Introduction

International standards have gained increasing prominence in the organisation of production and, more generally, markets and society. A recent example is the concern expressed by major trade unions about the International Standard ISO 45'001 on occupational health and safety, considered not at par with the existing Standards and Guidelines of the International Labour Organisation (ILO) [1]. The International Organization for Standardization (ISO) is only one arena among others that have acquired more recognition in setting a growing variety of technical specifications. Such new forms of governance in contemporary global political economy have elicited questions regarding who has access to such arenas, how decisions are made, and more broadly, how civil society organisations (CSOs) can provide input beyond ideas in such circumstances[2]. It indeed remains unclear how CSOs can truly participate in standard-setting processes, voice their concerns and be heard when they do so.

This is a core issue of what we call here technical diplomacy, the negotiating processes involving states and non-state actors to set specifications claimed to be based on scientific knowledge. A particular case in point is international standards set by bodies such as the ISO. International standards do not just bear upon narrow technical specifications for organising production, protecting consumers and facilitating international trade in domains such as measurements, performance and related effects of manufactured goods and services. Today their scope embraces non-physical fields including labour, environment, education, risk and security, plus all sorts of management systems and business models. Scholarship on new forms of regulation and global governance has emphasized that standards are a central component in the organisation of contemporary capitalism and examined how standard-setting processes privilege powerful actors with considerable financial resources and expertise, to the detriment of CSOs[3]. Such studies have provided major insights on how

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[1] ETUC, ETUC Resolution on ISO DIS 45001 Occupational health and safety management systems (Brussels: European Trade Union Confederation, 2016); ITUC, ITUC Statement following approval of the ISO Standard 45001 on Occupational Health and Safety Management Systems (Brussels: International Trade Union Confederation, 2017); ILO, *Guidelines on occupational safety and health management systems, ILO-OSH 2001* (Geneva: International Labor Office, 2001), section 3.10.1.1.d.

[2] Manuela Moschella and Catherine Weaver, eds, *Handbook of Global Economic Governance* (London: Routledge, 2013).

[3] Craig Murphy and JoAnne Yates, *The International Organization for Standardization (ISO)* (London: Routledge, 2009); Walter Mattli and Ngaire Woods, eds., *The Politics of Global Regulation* (Princeton: Princeton University Press, 2009); Stefano Ponte, Peter Gibbon and Jakob Vestergaard, eds., *Governing through Standards* (Houndmills: Palgrave Macmillan, 2011); Lawrence Busch, *Standards. Recipes for Reality* (Cambridge (MA): MIT Press, 2011); Leonhard Dobusch and Sigrid Quack, "Framing standards, mobilizing users: Copyright versus fair use in transnational regulation", *Review of International Political Economy*, Vol. 20, No. 1 (2013), pp. 52-88; JoAnne Yates and Craig Murphy, *Engineering Rules: Global Standard Setting since 1880* (Baltimore: Johns Hopkins University Press, 2019 forthcoming); Jean-Christophe Graz, *The Power of Standards: Hybrid*

standards exercise authority and in many respects reflect a democratic deficit; yet they often show a shallow understanding of the lack of inclusiveness in distinct socio-technical processes. For their part, science and technology studies (STS) have extensively untangled the authority of scientific and expert knowledge[4]. While emphasizing the heterogeneity and overlapping of lay- and expert-knowledge, they conceive the participation of CSOs in socio-technical processes as depending on explicit socio-technical controversies in local or national contexts. The possibility of mobilising CSOs seems much more complicated in the absence of such controversies, as in the daily work of technical committees of the ISO.

This article builds on this scholarship to develop a framework of analysis of CSOs' involvement in technical diplomacy and presents results from a project designed to support the involvement of CSOs in standards-setting procedures related to the ISO. We place particular emphasis on the co-production of socio-technical knowledge embodied in the distinct environment of standardisation. Callon and others have developed a sociology of translation providing insights on how lay- and expert knowledge comes across in distinct encounter points[5]. In this perspective, three moments are of particular significance: the framing of problems, the constitution of research collectives, and the final transposition of knowledge from the research collective to its broader recognition by society at large. Our analytical framework elaborates such moments of extended translation with a distinct focus on CSOs' participation in standard-setting bodies. The paper argues that CSOs' participation depends on multiple translation practices between lay- and expert-knowledge which affect the involvement of actors concerned, the pluralisation of knowledge brought into play, and a prospect of at least some influence on the outcome of the process. Empirical findings are based on a participatory action-research project led by the authors and funded by the University of Lausanne (INTERNORM) to pool academic and CSO participation in official ISO technical committees.

The remainder of the paper is organised as follows. Section 2 presents the methodology and introduces the INTERNORM project. Section 3 provides background on the rising prominence of international standards and the democratic deficit affecting standard-setting processes. Section 4 reviews the literature on new forms of power and regulation in global governance, participatory dynamics in expert arena, and science and technology studies of socio-technical processes. Section 5 builds on this scholarship to elaborate our analytical framework. Section 6, 7 and 8 provides empirical findings of the INTERNORM project by distinguishing the three translation practices between lay- and expert-knowledge affecting CSO participation in technical diplomacy. The conclusion wraps up the argument and draws larger implications, in particular of how its findings are likely to address the democratic deficit of technical diplomacy and current research in the field of international relations.

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authority and the globalisation of services (Cambridge: Cambridge University Press, 2019 forthcoming).

[4] Michel Callon, Pierre Lascoumes and Yannick Barthe, *Agir dans un monde incertain* (Paris: Seuil, 2001); Sheila Jasanoff, ed., *States of knowledge: the co-production of science and social order* (New York: Routledge, 2004); Madeleine Akrich, Michel Callon and Bruno Latour, *Sociologie de la traduction: textes fondateurs* (Paris: Presses des Mines, 2006).

[5] Akrich, Callon and Latour, *Sociologie de la traduction*, *op. cit.* ; Callon, Lascoumes and Barthe, *op. cit.*; Michel Callon, "Four Models for the Dynamics of Sciences", in Sheila Jasanoff, Gerald E. Markle, James C. Petersen and Trevor Pinch (eds.), *Handbook of Science and Technology Studies* (London: Sage, 1995), pp. 29-63; Michel Callon, "Des différentes formes de démocratie technique", *Les cahiers de la sécurité intérieure*, Vol. 38 (1999), pp. 35-52.

Methods

The INTERNORM project was conducted between 2010 and 2014 in Switzerland and funded by the University of Lausanne (UNIL) in the framework of a program called "Vivre ensemble dans l'incertain" (Living together in uncertainty). The overall framework of the program was to bridge academia and society at large in order to reinforce the understanding the ability to face structural transformations of the contemporary world. It explicitly required an action research methodology ensuring a participatory approach. In accordance with the participatory action research methodology, all selected projects adopted a dialogical approach that included in flexible ways a real participation from civil society likely to rebalance power relations[6]. While the concept of civil society is highly contested and far from tantamount to a homogenous social group, within the framework of the INTERNORM project, civil society was conceived more narrowly than in most studies in political science emphasizing the close relationship between the civil and political spheres. Civil society organisations were thus confined to not-for profit organised interests structured as formal associations, with no direct commercial stakes; political parties were also excluded.

