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## **The good, the bad and the ugly: Framing debates on Nature in a One Health community**

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## **Abstract**

Originating in medical and veterinary spheres, the One Health concept stands as an open call for collaboration also between these disciplines or professions and those of environmental and social science. However, the communities of practice in question show uneasy or under-developed collaborations, due to a variety of factors. We argue that an important factor is the way issues are raised and questions are formulated, i.e. their framing. Based on complementary perspectives on health and knowledge, this overview provides an inter- and trans-disciplinary analysis of the role of the framing of « nature » in One Health discourses as a barrier or a facilitator to collaboration, as revealed by the scientific literature. We find that the lack of reflection by scientists about the framing under which they operate appears as a major factor of misunderstanding between disciplines, and a barrier for inter- and trans-disciplinary solutions to improve management of health risks and benefits. Hence, to build such solutions, framing will have to be a conscious and repeated step in the process, acknowledging and explaining the diversity of viewpoints and values. The interdisciplinary dialogues inherent in this process promote translation between scientific domains, policy-makers and citizens, with a critical but pluralistic recourse to various framings of health risks and benefits associated with nature, and a deep awareness of their practical and ethical consequences.

## **1. Introduction: Needs and approach**

The One Health concept stresses the complex intertwining of human health, animal health and the state of ecosystems, then also termed “ecosystem health” (Zinsstag et al. 2015a). These three domains then appear as constituting one single health, in a shared world with shared risks and benefits (Rabinowitz et al. 2008). Fitting within a theoretical framework of complexity and fueled by strong concerns about present trends in health risks emergence, it may also be considered a sustainability-oriented approach of health, or a health-oriented approach of sustainability. To take into account these many interactions and interdependencies between the health of humans, animals and their environments, the One Health concept encourages collaborations between medical and veterinary sciences, as well as between them and social and environmental sciences (WHO-CBD 2015). Championed since 2010 by the tripartite between World Health Organization (WHO), World Organization of Animal Health (OIE), and Food and Agriculture Organization of the United Nations (FAO) (FAO-OIE-WHO 2010), this call for collaborations is aimed at academia and society at large, which is translated under the terms of interdisciplinarity and intersectoriality, respectively. The term transdisciplinarity further underlines the need to strengthen exchanges at the science-society interface (Zinsstag et al. 2015a).

However, the inclusion of environmental science in One Health communities has proven weak (Destoumieux-Garzón et al. 2018; Khan et al. 2018). In this overview, we propose interdisciplinary perspectives on this experienced interdisciplinary barrier. More particularly, we base our argumentation on a proposed divide in the way nature or environment is considered, which is termed here “framing”, within the scientific communities involved. Discussing relevant literature, notably integrated studies of risks, benefits, decision-making and governance, we analyze this framing effect and discuss resulting needs and opportunities in integrative and comparative approaches to health, specifically from an epistemological and science-in-society point of view. As often in interdisciplinary work, terminology will be carefully clarified according to the authors’ intentions, since terms often cover different interpretations in different disciplines.

## **2. Is nature good or bad? An inconvenient conversation**

Speaking about emerging diseases with some medical or veterinary researchers, one might conclude somewhat bluntly that nature to them is a frightening danger for humanity, a reservoir for ever-more numerous and deadly diseases, bearing exotic names as Ebola, Nipah, Zika, Chikungunya or more abstract acronyms as MERS-CoV or SARS. As the conversation continues, soon the concept of an “interface” between human, animal and (natural) environment will pop up; an “interface” that soon proves to be some virtual place where deadly pandemic risks lie waiting for humanity. The emergence of Highly Pathogenic Avian Influenza (HPAI) in the early 2000s was the main trigger for this discourse and the institutionalization of One Health (Scoones 2010; Gibbs 2014). This view inspired

the common statement of the WHO, OIE and FAO on the need for inter-sectorial collaboration to manage “health risks at the interface human-animal-environment” (FAO-OIE-WHO 2010). Underlying these frameworks, is the factual assertion that the majority of human pathogens originate from animals (Taylor et al. 2001) and, more specifically, that 70% of emerging infectious diseases are coming from wildlife (Jones et al. 2008). Hence, the link between animal and human health appears based on what Rabinowitz et al. (2008) call an “us vs. them” perspective. This perspective is still the main driver of One Health development and institutionalization (Destoumieux-Garzón et al. 2018; Machalaba et al. 2018), as illustrated by the title of the 2018 Prince Mahidol Award Conference, i.e. “Making the World Safe from the Threats of Emerging Infectious Diseases”.

