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DLMPS—Tarski's vision and ours

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Historical note (2022)

This is a slightly updated re-print of the published version of the author's Presidential Address held on 19 July 2011 at the Fourteenth *International Congress of Logic, Methodology and Philosophy of Science* at Nancy, originally published as [13]. It is re-printed in this volume with the kind permission of the author and the publisher. Both DLMPS and IUHPS changed their names at the General Assembly in Helsinki on 6 August 2015 to *Division for Logic, Methodology and Philosophy of Science and Technology* (DLMPST) and *International Union of History and Philosophy of Science and Technology* (IUHPST), respectively (cf. § 4). Since this paper was originally written before this change of name and acronym, the old acronyms DLMPS and IUHPS are used.

Preliminary remark (2015)

The title is the title I gave for my talk. Naming individuals enriches history, and Tarski is a natural person to name, both because of his very articulate views about the reasons for doing logic, and also because of his broad and lasting personal influence. In [2, Chapter 10], Solomon and Anita Burdman Feferman give a very readable account of Tarski's role in the setting up of DLMPS. But there is a danger that by naming Tarski I diminished the contributions of many other people whose interests combined to shape DLMPS; I hope the paper itself will set the balance straight.

1 What happened fifty years ago

DLMPS, or to give it its full title, the *Division of Logic, Methodology and Philosophy of Science*, held its first international congress in 1960 at Stanford University, California. Starting with the Third International Congress at Amsterdam in 1967, these congresses have taken place every four years. So the 2011 congress is the nearest thing we have to a celebration of the first half-century of DLMPS congresses.

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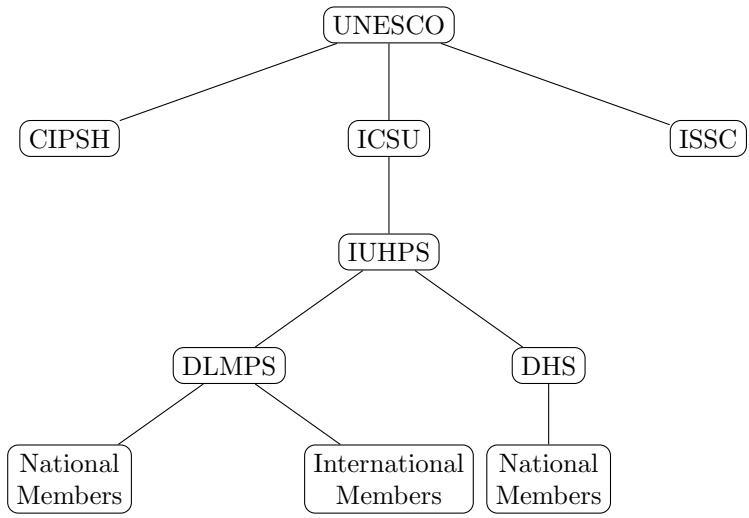

FIGURE 1. The DLMPS in the ICSU family in 1955. For explanations of the acronyms, cf. § 1.2. ICSU and ISSC merged in 2018 to form the *International Science Council* (ISC). DHS (now DHST) became a member of CIPSH in 2001; DLMPS became a member of CIPSH in 2011.

The editors of the proceedings of the 1960 Stanford congress (Ernest Nagel, Patrick Suppes and Alfred Tarski) wrote in their preface [16, p. vi]:

> This was the first International Congress for Logic, Methodology and Philosophy of Science since the International Union of the History of Science and the International Union of the Philosophy of Science established the International Union of the History and Philosophy of Science on June 3, 1955. The congresses of a related character held prior to the formation of IUHPS were mainly devoted to the philosophy of science. The title of the 1960 Congress reflects its broader coverage; it was in fact the first international congress to include a large number of papers on both mathematical logic and the methodology and philosophy of science.

The editors refer to the establishment of IUHPS, the *International Union of the History and Philosophy of Science*. In fact, DLMPS came into existence as one of the two Divisions of IUHPS, creating a splatter of acronyms as in Figure 1. Let me run through this figure.

1.1 Upwards from ICSU

At the top is UNESCO, the *United Nations Educational, Scientific and Cultural Organization*, which was born in 1946. During the Second World War there had been discussions between countries on the Allied side with a view to setting up supranational organisations after the war. The creation of the United Nations in 1945 was one result of these discussions. Another was UNESCO, which was attached to the United Nations and thus became funded by and answerable to the national governments ratifying the United Nations Charter. The original plan was for UNESCO to support just education and culture; Joseph Needham and Julian Huxley successfully argued that science should be included too [10, p. 71f].

ICSU, the *International Council of Scientific Unions*, had existed since 1931 as an international alliance of scientific organisations.[1] It had grown out of collaborations between the scientific academies of some European countries, together with some international scientific projects such as global distance measurements or the establishment of standards. Because of these mixed origins it had two kinds of member: "national adhering organisations" like the Royal Society, and international scientific unions like the *International Union of Pure and Applied Chemistry*. The aims of ICSU in 1931 were (in summary):

(1) to coordinate member organisations,

(2) to direct other international scientific activity,

(3) to promote science in countries through their national academies.

At the outset the members of ICSU were forty national members and eight international unions [10, Chapter 3].

In 1946, UNESCO and ICSU formally recognised each other. This meant in practice that UNESCO could call on ICSU for scientific expertise, and ICSU could call on UNESCO for money for the kinds of venture likely to appeal to the United Nations. These arrangements still stand; e.g., Rio+20, the 2012 United Nations Conference on Sustainable Development held in Rio de Janeiro, had a strong input from UNESCO and ICSU together.