The INTERNORM project was conceived as an interactive knowledge pool of academic skills and experience gathered by civil society organisations (CSOs), in particular consumer associations, environmental protection associations, and trade unions, with the aim of supporting the involvement of CSOs in standards-setting procedures. The action research design allowed INTERNORM to engage with the literature assuming that a lack of resources explains to a large extent the weakness of CSOs participation in such new forms of global governance arenas. It provided for additional key resources, such as knowledge, time and money, in order to explore their influence on complex participatory dynamics.

Responsibility for conducting the project was entrusted to a research team from UNIL whose main tasks were to initiate and develop discussion, in particular with the project partners, to facilitate access to standardisation documents and procedures, and to seek the required expertise to support the partner associations in their discussions on the standardisation work underway at ISO in the areas they themselves selected among a choice of potentially relevant technical committees. In a preliminary stage, a broad call for participation was made to CSOs active in various areas, inviting them to join the project and take part to international standardisation processes. According to the above-mentioned pragmatic understanding of civil society, the selection criteria used to define the CSOs likely to take part to the project were the following: 1) not-for-profit organisation with an associative structure; 2) membership with no commercial interests; 3) headquarters located in Switzerland. The research team also negotiated the membership of INTERNORM to the Swiss Standardisation Association (SNV), the Swiss ISO member body providing access to ISO technical committees. Finally, it conducted an analysis of standardisation areas and TCs of potential interest for associative partners and identified four themes with relevance to civil society: nanotechnology, tourism services, non-formal education and quality insurance. The selection was mainly based on a requirement for (early) development stage of draft standards enabling an effective participation. Following early consultation and deliberation with CSOs that joined the project, INTERNORM took part to two ISO technical committees: ISO TC 228 on tourism services and ISO TC 229 on nanotechnologies. Considering the high number of standards in development in those technical committees, INTERNORM established working groups to engage with only those standards under development with the highest stakes for CSOs involved in the project.

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[6] Mandakini Pant, "Participatory Action Research", in David Coghlan and Mary Brydon-Miller (eds), *The SAGE Encyclopedia of Action Research* (London: Sage, 2014), pp. 583-588.

As such the research team acted somehow like a "scientist in the lab"[7] – the lab being the deterritorialised arenas of the technical diplomacy of the ISO and the scientist being the research team acting as facilitator between CSOs and standardisation processes. The material used for this study is based on official documents, confidential working documents, and in-depth participatory observations gathered throughout the duration project. At its completion, INTERNORM participated in 11 expert groups, spent more than 45 days in ISO technical committees and submitted more than 150 comments and drafting recommendations resulting from meetings held with partner associations to discuss draft standards under negotiation[8].

International standardisation: rising prominence versus democratic deficit

International standards refer to voluntary technical specifications explicitly documented, published and sold as tools in the organisation of production and exchange of goods and services. They codify technical specifications for measurement, design, performances, or side effects of products, industrial processes, and services. Many organizations with varying private and public statutes set standards across the world. Among them, the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), both private not-for-profit organisations, stand apart with, for ISO alone, over 160 national members and more than 21'000 published standards. Participation in the standard-setting activities of the ISO and IEC follows a so-called model of national participation where a national body holds the voting rights in the international standardisation bodies. ISO members are not states, but each national standard-setting organisation considered as the most representative in the country. Standardisation processes involve a mix of private and public actors to shape standards on a voluntary basis. On paper, they are open to all interested parties, follow the "state of the art" of technical knowledge and a consensus-based decision-making [9].

Two decades ago, estimates of the Organisation for Economic Cooperation ant Development (OECD) showed that up to 80% of trade is affected by standards or associated technical regulations[10]. In addition to market access, international standards matter for consumers and workers in so far as they provide interoperable technological devices, minimum health and safety protection measures or quality guarantees with regard to goods and services. The significance of international standards pertains not only to their growing share in the economy and their impact upon the environment, or the health and safety of workers and consumers. It also relates to the institutional environment that establishes formal transfers of power to international standard-setting organisations. Technical specifications were once largely the preserve of the regulatory framework of law, with company standards decided by managers and, to a marginal degree, national standards institutions. Today, as seen above, the regulatory framework of law has yielded ground to voluntary standards drafted by a host of public and private sector bodies operating internationally or regionally[11].

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[7] We thank one of our reviewers for addressing this point.
[8] For more information: see the following website: www.unil.ch/vei/internorm.
[9] This is what Czaya and Hesser call the "ethos of standardisation": Axel Czaya and Wilfried Hesser, "Standardisation Systems as Indicators of Mental, Cultural and Socio-Economic States", *Knowledge, Technology, & Policy*, Vol. 14, No 3 (2001), pp. 24-40.

[10] OECD, *Regulatory Reform and International Standardisation (*Paris: Organization for Economic Cooperation and Development, Trade Committee Working Party, 1999), p. 4.
[11] Mattli and Woods, *op. cit.*; Ponte, Gibbon and Vestergaard, *op. cit.*; Murphy and Yates, *op. cit.*; Graz, *op. cit.*; Harm Schepel, *The Constitution of Private Governance* (Oxford: Hart Publishing,

The creation of the World Trade Organization (WTO) in 1995 was an important milestone. The Agreement on Technical Barriers to Trade (TBT), the Agreement on Government Procurement (AGP), the review of the Agreement on Sanitary and Phytosanitary Measures (SPS), and the General Agreement on Trade in Services (GATS) all grant international standards a major role in the harmonization of technical specifications applicable to goods and services. State regulation in this domain must comply with "legitimate objectives" related to health, safety and environmental issues. Thus, the goal of removing "unnecessary" barriers to trade should be pursued insofar as possible by substituting domestic standards for international standards.

Despite the growing prominence of international standards, they face what Bamberg describes as a paradox of "huge minorities": "the two largest affected groups [consumers and employees] are minorities within the standards committees, if indeed they are represented at all"[12]. Taking part in standardisation meetings held all over the world several times a year does not just imply time and money; it also requires expertise to cope with the highly technical standardisation committees' deliberations. While CSOs have unique expertise in terms of consumers, workers, or environmental protection, they experience great difficulties in turning their general concerns into what Mallard[13] describes as the "compulsory figure" of the technical language of standard-setting activities. Standardisation organisations have acknowledged the difficulties faced by CSOs, without going so far as to recognise an actual democratic deficit. In consequence, their response has so far been couched in purely procedural terms, with the institutionalisation of consultative committees that rarely take a direct part in the development of standards or with no voting right when doing so. The importance of socio-technological choices enacted in standards gives CSOs a strong incentive to be involved beyond such a consultative role. This brings us back to our research question concerning CSOs participation in the making of the authority of international standards .