The fear for pandemics has been a strong driver for the One Health movement (Gibbs 2014), enabling fund-raising for research and other projects on infectious diseases in the developing world. The negative framing of nature as a source of danger – and a justification for obtaining funding – has gained wide acceptance among funding agencies and fund seekers for health projects. The response is clear: we have to shield off humanity from nature. This mindset strongly adheres to the prevailing “culture–nature divide” (Bakari 2014). This framing will be at best disappointing and most probably irritating to many nature conservation scientists and professionals (and most likely to some health science professionals, too), who were until then convinced that a healthy human would be “in harmony with a preserved nature”. This idea can be dismissed as “hopelessly romantic”, but in fact paradoxically feeds other threads of the One Health approach (Zinsstag et al. 2015a). It is rooted in the ancient history of classical medicine (Bresalier et al. 2015), and is becoming increasingly consensual among experts in its modern formulation (Gibbs 2014), calling for a shift in perspective from “us vs. them” to “shared risks” (Rabinowitz et al. 2008). This is in line with ecosystem approaches to health (Rapport et al. 1999), recognizing an inextricable linkage between humans and their environment as human-environment systems or social-ecological systems (SES) (Ostrom 2007).

### **3. Good, bad, both: Where’s the problem?**

The above-mentioned conversation is – unfortunately – not fully fictional and may be familiar to many researchers. It highlights the misunderstanding between the negative and positive framings of nature as an overlooked field of tension hampering the implementation of the One Health approach, which ideally requires the creation of added value by integrating various disciplines and skills (Zinsstag et al. 2015a). This dialogue may even become more complex since culture heavily influences the relationship between humans and animals and nature (MacGregor and Waldman 2017). For example, a dog is considered as impure in many Arabic cultures, but a companion or even a family member in western countries, and a consumption animal in others. However, while this diversity may be well identified when tackling diverse application contexts worldwide, within the scientific community the multiplicity of worldviews is often not recognized for the cultural divide it may cause.

A dominantly negative framing of nature can be detrimental to the implementation of a One Health approach if it discourages collaboration under this integrative framework. Divergences in views are indeed a common barrier to communication: conflicting views may lead participants to reject contributions from different domains, to inflate or downplay risks and benefits, while the motivation to win the argument can often introduce strong biases in scientific exchange (Lyytimäki et al. 2011; Keune et al. 2013a). Such an imbalance could further hamper opportunities for funding research and public health actions operating under a framing that is distinct from that of the call. Moreover, oversimplified communication about the link between wildlife and disease outbreaks can impact protected areas through *e.g.* altered visitor or community perception or through invasive management interventions like fencing or spraying (De Vos et al. 2016). Wildlife culling has also been a recurrent strategy to control diseases (*e.g.* Caley et al. 1999; Jenkins et al. 2010; ANSES 2015), raising questions regarding ethics and conservation, and regarding effectiveness and sustainability (Harrisson et al. 2010; Treanor 2013; Lederman 2016). Oversimplified communication also neglects the fact that parasites, being evolutionary products and actors in complex ecosystems, may have an ambivalent influence on their host's health: they serve as important bio-indicators and sometimes they even reduce pollutant concentrations in their hosts (Sures 2008). They can furthermore act as ecosystem engineers (Hatcher et al. 2012) and contribute to prevention of immune-regulated diseases (Guarner et al. 2006; Rook 2009; Weinstock and Elliott 2009).

Nature is supportive of human health through numerous ecosystem services (Hartig et al. 2014; WHO-CBD 2015), also coined "Nature's Contribution to People" (NCP) in a pluralistic approach to recognize the diversity of values (Pascual et al. 2017). Examples include waste management, water purification, air quality, pest control, all protective against a wide diversity of diseases. Certain health problems like allergies recently emerged from continuously shielding off humanity from nature (Hanski et al. 2012). Also, as now observed with the emergence of Lyme disease in temperate climates, awareness raising about ticks may discourage people from going for a walk, which conflicts with the health benefits of outdoor recreation (Donohoe et al. 2015). Similarly, ambivalent health effects of behavioral changes appeared in food risk management, where for instance the advice of limiting the consumption of key food sources (such as marine products) due to contaminants somewhat contradicts the benefits of balanced diets (Assmuth 2011; Lyytimäki et al. 2011). Therefore, systematically presenting wildlife and biodiversity as a threat to be eliminated or mitigated hampers global and integrated management of health and biodiversity. It might generate unexpected environmental and health problems in the long run.

