
Dreams often fade and die
In a bad bad world.
I'll take you where real animals are playing.
And people are real people, not just playing.
It's a quiet, quiet life,
By a dirty old shack,
That we called our home.
I want to be back there,
Among the cats and dogs,
And the pigs and the goats
On Animal Farm, my animal home.[18]

Just sitting down by the riverside
Spreading my arms to the open wide
Now I am free and the world's at my feet
I can close my eyes
Oh Lord, keep me warm, keep me satisfied
Please keep me calm, keep me pacified
Now I'm content and my life is complete
I can close my eyes
Sitting by the riverside with you
I love sitting down by the riverside
Watching the water go flowing by
Oh, golly gee, it is heaven to be
Like a willow tree
Spend my time
Just drinking wine while looking at the view.[19]

Camerini talks mainly about the nature violated by urbanization and industrialization; in his narrative animals replace humans (or they help individuals who do not accept the status

18. *Animal farm* (*The Kinks Are the Village Green Preservation Society*, 1968).
19. *Sitting by the Riverside* (*The Kinks Are the Village Green Preservation Society*, 1968).

quo) and turn into guerrillas fighting the capitalist system to aid weakest workers, outcasts and poor people. This plot device is not new, but transfers in the musical context a long tradition aimed at making animals more and more humanized. Pop culture played a major role in this process: we can cite cartoons such as *Mickey Mouse* (1928), *Donald Duck* (1934), *The Yoghi Bear* (1958), *Looney Tunes* (1930-1969)... up to Japanese anime (*Maya the Honey Bee*, 1975; *Doraemon*, 1973/1979-2005; *Pom Poko*, 1994...) and very successful feature films (*Madagascar*, 2005; *Kung Fu Panda*, 2008; *Zootopia*, 2016...). Camerini's vision is certainly influenced by the animal-rights movement (in Italy, in 1977, the Lega anti-vivisezione/Anti-Vivisection League was founded and began to spread the demands of animal liberation)[20] and by the Italian socio-political context (the 1970s were a decade of intense social tensions and terrorist actions by far-right and far-left organizations):

> Quando fu per tutti chiaro che il prezzo troppo amaro era la totale distruzione, la completa alienazione
> E che la giungla tropicale, paradiso naturale stava ora diventando una metropoli infernale
> Ma gli uccelli della jungla, tutti colorati e belli, stanchi di subire decisero di agire
> E con i pesci e gli animali dei fiumi un tempo chiari, cercarono alleati come loro violentati
> Con le amazzoni del fiume, alleate con la luna, l'obbiettivo era comune
> La via di uscita solo una
> Perché avevano deciso di cercare il paradiso e perché avevano rifiutato il massacro organizzato.[21]

20. See Singer 1975; Cochrane 2012.

21. *La (s)ballata delle Amazzoni* (*Gelato metropolitano*, 1977): «When it was clear to all that the price too bitter was total destruction, the complete alienation / And that the tropical jungle, natural paradise it was now becoming a hell metropolis / But the birds of the jungle, all colorful and beautiful, tired of suffering they decided to act / And with the fish and animals of the once clear rivers, they sought allies like them raped / With the river

Nella jungla infernale, totalmente devastata dal veleno artificiale
Dove l'acqua è inquinata e la pioggia colorata, la legge accecata
Dove nulla ha più sapore, chi non ha i soldi muore
C'è una banda di banditi, così vengono chiamati, perché hanno rifiutato
Questa legge, questo stato [...]
Ma una banda di ladroni, erano quaranta
I padroni della jungla inquinata
Totalmente devastata rubavano la terra
Ammassavano quintali di tesori naturali per poi vendere la guerra
Senza lasciare niente ai locali, povera gente, indios mal pagati, operai incatenati
Per poterci controllare e per non perdere il potere.[22]

In essence, the narratives of Kinks and Alberto Camerini can be ascribed to that movement of countercultural inspiration which proposes the return to a social organization closer to the pre-industrial model as the only way to reconcile human beings with nature. The reversion to a more natural dimension in which *Homo sapiens* ceases to exploit intensively animals and nature is considered the essential premise to avoid the risks associated with the irremediable depletion of natural resources and a probable ecological suicide of humanity itself.