Private authority, expertise and participation

Addressing the relation between the participation of CSOs and the authority of standards involves understanding who set such rules, with which knowledge and how to take an active part in such processes. Various studies have examined the wide range of institutional designs supporting the making of standards, their diffusion and worldwide recognition[14]. Such a mix of public and private design in the world of standards echoes the *nébuleuse* that Cox refers to in discussing official and unofficial networks, with representatives of business, the state and

2005); Benoît Frydman and Arnaud Van Wayenberge, eds., *Gouverner par les standards et les indicateurs* (Bruxelles: Bruylant, 2014).

[12] Ulrich Bamberg, " Le rôle des syndicats allemands dans le processus de normalisation national et européen", *Newsletter du BTS*, Vol. 24-25 (2004), p. 13.

[13] Alexandre Mallard, "L'écriture des normes", *Réseaux*, No. 102 (2000), p. 57.

[14] Kristina Tamm Hallström, *Organizing international standardization* (Cheltenham: E. Elgar, 2004); Walter Mattli and Tim Büthe, *The New Global Rulers* (Princeton: Princeton University Press, 2011); Stefan Timmermans and Steven Epstein, "A World of Standards but not a Standard World: Toward a Sociology of Standards and Standardization", *Annual Review of Sociology*, Vol. 36 (2010), pp. 69-89; Murphy and Yates, *op. cit.*; Jean-Christophe Graz and Christophe Hauert, "Beyond the Transatlantic Divide: the multiple authorities of standards in the global political economy of services", *Business and Politics*, Vol. 16, No. 1 (2014), pp. 113-50; Ponte, Gibbon and Vestergaard, *op. cit.*; Jean-Christophe Graz and Nafi Niang, eds., *Services sans frontières* (Paris: Presses de Science Po, 2013); Nils Brunsson, Andreas Rasche and David Seidl, "The Dynamics of Standardization: Three Perspectives on Standards in Organization Studies", *Organization Studies*, Vol. 33, No. 5-6 (2012), pp. 613-632.

academia working towards the formulation of a consensual policy for global capitalism[15]. Standards are not only part of the broader organization of the capitalist system[16]. More specifically they belong to the "re-articulation of governance" in which public regulation has "retreated in some areas of the economy, at the same time as other forms of governmental and inter-governmental regulation are actually being strengthened"[17]. As Hauert emphasises, "the influence of those private arrangements in various institutional environments, their relationship with public authorities and the characteristics of actors supporting it remain largely ambivalent"[18]. Such ambivalence is particularly significant with regard to the role of expertise and the forms of participation in standards-setting practices.

Organisational studies have shown that the quality of expertise is instrumental in supporting the authority of standards. Organisations eventually conform to so-called voluntary standards as they incorporate knowledge "assumed to embody what experts have found to be best"[19]. The scientific and expert knowledge stored in standards provides justification for governments and public administration to refer standards into law or, on the contrary, to keep the law clear of defining suitable technical means for public purpose – a task left to standardisation organisations. In this way, the power of expertise rests on the broader trend towards scientisation in world society[20]. Political scientists emphasise the opposing interests shaping expertise, seen as a critical resource used by actors involved in standardisation arenas as in many other domains of global governance. As Sending points out, the "question of whether and how expert groups may shape policy is therefore subordinate to the question of the type and content of knowledge that prevail as authoritative"[21]. For example, producers who need to agree on an international standard for interoperability purpose do not have the same interests as consultancy firms whose business model is based on the mere existence of certifiable standards, let alone consumer organisations or labour unions likely to use standards for health and safety concerns. In technical diplomacy arenas geared towards the economic benefits of standardisation, CSOs unmistakably struggle to gain recognition for their own type of knowledge. It is usually assumed that they lack sufficient expertise for meaningful participation and, therefore, they are confined to consultative mechanisms. Such biased understanding of expertise prompts Werle and Iverson to point out that making standards authoritative "requires successfully integrating a great plurality of interests and values in the standardization process without necessarily requiring the direct participation of the respective stakeholders and advocates"[22]. Choosing between consultation and a more direct participation prompts us to discuss the question of inclusiveness in standardisation processes.

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[15] Robert W. Cox, *Production, Power and World Order* (New York: Columbia University Press, 1987), p. 262; Robert W. Cox, with Michael G. Schechter, *The Political Economy of a Plural World* (London and New York: Routledge, 2002), p. 33.

[16] Murphy and Yates, *op. cit.*; Yates and Murphy, *op. cit.*.

[17] Ponte, Gibbon and Vestergaard, *op. cit.*, p. 7.

[18] La participation des consommateurs à la construction de l'autorité des normes internationales: vers une économie politique internationale de la traduction (Lausanne: Université de Lausanne, 2014, Doctorat ès Science Politique), p. 2 – our translation.

[19] Nils Brunsson, Bengt Jacobsson and and Associates, *A World of Standards* (Oxford: Oxford University Press, 2000), p. 45.

[20] Gili S. Drori and John Meyer, "Scientization: Making the World Safe for Organizing", in Marie-Laure Djelic and Kerstin Sahlin-Andersson (eds.), *Transnational Governance* (Cambirdge: Cambridge University Press, 2006), pp. 31-52.

[21] Ole Jacob Sending, *The Politics of Expertise* (Ann Arbor: University of Michigan Press, 2015), p. 8.

[22] Raymund Werle and E.J. Iversen, "Promoting legitimacy in technical standardization", *Science, Technology & Innovation Studies*, Vol. 2 (2006), p. 33.

Studies on voluntary standards (be it technical or on broader sustainability issues) never fail to mention the under-representation of consumer associations, trade unions, environmental non-governmental organisations (NGOs) and small and medium enterprises (SME)[23]. Common explanations include the lack of awareness and insufficient temporal, financial and cognitive resources[24]. Most of them draw from various strands of institutionalism. For instance, rational institutionalist studies focus on the supply and demand of standards: while the supply of open and fair procedures is seen as a prerequisite for participation, the demand-side depends on information, expertise, interest and operational capacity – resources seen as generally lacking among CSOs[25]. Other studies examine how the inclusiveness of participation supports a formal recognition of global governance mechanisms such as standards[26]. They perceive CSOs as stakeholders whose involvement affects the credibility and legitimacy of international standards[27].

Expertise and participation are thus seen both as depending on resources and procedural constraints or as embedded in broader structures of power. Institutionalist accounts tend to leave expertise in a black box, thus ignoring power relations concerning the production of knowledge. Moreover, they take for granted the distinction between lay- and expert – knowledge. As a result, they fail to question the supposed lack of expertise for a meaningful involvement of CSOs. Finally, for those studies that consider participation, the question is more about how standardisation institutions include stakeholders than the other way round, i.e. how CSOs themselves engage with standardisation. The inclusiveness of standardisation processes here remains one-sided.