Another strong example of a clash of different framings can be illustrated in the Sahel, where public health communication about Rift Valley Fever in Niger was perceived in an antagonistic way by local pastoralists (Kreuter et al. 2003; Torri 2012). The health messages were perceived as elements of a political campaign against their way of life. Therefore, under the concept of intercultural health,

initiatives should emerge to account for cultural diversity and work towards complementary visions of health, reflecting the western biomedical vision and indigenous knowledge on health and medicine (e.g. Torri 2012). This is illustrated in Chad, where transdisciplinary, participatory processes engaging mobile pastoralists, authorities and scientists contributed to mutual understanding and joint identification of health service interventions. In this way, transformational knowledge was created between academic and non-academic actors (Schelling et al. 2007).

#### **4. But what does (One) health mean?**

The dominant position of zoonotic infections in the One Health conceptual framework (*e.g.* Gibbs 2014; Degeling et al. 2015) does not concur with the definition of health by the WHO in its constitution (1946): « a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity », nor is it in line with the One Health concepts promoted by WHO, OIE, FAO or the Convention on Biological Diversity (CBD). Beyond these official statements, a large body of literature puts the concept of health under philosophical and ethical scrutiny (for an example under the One Health framework, see Houle and Cooke 2015). Apart from One Health, other approaches to health exist that are considered “holistic and interdisciplinary”, such as EcoHealth and Planetary Health. These differ in their contributing disciplines and core values (Lerner and Berg 2017). This obviously has its impact on how “nature” (under the form of animals, ecosystems, (parasite) biodiversity...) is valued throughout these approaches. Despite the wealth of perspectives on One Health, we propose that ultimately the concept amounts to considering that all living beings share common environments and that the health of humans and domestic or wild animals alike depends on these environments, including their biological, chemical and physical components. Beyond this common dependency on environmental and ecological conditions, health as an inherent and shared property of all living systems underlines the relevance of the notion of One Health. Hence, there is a conceptual, theoretical, methodological (by cross-fertilization of knowledge) and even symbolic justification for One Health. Within the One Health approach, the concepts of human health, animal health, and ecosystem health should be considered together.

Regarding animal health, present western societies tend to adhere to a concept similar to that formulated by the WHO for humans. Health of (domestic and wild) animals is thus considered a state of wellbeing (physical, mental and social) that has to be pursued in its own regard, and not simply as a factor of utility or safety for humankind (Nicks and Vandenheede 2014). In line with this opinion, animals may be rather referred to as “non-human animals” (*e.g.* Singer 1993; Whittaker 2015). However, the main driver of animal health actions currently remains their utility for humans, under the concept of “veterinary public health” (Stewart et al. 2005).

The present One Health frameworks may address a range of environments, more or less modified by human activities (*e.g.* agriculture, forest exploitation, industrial development) but always including

natural components, which might be “in health” or not, thus justifying our present focus on the term “nature”. Hence, so-called “ecosystem health” may be thought of along two main threads. One considers it under the scope of “ecosystem services” (in the agricultural sector among others, this would mean “multifunctionality”, see Brunstad et al. 2008), strictly relating to utility to humankind, and potential substitution by other service providers. The second line of thinking defends the duties of man towards nature, stressing the need to respect nature or at least minimize negative impacts on nature. This approach to health is often expressed in terms of integrity and resilience of biological systems (notably ecosystems). Especially the resilience concept overlaps with the aspect of multifunctionality, while also stressing the ability to recover and regenerate. Another overlap in frame is the notion that by protecting and caring for nature also humans can be protected, or even that *only* by protecting ecosystem integrity can humans thrive, *i.e.* they share at least some goals, and nature – like non-human-animals traditionally – can thus also function as a sentinel of human health. The human responsibility towards the natural world often finds – albeit not always unequivocally – its origins in philosophical or religious traditions, Buddhist, Christian or animistic (Negi 2010; Kongsak 2012; Francis 2015), and also in *e.g.* Hinduism, Islam, Sikhism, Jainism (Andhra Pradesh State Biodiversity Board 2006). These perspectives further refer to the multitude of framings of nature and conservation itself, such as the different emphases between “nature for itself”, “nature despite people”, “nature for people” and “people and nature” proposed by Mace (2014), or, more recently, humankind as steward for evolutionary processes (Sarrazin and Lecomte 2016). The multitude of different normative views of nature, as exemplified earlier with the case of the dog-human relationship, makes it impossible to identify one common view. Hence, facing action needs in intercultural contexts, a self-reflexive attitude will be needed to clarify the perspective from which a human-animal-environment issue is tackled (Zinsstag et al. 2015a).