It would be interesting to figure out if the artists at that time perceived themselves as part of a dilemma that was hard to solve (and still is): the pressing call to put back the clock of progress came from someone who belonged to an industrial sector – that

amazons, allied with the moon, the goal was common / The way out was only one / Because they had decided to seek heaven and because they had rejected the organized massacre».

22. *Ali Babà nella Jungla* (*Gelato metropolitano*, 1977): «In the infernal jungle, totally ravaged by artificial poison / Where the water is polluted and the rain coloured, the law not respected / Where nothing tastes better, the poor die / There is a gang of bandits, so they are called, because they have refused / This law, this state [...] / But a band of thieves, forty / The masters of the polluted and totally devasted jungle, they stole the land / They amassed tons of natural treasures to then sell the war / Without leaving anything to the locals, poor people, poorly paid Indians, chained worker / They control us in this way not to lose their power».

of the record industry, so execrated by a philosopher such as Theodor W. Adorno (1990, 2002) for having allowed the trivialization of art through its reproducibility in series – that it would never have assumed the scale acquired in the second half of the XX Century without the affirmation of an economic system based on mass consumption (music albums and the technological devices for their home reproduction have represented a significant share of those consumptions, to which must be added the merchandise and live concerts). This essay does not pursue this objective, but it would be very intriguing for the understanding of the processes by which ideas circulate to study the contradictions and the inconsistencies between the ethical and moral contents of narratives and their narrators, whose status and social role depend strictly on the commercial success of their products (in this case their songs). In short, their chance to express their ideas to a wide audience is directly proportional to the success they achieve within a society that is organized around consumption. For these reasons it is difficult to discern whether their countercultural vision is the result of a sincere social criticism or if it is only an attempt to introduce into the music market products able to satisfy a specific segment of the audience already in agreement with the ideas of environmental movement[23]

23. After a few decades in which interest in ecological problems had significantly decreased, the alarm for climate change is fueling a new wave of environmental commitment within the Italian music scene. It is a scenario similar to that of the 70's and today as at that time it is difficult to discern how sincere this commitment is, or if it is a *race* to appear aligned with politically correct thinking. Just a few examples: in 2019 the indie rock group Eugenio in Via Di Gioia released an album titled *Natura Viva* (*Living Nature*), while in 2022 Marlene Kuntz, one of the most important bands of Italian indie rock, released the lp *Karma Clima* (*Karma Climate*); the songwriter Bernardo Sommani opens his 2024 album *((onde))* with the song *Salvare il pianeta* (*Save the planet*) focused on the hypothetical disappearance of humanity due to climate change. The most interesting example is that of the ensemble Stato Brado (Alessio Vanni, Lorenzo Valdesalici, Lorenzo Marra, composers and sound designers) which in 2024 published the album *Canzoni contro la ragione* (*Songs against the reason*). In their songs returns that dichotomous approach (progress vs nature) already met in Camerini. An effective example is the song *Capre* (Goats) in which the first part describes the alienated and neurotic life imposed by technology and dynamics typical of urban contexts, while the second tells the liberating and thaumaturgic power of the return to rural life:«Facebook, Reddit, Series, Bed, Wake up, I

4. Anti-Science and Healthism as Expression of Political Action

During the 1970s, countercultural movements brought to light anti-science attitudes characterized by a preconceived hostility to conventional lifestyles. The main cultural references were naturism and healthism. The first was intended as an attitude of respect for the environment and was based not only on the refusal of the mandatory use of clothes considered oppressive of human naturalness, but also on the adoption of lifestyles considered closer to nature such as vegetarianism and veganism. The second, influenced by individualism and post-materialism, was characterized by a growing focus on body care and by attitudes considered more ecological such as choosing vegetarian and vegan food styles with a preference for organic foods. Both gave great importance to alternative medicines such as homeopathy, ayurveda, Steinerian medicine, shamanic therapies. The counter-cultural criticism did not spare official medicine, which was challenged through the dissemination of arguments without any scientific basis presented as perfectly credible and alternative to official science. As more people turned to alternative lifestyles, they became convinced that natural hygiene, proper nutrition, and practices like fasting were sufficient to prevent diseases.