Science and technology studies (STS) help us to disentangle the authority of scientific and expert knowledge and participatory concerns in socio-technical processes such as standardization. A prominent achievement of STS has been to bring science and society, material and societal orders closer together. This presumes questioning the distinction between lay- and expert-knowledge. The embeddedness of scientific and technological choices into social, cultural and political contexts and institutions has prompted Jasanoff to

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[23] See for instance: EIM Business & Policy Research, *Access to Standardisation. Study for the European Commission, Enterprise and Industry Directorate-General. Final Report (*Zoetermeer (NL), 2009), pp. 98, 81, see also Table 6.20; Mari Morikawa and Jason Morrison, *Who develops ISO standards? A survey of participation in ISO's international standards development processes (*Oakland (CA): Pacific Institute for Studies in Development, Environment, and Security, 2004); Christophe Hauert, "Where Are You ? Consumers' Associations in Standardization, A Case Study on Switzerland", *International Journal of IT Standards & Standardization Research*, Vol. 8, No. 1 (2010), pp. 11-27.

[24] Susanne K. Schmidt and Raymund Werle, *Coordination Technology* (Cambridge (MA): MIT Press, 1998), pp. 87-9; Tamm Hallström, *op. cit.*, p. 32; Michelle Egan, "Regulatory strategies, delegation and European market integration", *Journal of European Public Policy*, Vol. 5, No. 3 (1998), p. 492.

[25] Mattli and Woods, *op. cit.*; Mattli and Büthe, *op. cit.*

[26] Klaus Dingwerth, "Global Democracy and the Democratic Minimum: Why Procedures Alone Are Insufficient", *European Journal of International Relations*, Vol. 20, No. 4 (2014), pp. 1024-1048; Klaus Dingwerth and Patrizia Nanz, "Participation", in Jacob Katz Cogan, Ian Hurd and Iain Johnstone (eds.), *The Oxford Handbook of International Organizations* (Oxford: Oxford University Press, 2016); Agni Kalfagianni and Philipp Pattberg, *The Effectiveness of Transnational Rule-Setting Organisations in Global Sustainability Politics: An Analytical Framework* (Amsterdam, 2011).

[27] Anne Wilcock and Alejandra Colina, "Consumer representation on consensus standards committees: a value-added practice", *International Journal of Services and Standards*, Vol. 3, No. 1 (2007), pp. 1–17; Magnus Böström, "Regulatory Credibility and Authority through Inclusiveness: Standardization Organizations in Cases of Eco-Labelling", *Organization*, Vol. 13, No. 3 (2006), pp. 345-367; Werle and Iversen, *op. cit.*

forge the concept of co-production, according to which "there cannot be a proper history of scientific things independent of power and culture"[28]. It is from this perspective that studies reveal the inclusion and exclusion power of the expertise developed by a coherent and multi-positioned small group of scientists in shaping standards, certification and accreditation in crucial public policies, such as food hazards control, agriculture or finance[29].

STS and participation studies shed light on the importance of considering expertise as fully heterogeneous, rather than confined in a secluded realm. They highlight the extent to which expertise and participation relate to each other and are likely to take various forms in international standardisation as in any other socio-technical arenas[30]. So-called "public understanding of science" and "public debate" are the most common forms of participation. They reproduce, however, the distinction between lay- and expert-knowledge. They see expertise as science applied to decision, its legitimacy confirmed by its autonomy from society. In contrast, what Callon and his co-authors call "extended translation" involves both experts and laymen in framing and setting the knowledge used for solving socio-technical issues ; such practices take place in "hybrid fora", designed as exploratory spaces open to heterogeneous groups, knowledge and experiences[31]. Here, CSOs and citizens are in a position to frame technical issues before imagining potential solutions, rather than providing their own knowledge to solve problems defined elsewhere. From this angle, the inclusiveness of standardisation processes depends as much on the public engagement with standards as on standardisation procedures including the public. However, power relations involved in linking lay- and expert-knowledge mostly play out in the context of socio-technical controversies. For better or for worse, standards rarely become rabble-rousers. The importance of innovative arenas and procedures in hybrid fora is one thing. In the absence of controversies, understanding the possibility of filling these fora in the first place is another. Moreover, it remains unclear how such fora can match the global reach of the institutional environment of standardisation. The extended translation supported by hybrid fora has so far mainly been considered at the national level. Finally, understanding the preconditions of the co-production of knowledge does not necessarily provide insights into the ability of such knowledge to influence the outcome of socio-technical choices not limited to the institutional environment of the fora themselves.

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[28] Jasanoff, *op. cit.*, p. 21.

[29] David Demortain, *Scientists And The Regulation Of Risk* (Cheltenham: E.Elgar, 2011); Busch, *Standards. Recipes for Reality*, *op. cit.* ; Allison Loconto and Lawrence Busch, "Standards, techno-economic networks, and playing fields: Performing the global market economy", *Review of International Political Economy*, Vol. 17, No. 3 (2010), pp. 507-536; Tony Porter, "Tracing Associations in Global Finance", *International Political Sociology*, Vol. 7, No. 3 (2013), pp. 334-338.

[30] Sherry R. Arnstein, "Ladder Of Citizen Participation", *Journal of the American Planning Association*, Vol. 35, No. 4 (1969), pp. 216-224; Massimiano Bucchi and Federico Neresini, "Science and public participation", in Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman (eds.), *The Handbook of Science and Technology Studies* (Cambridge (MA): MIT Press, 2008), pp. 449‒473; Callon, "Des différentes formes de démocratie technique", *op. cit*; Daniel J. Fiorino, "Citizen Participation and Environmental Risks: A Survey of Institutional Mechanisms", *Science, Technology & Human Values*, Vol. 15, No. 2 (1990), pp. 226-243; Andrew Stirling, "Opening Up or Closing Down? Analysis, Participation and Power in the Social Appraisal of Technology", in Melissa Leach, Ian Scoones and Brian Wynne (eds.), *Science and Citizens: Globalization and the Challenge of Engagement* (London: Zed, 2007), pp. 218–231.