## 5. What exactly is framing and why does it matter?

Framing, simply stated, refers to the particular ways in which an issue is interpreted and represented (Hugé et al. 2017). It consists in setting the boundaries of an issue, deciding the particular perspective to adopt for its resolution. Far from being trivial, framing is a crucial step in tackling complexity (Cilliers et al. 2013; DeFries and Nagendra 2017; Keune and Assmuth 2018), which characterizes the scope of the One Health concept. Setting the scene to take action, framing is also described as a key part of participatory decision and policy-making processes (Fish et al. 2016). The controversial dimension of topics involving health and environment implies that the wording of a research and/or policy question entails a set of *a priori* value-laden statements, either knowledge or beliefs, which may allocate a higher weight to the “negative” or the “positive” roles attributed to nature. With regard to research priorities and to management and governance, a particular framing reflects norms, social



conventions and constraints that define which actions are acceptable in a specific context (Phillips et al. 2004; Assmuth et al. 2010).

Framing nature in the One Health context is akin to the even more basic issue of framing health itself: do we aim at favoring health or at preventing and controlling diseases? The difference between these two framings is firstly a matter of scope of the approach or restrictiveness of the concept of disease, even more if it refers to infectious diseases. More crucially, these framings call for different actions. Hence, the negative framing of “diseases” calls for a policy of preparedness, prevention, epidemiological prediction and mitigation, acting on what Degeling et al. (2015) call the “necessary and proximal causes”. On the other hand, the positive framing of “health” rather calls for long-term actions on structural promoters of health (i.e. social and environmental drivers) (Kelly et al. 2009). Hence the involvement of environmental scientists and professionals is expected to be easier in a framing of health than in one of disease. However, that even under a framing dominated by diseases and threats, the introduction of environmental sciences, especially ecology, is a facilitator and important thinking school to develop a systemic and holistic approach, also conducive to considerations on such structural promoters of health (Destoumieux-Garzón et al. 2018).

The importance of framing lies in its influence on subsequent decision-making. Indeed, behavioral economics highlights the influence positive or negative framing exerts on individual decision-making and cooperative choices (Tversky and Kahneman 1981; Andreoni 1995; Kotani et al. 2014). Hence, according to these insights, the framing resulting from the mainstream perspective or focus of a discipline will directly influence the way decisions are made within that discipline. In their seminal works, Tversky and Kahneman (1981) analyzed public health decision-making in an experimental setting. The choice submitted to participants contrasted two options differing in the certainty of their outcome: one option resulted in a certain outcome while the other resulted in a probability of obtaining that outcome. Expressing the latter outcome as a number of saved lives or deceased people influenced the decision, despite the equivalence between both situations: the certainty option expressed positively (number of lives saved) proved attractive, the very same option expressed negatively (number of deaths) proved repulsive and the probabilistic outcome was then more often preferred. It appears that negative framings can hence lead to more risky decisions. Funding decisions might be such risky decisions stimulated by negative framings, as highlighted above. Regarding the cooperative or non-cooperative choices – which may be paralleled with interdisciplinarity *versus* monodisciplinarity – the strongest impulse for cooperation is generally given by positive framings (Andreoni 1995). More recently, Kotani et al. (2014) brought an additional insight by differentiating between people with an *a priori* cooperative versus individualistic attitude: the former proved more cooperative under a negative framing while the latter cooperated more under a positive framing. The authors explain this puzzling finding by the possibly stronger commitment of cooperative people when facing a common danger.

Individualistic people, in line with the general case first shown by Andreoni (1995), would better cooperate when stimulated by a positive vision of the task or challenge.