A role in the spread of certain attitudes must be assigned to the more radical thoughts of political ecology (Adré Gorz, Serge Moscovici, Ivan Illich) that considered positivism and materialism deeply anti-ecological. In particular, Ivan Illich developed a radical critique of social institutions in the fields of economy, education and health that he considered part of the consumer ideology

tremble, Wake up, Street, Crammed people, Street, Hunger, I Run, All Run, Escape from who, from what, since when [...] I'm alone, I cry, I scroll down the others, I, The others, I lie down and scream, I open the fridge, I drop drops, And they go down; And one day home, Wheat, Bread, All, Endless songs, Evenings full of life, Running, And wine in the veins, Endless views, Fairs without borders, And above only flocks, Woods, Herds, And ferns along the sides, You lying in sacred things, Like summer flowers, And goat shit» (the original lyrics are in Italian, English translation by the author).

that, creating artificial needs, destroyed any equilibrium between human beings and nature. In his book *Medical Nemesis* (1975), Illich argued that the medical guild had become a major health threat. According to him, the professional management of medicine had reached epidemic proportions and was producing a real disabling effect. Illich stated that medicine was a threat to health as traffic was a menace to mobility and the binomial represented by education and media was a peril to learning. He believed that there was a crisis of confidence in medicine which would allow citizens to claim control over health decisions.

In Italy, at the beginning of the 70s, the physician Giulio Maccacaro (director of the Institute of Biometrics and Medical Statistics of the University of Milan) promoted public campaigns for a medicine more open to social participation and the right of every citizen to be treated in the best way. According to Maccacaro, many medical practices were an integral part of the system of social control and were promoted to favour the interests of capitalism (especially large pharmaceutical corporations)[24].

In the narratives of Kinks and Alberto Camerini we find all these topics. As suggested by the lyrics of the songs already mentioned, these authors assign to the concept of health/well-being three meanings: as freedom from power and its control over individuals; as rejection of lifestyles imposed by urbanization; as a form of approach to nature through the choice of healthy lifestyles.

The issue of social control is perceived most by the Kinks who stigmatize the new salutist rituals (the growing use of diets and the emerging craze for fitness) as new social obligations imposed by conformism:

24. See the letter sent by Maccacaro to the president of the Order of Physicians and reported in the Italian of the book by Jean-Claude Polack *La Medecine du capital* (F. Maspero, Paris 1971). See also Maccacaro 1971. On the criticism of medicine see Krause 1972; Crawford 1980.

Fat Flabby Annie was incredibly big
She weighed just about sixteen stone
And then a fake dietician went and put her on a diet
Now she looks like skin and bone
She looks like skin and bone
Do the meditation and yoga
And she's thrown away the good food guide
And she's given up the alcohol and pizzas
And the pies and now she looks as if she's ready to die [...]
If you look flabby
And you feel overweight,
And you wanna lose a couple of stone,
Take a crash course diet do your daily exercises
And you'll look like skin and bone.
Come on rattle them bones,
Put your hands up to the ceiling,
Bend your hips and touch your toes,
Do your daily exercises,
You're gonna look like skin and bone,
Don't eat no mashed potatoes,
Don't eat no buttered scones
Don't eat no carbohydrates
You're gonna look like skin and bone.[25]

Camerini is closer to countercultural issues and uses the dichotomy between healthy food and junk food to emphasize the harmfulness of capitalism and also to highlight how healthier lifestyles are connected to greater economic well-being:

E se penso all'allegria che mi da un'amica mia,
con i suoi vestiti bianchi, i suoi sorrisi colorati
quando dice di volere un corpo bello, equilibrato
mangia solo cibo naturale con amore cucinato.

25. *Skin and Bone* (*Muswell Hillbillies*, 1971).

Ma se cerchi di andare al di là dei suoi vestiti a fiori e seta
dei suoi giochi, dei suoi soldi, per l'equilibrio del pianeta
lei si alza sorridendom e dice "ciao" e poi va via
dicendo "scusa ognuno ha il suo karma in fondo non è colpa mia"
[...].