[31] Callon, Lascoumes and Barthe, *op. cit.*

Translating technical diplomacy

Our analytical framework draws on these various contributions, while overcoming some controversy- and domestic-dependent understanding of socio-technical co-production. It draws upon the sociology of translation[32] and supplements the hybrid fora model developed by Callon and his co-authors with a distinct focus on how encounter points between lay- and expert-knowledge play out in the technical diplomacy of CSOs within standardisation processes. Callon and his co-author locate such encounter points at three moments providing insights for an in-depth understanding of the co-production of socio-technical knowledge embodied in standards[33]. The first moment is defined as the "transportation of the complex world into the laboratory"[34]. This supposes processes by which the scientists reduce the complexity of the big world into the manageable scale of the laboratory in order to conduct experiments to reproduce real life conditions. With regard to the world of international standards and a meaningful involvement of CSOs, this can be understood as the ability to frame the world of standards in a way that would sufficiently raise CSOs' concerns to make them ready to engage with the laboratory of standard-setting practices – in other words to become standards-setters themselves. The second is the "research collective at work"[35], that is the production of knowledge in the microcosm of the laboratory in which discussions take place, interpretations vary, and controversies occur on socio-technical issues. Here, the knowledge produced depends on who takes part to the research collective. In the microcosm of standard-setting practices, this moment sheds light on the potential of a pluralism of expertise supported by a direct participation of CSOs in technical diplomacy, rather than its confinement to an advisory role. The third is the "transportation of laboratory results into the big world"[36]. This moment describes the ability to transpose results from the research collective back to the real world, that is the extent to which such results may be accepted by society at large. In the context of the current analysis, this moment corresponds to how CSOs' involvement in standard-setting procedures is likely to have a concrete outcome and thus shape the content of international standards.

The sociology of translation has provided critical accounts of cases of scientific knowledge production and the use of expertise in global governance[37]. It also provides insights to identify potential encounter points between CSOs and global rulers at the three moments described above. Such encounter points are the framing of problems, the constitution of research collectives, and the final transposition between the knowledge produced in the research collective and its broader recognition by society. With respect to the world of international standards and a meaningful involvement of CSOs, the encounter points lie in a distinct institutional environment that combine problem framing and CSOs' involvement, requires a wide range of different types of knowledge in the constitution of research collectives, and

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[32] Akrich, Callon and Latour, *op. cit.*

[33] Callon, Lascoumes and Barthe, *op. cit.*, pp. 75-104.

[34] *Ibid.*, p. 78.

[35] *Ibid.*, p. 79.

[36] *Ibid.*, p. 98.

[37] Tobias Berger and Alejandro Esguerra, eds., *World politics in translation* (London: Routledge, 2018); Andrew Barry, "The Translation Zone: Between Actor-Network Theory and International Relations", *Millennium - Journal of International Studies*, Vol. 41, No. 3 (2013), pp. 413-429; Jacqueline Best and William Walters, "Translating the Sociology of Translation", *International Political Sociology*, Vol. 7, No. 3 (2013), pp. 345-349; Vaughan Higgins, "Re-figuring the problem of farmer agency in agri-food studies: A translation approach", *Agriculture and Human Values*, Vol. 23, No. 1 (2006), pp. 51-62; Diana Stuart, "Science, Standards, and Power: New food Safety Governance in California", *Journal of Rural Social Sciences*, Vol. 25, No. 3 (2010), pp. 111-140.

expects at least some outcome in the final transposition, i.e. the substance of the international standard under negotiation. In other words, in technical diplomacy, encounter points to be reckoned with include the mobilisation of CSO's, a pluralisation of knowledge, and influence on the content of international standards. This prompts us to elaborate further on CSOs' participation in the distinct moments of such extended translation. We will discuss the issue of involving CSOs in standardisation processes, the ensuing production of knowledge and the influence that they may eventually have on the content of international standards under negotiation.

First, the enlistment of CSOs towards technical diplomacy supposes establishing a relationship between their issue area, their strategic objectives and underpinning principles on the one hand, and the production of technical specifications at the international level on the other. Enrolling CSOs in international standardisation requires a minimum of awareness and affinity with their own projects. The increasing political significance of standards presumes making it a privileged tool for CSOs' action. Yet the intricate institutional characteristics of standard-setting bodies challenge their ability to make it part of their repertoire of actions. Above all, given CSOs' limited resources, they may rightly question the value of participating in deliberations whose results remain unclear in view of the voluntary dimension of international standardisation. Moreover, most associations conceive their action on a local or national scale, while international standards are *per se* intended for a global reach. The work of technical committees is supposed to be based on the state of the art of scientific and technical knowledge; this in itself makes technical language a "compulsory figure" of standard-setting processes at the expense of many CSOs' enrolment[38]. Yet, officially, standardisation procedures are fully open to any actor deemed fit to participate to committees established by national standardisation bodies. How may CSOs successfully seize this opportunity despite these difficulties? In contrast to conventional views on the lack of resources as the main barrier to CSOs' participation, allocation of resources remains a matter of strategic decisions; almost all organisations contend with limited resources. Moreover, a CSO may be encouraged to participate when the scope of an international standard under negotiation has a close relationship with its core principles and priority objectives, and moreover involves a timeline likely to match projects undertaken in this regard. Under such circumstances, CSOs realise that standards may have more power than their supposedly strictly voluntary dimension and that it may be worthwhile taking part in their definition.

The second encounter point shaping CSOs involvement in standardisation is the combination of knowledge required to translate the general concerns of CSOs into technical specifications and, in turn, to convert technical specifications into societal issues. In addition to CSOs' experience in their own field of practices, a wide range of knowledge is required to engage and contribute to standard development processes. This not only includes scientific and technical expertise in relation to the topic drafted as international standard, but also the complex procedural rules used in standardisation arenas, as well as those applied in wider state and inter-governmental regulatory environments. Thus, the pooling of knowledge which includes specialized and ad-hoc analytical and procedural skills can support CSOs' socio-technical contribution to the world of standardisation. The fact remains, however, that business interests often trump scientific rationality in standard-setting processes[39]. Power relations, economic considerations and liability issues may therefore arise and easily outplay such pooling of knowledge.

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[38] Mallard, *op. cit.*
[39] Stuart, *op. cit.*

The third encounter point of CSOs' engagement with international standardisation entails their influence on the content of international standards under negotiations. This supposes understanding how the distinct institutional environment of international standardisation is likely to shape such influence. In contrast to hybrid fora devised to set innovative procedures and decision-making processes, standardisation arenas operate according to well-established rules of procedures that predetermine the potential influence of participation. Technical diplomacy in this sense echoes the complex and politicized environment that Barry describes as a translation zone "marked by enduring blockages and intransigent obstacles"[40]. For instance, to elicit compliance with voluntary standards, the standardisation process is frequently geared towards the definition of the lowest common denominator, and thus likely to bar too stringent claims from CSOs. In contrast, despite the frequent over-representation of corporations, consultancy firms and business associations, the voluntary dimension of standards-setting activities can provide unexpected leverage to those present and willing to contribute, including CSOs. In the rare cases where usually overrepresented actors are less involved, it can contribute to designing more demanding standards in domains such as safer workplaces, healthier products or environmental protection.