Economics further provide clues on the motives behind a negative or even catastrophic framing of health risks. Indeed, people tend to ascribe lower importance to outcomes in the remote future, which is accounted for in project evaluations by applying a corrective factor on monetary flows, called “discounting of utility” (Samuelson 1937). By lowering the weight of future gains and costs in decision-making, this discounting minimizes the weight of sustainability concerns in public decisions and puts a strain on present investment for conservation (Dietz and Neumayer 2007). In this regard, framing environmental issues as catastrophes and major threats, such as emerging diseases, contributes to a perception of emergency among decision-makers and among the wider public regarding behavioral change. Two cognitive biases in decision-making are relevant here, as studied by Kahneman and Tversky (1979). First, losses are perceived more acutely than gains, meaning that the possibility of smaller losses may outweigh that of larger gains. Second, low probabilities are commonly overestimated, which in the present case leads to overestimating the importance of a topic like “emerging pandemic threats”. Moreover, negative framings are known to be stronger psychological attractors (Bolls et al. 2001; Ferreira et al. 2011). These fundamentals are exploited by a line of research on panic effects in decision-making and behavior (Lerner et al. 2015). Nevertheless, it may be proposed that decisions spurred by a framing of alert and emergency will tend to favour actions with rapid expected results (e.g. vaccination campaigns). In a context of financial resource scarcity and allocation choices, this may be at the expense of more long-term oriented actions (e.g. more sustainable land use), which would have needed a distinct framing to be pushed forward.

## **6. Framing and positional objectivity: What is true? How do we make decisions?**

There is ample evidence supporting the medical and veterinary approach to the environment as a reservoir of risks: many health risks do originate from wildlife. Conversely, an ecological approach may capture the natural processes involved, but be limited in considering human or animal health. All of these may overlook key societal aspects of health risks and benefits from nature to various groups of organisms. While Tversky and Kahneman (1974; 1981) use distinct framings of logically identical situations to deal with uncertainty and bias in decision-making, the situations we are dealing with here are complex, with a diversity of views on a diversity of realities, thus involving ambiguity besides uncertainty. Indeed, at the heart of a critical perspective on complexity lie fundamental questions about the status of meaningful knowledge, for which no unambiguous criteria exist. Hence, the complexity framework acknowledges the possibility for different descriptions of a same system to co-exist, accepting that all knowledge is provisional and entails normative choices and ethical and political issues (Cilliers 2005).

In his epistemological work, Sen (1993) introduced the idea of positional objectivity, according to which an observation may be recognized as objective when it is shared between several observers standing in the same position (*e.g.* resorting to a same scientific discipline). Their observation is then said “positionally objective” and may contradict, or differ from, positionally objective observations made from other positions. While each positionally objective view may be useful, when considered separately, they may lead to mistakes due to the biased perspective of the position. The main issue is not to assess the impact of logically equivalent (*i.e.* having the same truth-value, that is, being verified by the same facts) framings on decision-making, but to deal with descriptions having different truth-values (*i.e.* being verified by different facts and actors). Considering the abovementioned divergence in thinking between medical, veterinary and environmental sciences, Sen’s positional objectivity would help in raising awareness among practitioners about the incompleteness of their view, notwithstanding the truth-value of their assertions when taken in isolation. This means that what is considered by many life scientists or health professionals as philosophical considerations out of their own scope of interest, should be better taught to students in life science and health curricula. Especially for medical and veterinary professions, we here propose that fundamentals of epistemology would benefit students, by helping them to question the validity of the knowledge that underlies an ethical action.

In translating these epistemological considerations to One Health, to avoid potential mistakes in management and research actions, one has to cross the limits of the positional observation, *i.e.* enter in a “transpositional dialogue”, more widely called interdisciplinarity, although various understandings of the term may differ (Choi and Pak 2006; Zinsstag et al. 2015a). This dialogue requires translation between researchers, as already stressed, but also between research and applied fields of policy and practice, as called for in the One Health framework under the term of transdisciplinarity (Zinsstag et al. 2015a). This introduces additional challenges of reconciling value judgments and world-views besides facts (Putnam 2002). This can be approached *e.g.* by Habermas’ communicative rationality (Skollerhorn 1998). Along this view, a dialogue basically needs a democratic procedure, in which views and arguments may be expressed without threats of repression, in order to yield rational decisions and actions. This social learning process, involving a diversity of communities (scientists from different disciplines, policy-makers, citizen movements), should genuinely aim at solving life-quality issues.

This agrees with a view of complexity as being – to a large extent – negotiated (Keune et al. 2013b). Key issues in this negotiation are then i) tolerance of diversity regarding types of information and actors that play a role in the decision-making process, ii) how to deal with uncertainty and complexity, difference of opinion, and the weight of a vast amount of information processed and deliberated in the decision support procedure. While this negotiation should come to decisions and actions, these will not be final, as arguments will evolve and knowledge will progress (Skollerhorn 1998). Hence,

gaining knowledge about complexity will be as important as the challenge to act based on limited knowledge (Keune 2012), the interpretative nature of knowledge being closely related to normative choices, ethical issues, and political issues.