Un amico mio, un compagno, un bravo rivoluzionario,
un tipo serio, intelligente e preparato
troppo preso dai problemi della Crisi dello Stato,
di sé stesso e del suo corpo sembrava essersi scordato.

Ma il fegato dimostra ogni giorno quel contrasto
tra i suoi nervi tesi e quel sorriso suo mai rilassato
o è il veleno che non ben ha digerito dopo il pasto
ma il colore del suo viso che sembra essersi ingiallito.

Uova plastificate, liofilizzate, gente mineralizzata biodegradata
carne inscatolata gelatinizzata deproteinizzata,
supermarketizzata
mangia verde artificiale, devitalizzato, clorifilizzato,
superindustrializzato
frutta sciroppata supercolorata, dolce gomma artificiale, bilancia sbilanciata.[26]

26. *Pane quotidiano* (*Cenerentola e il pane quotidiano*, 1976): «And if I think of the joy that gives me a friend of mine, / with her white clothes, her colorful smiles / when she says she wants a beautiful, balanced body / eats only natural food with love prepared. / But if you try to go beyond her dresses of flowers and silk / of her games and of her money, for the balance of the planet / she gets up smiling and says "hello" and then leaves / saying "sorry everyone has his karma it's not my fault" / [...] A friend of mine, a comrade, a good revolutionary, / a serious guy, intelligent and prepared / too busy with the problems of crisis of the state, / of himself and his body seemed to have forgotten / but the liver shows every day that contrast / between its tense nerves and that his smile never relaxed / or is the poison that has not well digested after the meal / but the color of his face which seems to have turned yellow / Eggs plasticized and lyophilized, biodegraded, mineralized people / jellied tinned meat deproteinized, / supermarketized / eat artificial green, devitalized, chlorophyllized / superindustrialized / supercolored syrup fruit, sweet artificial rubber, unbalanced kitchen scales».

Figure 2. *Cover of the album* Cenerentola e il pane quotidiano *(Cramps, 1976) in the reprint on cd On Sale Music.*

In Alberto Camerini appears a political use of the anti-science issues. Science is considered nothing more than a branch of capitalism: medicine is used as a metaphor for social control, as a means to monitor people's emotions; whereas, on the contrary, alternative cures and direct contact with nature represent liberation from conformism and alienation:

> L'ospedale che è l'industria nazionale
> si approfitta se stai male
> ci sono fabbriche di pillole e ce n'è una anche per te,
> la ricetta è molto semplice
> e poi non ci pensi più
> aiutami dottore non ce la faccio
> più, droga per favore
> la medicina che mi tira su.
> Lei che è sempre super-insoddisfatta
> forse è stata avvelenata da tutti quei pensieri
> le notti bianche i giorni neri
> e paga lo psicanalista
> e al dottore si è assuefatta, al suo medico stregone

e la ricetta l'ha calmata
psicoanalisi avanzata
sonniferi, compresse, calmanti colorati.
Ha provato i barbiturici e le pillole eccitanti anfetamine chimiche, anestetizzanti
e ha buttato una follia in quella farmacia ma la sua strana malattia non è andata via
ma il suo corpo avvelenato che la chimica ha alterato, la medicina ha devastato
l'equilibrio squilibrato
aiutami dottore non ce la faccio
più, droga per favore
la medicina che mi tira su.
Ma l'equilibrio è molto più importante
hai provato la natura, erbe amore e agopuntura
è una nuova medicina forse è un'alternativa
contro l'intossicazione, ci vuole cura ed attenzione
tu invece non ci pensi mai.[27]

5. Some Final Remarks

As the narrations of the Kinks and Alberto Camerini demonstrate, pop culture is very quick to take over social and political issues

27. *Droga, aiutami dottore* (*Cenerentola e il pane quotidiano*, 1976): «The hospital that is the national industry / takes advantage if you are sick / there are pill factories and there is one for you too / the recipe is very simple / and then you don't think about it anymore / help me doctor I can't do it anymore, / drug please / medicine that lifts me up. / She who is always super-unsatisfied / maybe she was poisoned by all those thoughts / the white nights, black days / and pays the psychoanalyst / and she is addicted to the doctor, to her doctor sorcerer / and the recipe calmed her / advanced psychoanalysis / sleeping pills, tablets, colored calmants. / She tried barbiturates and stimulant pills, chemical amphetamines, anesthetics / and has thrown a lot of money in that pharmacy but her strange disease did not go away / but her poisoned body that the chemistry altered and medicine has devastated / and made unbalanced / help me doctor I can't do it anymore / drug please / medicine that pulls me up. / But equilibrium is much more important / you tried nature, love herbs and acupuncture / is a new medicine maybe an alternative / against intoxication, it takes care and attention / you instead never think about it».