To sum up, our analytical framework details three encounter points in technical diplomacy likely to shape CSOs participation in standard-setting bodies and, more broadly, provide ways of coping with the democratic deficit of arenas of transnational private governance such as the ISO. The first encounter point relates to the involvement of CSOs and the difficult exercise of translating the complex world of standardisation and distinct issues raised by standards under development into CSOs strategic objectives. The second aims at pooling lay- and expert-knowledge into a proper mix of diverse cognitive skills. The third considers the transposition of CSOs involvement in standard-setting processes back into the content of standards used to shape markets and society. In other words, it provides the reality check of their influence on the outcome of the drafting process of standards. This leads us to discuss CSOs' participation in technical diplomacy as translation processes that converge on the three encounter points of CSOs involvement, knowledge pluralisation, and drafting outcome. It is against this background that we now turn to the analysis of the engagement of CSOs with standard-setting processes.

INTERNORM calling: being involved or not?

The world of international standards is challenging for CSOs involvement. At first sight, the sheer number and wide range of international standards under development, their highly specific nature, their global reach make hardly any sense in relation to CSOs' own priorities, strategic objectives and geographical scope of action. While a greater awareness of the regulatory power of international standards is a prerequisite for a meaningful involvement of CSOs, uncertainties regarding the effective impact of so-called voluntary standards on business practices as well as the potential instrumentalisation of their participation by standard-setting organisations question the relevance for CSOs to become standard-setters themselves.

Before the launch of the INTERNORM project, only one associative partner had prior experience in standardisation activities. Thus, one of the first tasks of the research team was to invite CSOs active at national and international level to join the project. The correspondence engaged with CSOs showed that the lack of awareness on the socio-political

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[40] Barry, *op. cit.*, p. 249.

salience of international standards was the first barrier to a meaningful participation. We needed to provide specific examples of on-going standardisation activities with more direct bearing on CSOs' concerns. This observation is far from trivial; it implied identifying precisely the standards being developed among the thousands of ISO committees and working groups likely to reflect CSOs priorities and thus providing a potential avenue for action. In 2010, no less than 214 technical committees (TC) were active at the ISO, discussing more than 3'880 standardisation projects. Thus, the research team carefully screened standardisation areas and technical committees of potential interest for associative partners and identified several themes relevant to civil society, mainly based on the transversality of the issue at stake and the development stage of the draft standard(s). As seen above, a deliberative meeting with CSOs led to the choice of the distinct topics of nanotechnology (ISO TC 229) and tourism services (ISO TC 228).

For a meaningful involvement in the world of international standards, CSOs' scope of action, priorities and strategic objectives matter; they provide the lens through which the relevance of specific standardisation activities is assessed. As noted above, CSOs often face difficulty in linking their activities, principally conducted at the local or national level, with international negotiations. Reconciling the international scope of standards devised within the ISO with strategies geared to national or regional projects and regulations is a challenge. It is therefore not surprising that some of the CSOs we contacted declined our invitation pleading their strictly local or regional scope of action. While establishing links between an international arena and the local or regional level could be an important obstacle to some CSOs' involvement, it can also, in other cases, provide an incentive to participate. For instance, the involvement in tourism standards resulted from the convergence between national and international issues, such as sustainable tourism, the promotion of the Swiss know-how in tourism, and the protection of consumers travelling abroad. In this perspective, standardisation topics with strong echo in the national debate will encourage the involvement of CSOs. Interest of trade unions or consumers' associations interests' in nanotechnology standards was boosted by their own priorities and projects, such as ensuring workplace safety in the chemical industry or transparency of information and freedom of choice for consumers. Thus, the relevance of specific standardisation topics to their agenda, priorities and scope of action clearly influences CSOs' decision to themselves become standard-setters. Inevitably, any such decision impacts upon the specific institutional environment in which standard-setting activities take place.

Even as CSOs recognized the regulatory power of standards beyond their supposedly strictly voluntary dimension, they still questioned the relevance and value of their involvement in the technical diplomacy of international standardisation. Organisations like ISO never fail to stress the voluntary nature of the adoption standards, thus contrasting with CSOs actions favouring legislation and binding regulations over voluntary arrangements. Yet, although some international standards do acquire a quasi-legal status when referenced into legislation or might become *de facto* market access requirements, uncertainties remain regarding the extent to which a distinct international standard will shape business practices or be used in support of legislation. In other words, the uncertain impact of international standards question the relevance of CSOs' involvement. Standardisation arenas are not easily perceived as a privileged target for CSOs, This is all the more the case when CSOs view their mere participation as a risk of legitimizing the regulatory power of international standards.

CSOs involved in the project frequently asked what do CSOs stand to gain from their participation in the world of international standards. CSOs are concerned by the risk of instrumentalisation of their participation while the payoff for their resource-intensive participation is far from certain. Whatever their effective influence on the content of the

published standard, like any other participants, they are part of the perceived consensus establishing the standard. In this process, CSOs' involvement in the standard-setting process can be used to legitimize the resulting standard and more generally the trend towards the devolution of state power to European and international standardisation arenas. Moreover, the fact that standards resulting form voluntary participation are subsequently sold and constitute the stock-in-trade of the flourishing market of certification businesses exacerbates the issue of instrumentalisation. This contrasts with the difficulty for CSOs to value their involvement in standard-setting activities towards their membership. The uncertain impact of standards and the consensus-based development makes it impossible for CSOs to enjoy the full glory even if their participation brought about a distinct improvement.

By exploring the extent to which CSOs seize the formal possibility for participation in standard-setting bodies, the INTERNORM project has shed light on the wide range of elements shaping CSOs' decision to become standard-setters themselves. Wider considerations include in particular the alignment between distinct standardisation work programs and CSOs' own priorities and scope of action, as well as concerns about their potential influence and the suitability of standardisation as a regulatory tool. The ambivalence of the technical diplomacy of international standards, in its relationships with state regulatory power or in its ability to provide *de facto* market access conditions, affects CSOs' approaches to their involvement in the arenas of standardisation. On the one hand, the risk that their participation could be usurped for political ends may have demobilising effects; on the other, they may consider that participating in the definition of international standards gives them more influence than their supposedly strictly voluntary dimension. To sum up, CSOs' decision to be involved in standard-setting activities is closely linked to the broader institutional framework in which their participation takes place and to the opportunities provided by the agenda of standard-setting organisations for CSOs' own priorities. And it is precisely here that the INTERNORM project, by lowering otherwise prohibitive entry costs, introduced CSOs to the world of international standards and facilitated the identification of on-going relevant standard-setting activities.