## **7. Framing nature in One Health: consequences for action**

The One Health approach has proven beneficial in tackling challenges such as the pandemic threat of avian influenza and neglected zoonoses (Okello et al. 2011; Gibbs 2014). Moreover, its utility is not only demonstrated for the surveillance of zoonotic outbreaks, but for fundamental research, biodiversity conservation and health policy. However, challenges remain in upscaling and sustaining One Health beyond a reactive approach and beyond specific outbreak cases (Kelly et al. 2017). While One Health is often and rightly presented as economically beneficial, through cost-sharing and synergies in action (Zinsstag et al. 2015b), we believe that many potential benefits lie at the analytical level and in enriched conceptual frameworks (Godfroid et al. 2013; Binot et al. 2015). However, the One Health concept often remains a promise due to barriers in collaboration (Gibbs 2014). Yet, the cooperative behavior of practitioners and scientists depends on their expectations, themselves under multiple influences, including the issue's framing. The framing of nature in funding calls for health research will influence scientists, who will in turn influence the main messages delivered to society and to research policy-makers, who in turn devise funding calls. This feedback loop reflects the intrinsic complexity of framing. The role of policy may be to modify actors' expectations in agreement with a desired behavior (Nyborg et al. 2016), which may also be a role of scientific production and communication. Co-construction of and brokering on knowledge in an array of fields, notably ecology, human health and veterinary science but also social sciences, will thus be needed (Assmuth and Lyytimäki 2015). Typical desired behaviors under One Health may be reduction of antibiotics or bushmeat consumption, and enhancing collaboration between environmental, health and social sciences across professional sectors. Acknowledging the role of framing in implementing One Health is key, since it goes beyond the vertical deadlock created by interdisciplinary misunderstanding and vested interests, be they corporate (Gillmore and Fooks 2012) or economic, as well as unconnected expertise (Hall 2005). Framing is a crucial stage of dialogue building shared representations and interests between actors with a common challenge.

Also pertaining to the process of framing, the importance of narratives and storytelling in health behavior was proposed from experimental psychology (Rothman et al. 1993; Hinyard and Kreuter 2007). Storytelling moreover proved important for intercultural communication (Christensen 2012). Given the behavioral and intercultural dimensions described above, the potential of storytelling together with communication technologies within the One Health framework requires further investigation, for application across the scientific community, at the science-policy-society interface and to explore the human-nature bond (Lapinski et al. 2015).

Considering nature only as a reservoir for pathogens and vectors has led to a partial and biased understanding of ecosystems (Thompson et al. 2010) and to potentially unsuitable strategies. Conversely, a positive framing of nature in health, stressing the interlinkage of human and animal health in shared ecosystems with shared risks (Rabinowitz et al. 2008), or viewing a healthy ecosystem as a buffer against pandemics (Epstein et al. 2003), may provide a framework for less anthropocentric and more holistic policies, in a renewed ethical thinking (Lederman 2016). Indeed, the lack of articulation between environmental ethics, public health and non-human ethics in the health sector rhetoric may weaken each of these components (Rock and Degeling 2015). What emerges here is a loop linking the One Health concept (calling for transdisciplinarity), framing of problems (allowing or impeding its implementation), and ethical thinking (influenced by transdisciplinarity and fueling health conceptualization and framing). This loop should be recognized and mobilized in the present dynamic of deeper inclusion of social and environmental sciences in the One Health community (Keune et al. 2017).

## **8. Conclusion and perspectives**

Dealing with One Health, public and animal health professionals often tend to focus only on diseases (and thus fear and risks), hence on disruption of the positive equilibrium that health fundamentally entails and targets. This maintains a misunderstanding between health and environment professionals, the latter usually acting under (or believing in) a positive framing of environment, biodiversity and nature, while the former may use a negative framing for the sake of getting funds and because they are also culturally convinced of this conceptual framework, in the name of saving human lives. Acknowledgement of the role of framing, as a continuous and iterative process of co-production throughout all stages of research, may contribute to more fruitful and inclusive One Health collaborations for the greater benefit of human, animal and environmental health, and more specifically global biodiversity.

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