such as the ecological crisis. Another characteristic of pop narratives is that – being inserted in a countercultural context – they portray the unconventional, heterodox, alarmist and catastrophist sides of the problems they choose to talk about.

This presents two kinds of problems. The first concerns the contents conveyed: it is difficult to trace back to the sources used by the protagonists of pop culture, but it is conceivable that they will learn about the issues through the mass media which are a secondary source already widely manipulated; it seems less likely that they can have direct access to scientific literature. This means that the broad public who enjoys pop culture products absorbs these narratives characterized by alarmist and anxiogenic tones, very often without having any knowledge of the complicated scientific contents.

The second problem is the great disproportion between the protagonists of pop culture and scientists/experts.

The research project of which this essay is a side-result[28] has shown that scientists able to play an opinion-leading role have been few in number. In the years studied (1950-1990), even in Italy the most influential were a handful of US scholars: Barry Commoner, the System Dynamics Group led by Donella and Dennis Meadow and, to a lesser extent, Rachel Carson, Paul Ehrlich and Garrett Hardin. The ability of Italian scientists to influence political and social dynamics has always been very modest. More generally, experts remain essentially invisible in the public space because their concrete and practical work does not create news capable of attracting a mass audience, depowers sensationalist pseudo-truths and is also opposed to the more radical fringes of the environmental movement (as it happens for vaccines and vivisection). On the contrary, the protagonists of pop culture (especially musicians, actors and film-makers) have a great visibility and are

28. The results of the research project (of which the first chapter of this volume is a first summary) will be published in open access in the following book: Federico Paolini, Francesco Sanna, *Gli scienziati, gli esperti e l'ambiente. Il caso italiano, 1950-1990* (*Scientists, Experts and the Environment. The Italian Case, 1950-1990*), FrancoAngeli, Milan 2025.

able to reach hundreds of thousands (and very often millions) of people.

At least for the topics studied in our research project, this clear mismatch means that, in the public space, opinions are not guided by scientists or experts who know the issues thoroughly, but by artists, entertainers and media professionals who offer emotional and subjective interpretations[29]. That affects the decision-making process because political parties and governments – in an effort to seek consensus – make choices that prefer to comply with public opinion rather than take into account scientific knowledge and the intricate dynamics that manage socio-economic processes[30].

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29. On the relationship between pop culture and communication strategies see Eco 1963, 1964; McLuhan 1964, 1967; Greenfield 1984; Bourdieu 1996; Sartori 1997; Burke 2012. Sartori's analysis is particularly interesting: concerning the leading role taken by people not endowed with specific knowledge, the Italian political scientist spoke «of sorcerer apprentices of post-thinking».

30. A case debated in Italy was the so-called Di Bella method: an alternative therapy for the treatment of cancers, lacking scientific evidence about its foundations and its effectiveness. Conceived by the doctor Luigi Di Bella, between 1996 and 1998 it was the subject of a great deal of attention from the Italian mass media. In 1977, Di Bella devised a multitherapy based on somatostatin: he stated the cure would be effective against so-called solid tumors because it could prevent the formation of metastases. In 1996 the National Cancer Commission reported that Di Bella therapy was without scientific validation. An association of patients, however, began to exert strong pressure so that a judge ordered the free supply of medicines necessary for therapy. The association's demand was also supported by some political parties (Alleanza Nazionale, Forza Italia, I Verdi) and a consumer movement (Codacons). In 1999, a research conducted by the Ministry of Health confirmed the therapeutic ineffectiveness of the Di Bella method. The ineffectiveness was again confirmed in 2005 by a study of the Consiglio Superiore di Sanità (Superior Council of Health).

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