INTERNORM sapiens: the pluralisation of standards knowledge

The second encounter point shaping CSOs' involvement in standardisation relates to the production of knowledge within the microcosm of standard-setting practices and the extent to which a plurality of knowledge supports CSOs contribution to the world of standardisation. The INTERNORM project confirmed that technical expertise is a crucial requirement for any meaningful participation in standard-setting processes. Yet the multi-faceted nature of the knowledge likely to support CSOs' participation involved more than looking for technical expertise. Whether it be to frame international standardisation in a way that raises CSOs' concerns or to support their contribution to the content of standards under negotiation, the project required distinct forms of knowledge: procedural knowledge of standardisation arenas, specialized knowledge of the issue at stake; in-depth understanding of political and legal context, as well as an organizational acquaintance with each partner CSO. Certainly, the knowledge developed under the aegis of the microcosm of the INTERNORM project was not limited to a simple exchange between academics of the steering committee and representatives of a given partner CSO. We rapidly realized that it was necessary to reach out to a broader pool on an ad-hoc basis – what we call here a pluralisation of knowledge. In the discussion that follows, we examine in more detail the procedural and the ad-hoc aspects of this second encounter point between lay- and expert knowledge in standard-setting practices.

At the beginning of the INTERNORM project, the academic steering committee and its CSO partners had hardly any knowledge regarding the content of the standards under negotiation. Our first task was to learn how standardisation arenas really work. In other words, the procedural knowledge required to cope with standardisation arenas appeared an important entry cost for all. We needed to find our way trough the maze of procedural rules governing standard-setting processes and information shared on working platforms. This was a prerequisite for the huge amount of work required to identify the issues at stake in the development of draft international standards under negotiation. As is often the case, the real issues were hidden in complex and voluminous documentation. Standardisation committees produce a mountain of documents (proposals for new standards, written comments from experts, minutes of meetings and resolutions, opinions from external actors, etc.). As for the technical committees in which INTERNORM took part, several hundreds of working papers had been produced on tourism services, and more than a thousand circulated in the field of nanotechnology. To pare such entry costs, the role of the INTERNORM research team was crucial. The team summarized a massive amount of information in easily accessible 1-page factsheets describing the work under way in a pre-selection of ISO technical committees and its relevance for CSO partners. The team also drafted documentation to explain standardisation procedures in simple terms, as well as modes and channels of intervention according to successive development stages. This procedural expertise was a condition *sine qua non* for any meaningful involvement of CSOs in international standardisation.

While the procedural knowledge provided by the research team is one part of the pluralisation of knowledge supporting CSOs involvement, the highly specialized nature of standard-setting debates within drafting committees meant that the project could not only rely on the knowledge of academic partners who agreed to be associated with the project when it was launched. The research team had to look for cognitive resources on a much more heterogeneous basis; it would not be enough just to invite any researcher on the topic. We had to identify a type of expertise specifically geared toward helping CSOs understand issues related to their own concerns in standards under negotiation. In order to fully recognize the significance of a drafting proposal, this included awareness of the wider regulatory environment, potential relations with public policy, and implications for production practices. In the case of nanotechnologies, for instance, this knowledge ranged from the potential legislative impact of standards in the regulatory environment to the toxicology of nanomaterials production processes. The INTERNORM research team invited experts from various backgrounds to working meetings with CSOs, including a toxicologist of occupational health and safety specialised in nanotechnology. In the field of tourism, a public official and the chief officer of a Swiss label for sustainable tourism provided insights on the significance of international tourism standards in the Swiss legislative environment and on local practices and solutions. In each case, the required expert invited on an ad-hoc basis stimulated CSOs' deliberations and led to written comments and proposals subsequently submitted to the standardisation committee.

With this experience, the transfer between the involvement of CSOs in world standardisation and actual standard-setting processes rests on what we have here described as a pluralisation of knowledge. The INTERNORM project does not just confirm that expertise and participation go hand in hand. It also shows that making sense of participation in standard-setting practices requires an encounter point between lay- and expert-knowledge, both on-going and ad-hoc. This included CSOs' queries and insights from the everyday life experiences of their members, the procedural knowledge of the INTERNORM research team turning such insights into written standardisation proposals, as well as academic and field specialists providing expertise for instance on the wider regulatory environment of standards

under negotiation. Thus the pooling of knowledge proposed by the INTERNORM project not only supported the effective participation of CSOs. It also helped raise new issues and draw progressive answers, such as the recognition of uncertainty in conformity with the precautionary principle in the field of nanotechnologies. Ultimately, do such progressive answers stand any chance of being transposed into international standards? This is the reality check discussed in the following section.

INTERNORM transposed: the reality check

The INTERNORM project offers insights on the third encounter point affecting the participation of CSOs in standardisation arenas. The ability of CSOs to translate their involvement in standard setting processes supported by a pluralisation of knowledge back into the big world of international standards as used to shape market and society eventually boils down to drafting outcomes. This section presents findings on the influence of CSOs associated with the INTERNORM project over formal ISO decision-making in the technical diplomacy of international standardisation. We first discuss institutional constraints and opportunities for CSOs involvement in standard-setting processes; we then examine some aspects of actor-driven power relationships encountered throughout the experience of the INTERNORM project and shaping CSOs potential influence on the content of standards under negotiation.

Despite high entry costs and the "pay to play" principle governing most standard-setting activities, the Swiss standardisation body channelling participation at ISO level supported the project by reducing the INTERNORM membership fees. We also had no problem of access to expert groups in charge of drafting international standards at the national and international level. Moreover, our own comments and drafting recommendations have always been accepted by the Swiss mirror committee for transmission to the international level without change. Such formal accessibility to deliberative practices remains, however, embedded in a constraining institutional environment

Standardisation bodies view the adoption of international standards by market actors as the cornerstone of their work, which inevitably hampers the potential influence of CSOs' participation. Indeed, in order to foster the voluntary adoption and effective use of standards, the drafting process is characterized by an effort to find the least constraining consensus. This prompts many participants to turn down demands from civil society viewed as posing too great a risk of market rejection if included in the content of the published standard. Despite the supposedly voluntary character of standards, this has broader implications regarding the regulation of markets, for standards are often taken up as a reference in public regulation and procurements.

The INTERNORM project also highlighted the extent to which CSOs' influence depends on wider power relationships. In the tourism sector, for example, industry associations' classification schemes and labels already exist, and as such, the ISO appears as a new competitor for professional associations or consortia in charge of those schemes and labels. The opposition strategy of the largest players of the hospitality industry with regard to international standardisation activities was aimed at preventing any move likely to go down this route (for example towards environmental good practices). The involvement of CSOs provided an entry point to counter-balance the hospitality industry in standardisation activities; the Swiss standardisation body even approached INTERNORM to act as convenor of the Swiss mirror committee on tourism services left idle as a result of a deliberate strategy of the hospitality industry to coordinate at the European level. After consultation with CSOs

taking part to the INTERNORM project, the proposal was turned down. It raised concerns of too big an instrumentalisation of CSOs participation.

In the world of standards, as anywhere else, power relationships are frequently played out in procedure and its use to impose hierarchies between issues under negotiation. For instance, in the field of nanotechnologies, European and Swiss Consumers' associations expressed their opposition to the notion of intentionality in the definition of nanomaterials. Their view was that what matters is the presence or absence of nano-objects in a product, not the intention of the producer. However, since the notion of intentionality was present in all previously negotiated ISO documents, CSOs' demands were met with an outright refusal in the name of conformity to the internal consistency of standards. In the case of the safety of adventure tourism, the development of three distinct standards dealing respectively with security management, leader competence, and client information (and their potential separate adoption) was considered as nonsense for most consumers' associations, who saw the three topics closely related in order to ensure consumers' safety. But an authoritative body of the ISO (the Technical Management Board) turned down demands to merge all three topics, arguing that this would not conform to the initial mandate of the working groups and to internal rules of ISO regarding the distinctiveness of management system standards. Moreover, the working group in charge of drafting requirements for environmentally friendly accommodation establishments eventually scaled down its ambition in face of the industry's obstruction. The successful "damage limitation strategy" of the hospitality industry – as one of its representative described it – led to establishing mere guidelines rather than a proper international standard with substantial requirements.

These findings suggest that CSOs' influence depends on the existence of open and fair procedures as much as on power relations within standardisation committees. This shows the limited influence of CSOs over the content of standards. However, the voluntary basis of participation in standardisation processes can also provide unexpected avenues to influence the content of standards. In the cases discussed here, this even led to several circumstances in which a single actor (INTERNORM) defined *per se* the so-called national position. For instance, during a vote on a draft standard, INTERNORM was the only voting member of the Swiss mirror committee. In accordance with the existing procedures, the Swiss vote at the ISO was based on this single vote, thus emphasising the extent to which the content of a standard can depend upon the participation of one single actor. While this example underlines the influence that CSOs may gain on the sole basis of their participation, it further confirms that the potential influence of CSOs participation is closely related to the configuration of actors taking part (or not) to specific standard-setting activities.

In brief, it comes as no surprise that only mixed results could derive from the encounter point in which CSOs involved in the INTERNORM project aimed at influencing the drafting outcomes of international standards. Institutional constraints, procedural tactics and a genuine power hierarchy clearly bound the potential influence of CSOs. And CSOs will only take part in standardisation, if they find there a balance between their strategic objectives (e.g. transparency of nano-products throughout the whole production chain), some expectation of the possibility to influence the content of standards and an assumption that the standard under negotiations will eventually be widely used on the market. Yet the uncertainty resulting from the principle of voluntary participation can provide unexpected – though limited – leverage for enlisted CSOs. The simple fact of participating grants influence.

Conclusions

The argument made in this article is that CSOs' participation in arenas of technical diplomacy such as committees in charge of drafting ISO international standards depends on multiple translation practices that unfold in three distinct encounter points between lay- and expert-knowledge. Regarding the first sequence, our findings has shown that a great deal of CSOs' involvement in socio-technical processes depends on how particular standards under development in the ISO echo their agenda, priorities and scope of action. As for the second, our analysis has emphasized the co-production of expert- and lay-knowledge likely to support an effective participation of CSOs in standard-setting processes rests on a wider range of ad-hoc and diverse skills than just pooling academic expertise with associations' own experience. Finally, results regarding the third encounter point suggest that outcomes resulting from such CSOs' involvement and pluralisation of knowledge reflect powerful asymmetries and procedural constraints, with however a few unexpected opportunities to shape the content of international standards officially published by the ISO. Far from the shallow inclusiveness discussed by most scholarship on new forms of regulation and global governance or the controversy-dependent and local or national confinement of hybrid fora of STS scholars, the INTERNORM project described in this article thus shows a comprehensive knowledge co-production process and its quite specific requirements for addressing the democratic deficit that international standardisation processes face, like many other socio-technical processes.

A first implication of such findings is to emphasize the extent to which all three encounter points may depend on mere chance. Important limits to our analysis include the fact that the topics in which CSOs experienced their own standard-setting practices are of varying importance and differ in their potential to generate socio-technical controversies. It thus may not make much sense to compare CSOs' concerns in nanotechnologies and in tourism and related services. The case studied here may also suffer from idiosyncrasy. The academic identity of the INTERNORM project and its location in Switzerland – a country renowned for its participatory democracy – surely helped the recognition within international standardisation arenas of CSOs interests conveyed by the platform. Despite the organized and externally funded platform set for the INTERNORM project, serendipity also characterised the ability of both the research team and CSOs with whom it made contact to exploit windows of opportunity, including personal relationships. For instance, the participation of a trade union representative undoubtedly responded to priorities and workplace experience of his umbrella association, but the fact that he was a fellow graduate in political science surely also helped! This suggests that it might be more difficult to transform into hybrid fora existing arenas of negotiations such as technical committees of standard-setting bodies than, quite the reverse, to create hybrid fora from scratch when public disputes arise on socio-technical controversies. On a more general basis, this mitigates the sometimes over-optimistic assumptions on participatory dynamics in social movements and models of deliberative democracy[41].

Finally, our findings resonate with recent scholarship on the practice turn in the field of international relations and what Best and Walters call the "materiality of knowledge"[42]. This supposes following translation trails, be it the co-production of knowledge leading to drafting

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[41] Laura Seguin, "Entre conflit et participation : double apprentissage dans un mini-public et un mouvement de contestation", *Participations*, Vol. 3, No. 13 (2015), pp. 63-88; Nina Amelung and Brita Baumgarten, "The Transnational Perspective of Political Participation: Linkages and Differences between Social Movement and Public Participation Studies", *Global Society*, Vol. 31, No. 1 (2017), pp. 3-22.
[42] Best and Walters, *op. cit.*, p. 347.

ISO international standards or any other translation practices such as counter-piracy best management practices recently developed by states and the maritime industry[43]. As Berger and Esguera point out, translation practices that move objects in world politics not only require power, but also forge new relations and open space for differences[44]. The multiple translation practices experienced by the INTERNORM project have shown that a modest platform to reinforce the participation of local CSOs in remote arenas of technical diplomacy can forge new relations and open new space for differences in ISO standard-setting committees in spite of strong power asymmetries. In a sense, it echoes the "collaborative encounters" experienced in critical international political economy methodologies likely to engage "with aspects of social life that remain unseen, unheard, uncounted or unacknowledged within prevailing understandings of capitalism"[45]. However, as far as INTERNORM is concerned, the mechanisms designed to support CSO's involvement and to pool an ad-hoc and on-going knowledge have only led to limited outcomes.

[43] Christian Bueger, "Territory, authority, expertise: Global governance and the counter-piracy assemblage", *European Journal of International Relations* (First Published September 12, 2017), DOI:10.1177/1354066117725155.

[44] Berger and Esguerra, *op. cit.*

[45] Johnna Montgomerie, *Critical methods in political and cultural economy* (Abingdon: Routledge, 2017), p. 6.