1.2 Downwards from ICSU

The next step down from ICSU in the diagram is IUHPS, the *International Union of History and Philosophy of Science*. There had been an *International Academy of the History of Science* as early as 1928. When UNESCO came into being, Needham and others felt that an *International Union of*

[1] In 1998, ICSU changed its name to *International Council for Science* while retaining the acronym ICSU; in 2018, ICSU merged with the *International Social Science Council* (ISSC) to form the *International Science Council* (ISC).

the History of Science would be a valuable addition to ICSU. So UNESCO negotiated with the International Academy to convert it into the IUHS, which duly became a member of ICSU in 1947.[2]

In 1946, responding to a suggestion of Józef Bocheński who pointed to the recently-formed *Association for Symbolic Logic* and its associated *Journal of Symbolic Logic*, Ferdinand Gonseth (a Swiss mathematician with interests in philosophy of science and the foundations of mathematics) launched the *International Society of Logic and Philosophy of Sciences* (*Société Internationale de Logique et de Philosophie des Sciences*; SILPS) with an associated journal *Dialectica*. His chief colleagues in this were Paul Bernays, Karl Popper, and Karl Dürr. At about the same time, Stanislas Dockx (a Belgian philosopher of science) set up an *International Academy of Philosophy of Science*. When Gonseth and Dockx became aware that the *International Academy of the History of Science* had been converted into a member of ICSU, they decided to pool their efforts so as to create an *International Union of the Philosophy of Science* (IUPS), which would apply to ICSU for membership. So they called a meeting of interested parties in Brussels in July 1949, where plans were made to set up the IUPS. Besides representatives of UNESCO and ICSU, and Robert Feys representing the *Association for Symbolic Logic*, the meeting included the logicians Evert Beth and L. E. J. Brouwer together with several leading European philosophers of science. The inaugural meeting of IUPS took place in Paris in October 1949. Sometime between July and September 1949, presumably under pressure from ICSU which wanted to avoid a proliferation of smaller unions, it was agreed that IUHS and IUPS should amalgamate into a single union. In September the executive of IUHS appointed three delegates, and in October IUPS responded with its own three delegates (Gonseth, Dockx and Raymond Bayer), to meet in Paris in 1950 to draw up statutes for a combined IUHPS. In fact it took until 3 June 1955—the date quoted above—to agree the form of IUHPS, and the new union was admitted to ICSU in August 1955.[3]

The previous paragraph is based on the detailed first-hand account by Dockx [1]. Dockx was writing in honour of Gonseth, and he chose not to mention one embarrassing event. In 1952, there was a coup in IUPS; Gonseth, Dockx and Bayer were all removed from the executive committee, and presumably from the committee to negotiate with IUHS. The new executive consisted of Albert Châtelet, Arend Heyting, Hans Reichenbach, Bocheński and two participants in the July 1949 meeting: Feys and Jean-Louis Destouches. Feys in correspondence gave two reasons for the coup:

[2]Cf. [11]; however, several statements about "the Union" in this article are in fact true only of DHS(T), e.g., the list of officers and the list of commissions.

[3]Cf. also [21].

Gonseth's group wanted to steer UNESCO funds to their own pet projects, and "they were interested in rather literary forms of 'Philosophy of Science' ". Given the commitments made by Gonseth and Dockx in 1949, neither of these two points are likely to have had much direct impact on the negotiations with IUHS. But we know that the *Association for Symbolic Logic* was unwilling to throw its weight behind the new union until after the coup, so that the coup may have removed a logjam in the negotiations. There was also a perception on the philosophy side that Petre Sergescu, Executive Secretary of IUHS from 1947 till his death in 1954, was against having a combined union.[4]

According to the formula agreed in 1955, IUHS became the *Division of History of Science* (DHS), IUPS became the *Division of Logic, Methodology and Philosophy of Science* (DLMPS), and the two divisions together formed the *International Union of the History and Philosophy of Science* (IUHPS), which became a member of ICSU replacing IUHS.

During the Presidential Address in Nancy, I said that both Divisions seemed to have lost their copies of the IUHPS statutes by the late 1990s if not earlier—which rather nullified the six years that it had taken to draw up the statutes in the first place. I had reported that Lehto had cited from them in his 1998 book [14, p. 75] and had expressed hope that they could be found somewhere. And, indeed, in May 2013, Benedikt Löwe discovered a copy of the statutes, written in French and dated 1962, in an old box containing documents of the German National Committee of the DLMPS. By that time, the two Divisions had agreed on a *Memorandum of Agreement* that described their collaboration in IUHPS; the 1962 statutes were updated accordingly in 2017 and can be found on the IUHPST website. The 1962 statutes describe the aims of the IUHPS as follows:

(1) *établir des rapprochements entre les historiens et philosophes des sciences et entre les institutions, sociétés, revues, etc. consacrées à ces disciplines ou à des disciplines connexes;*

(2) *rassembler les documents utiles au développement de l'Histoire des Sciences et de la Logique, la Méthodologie et la Philosophie des Sciences;*

(3) *prendre toutes les mesures qu'on croira nécessaires ou utiles pour le développement, la diffusion et l'organisation des études et recherches dans les domaines de l'Histoire des Sciences, de la Philosophie des Sciences et des disciplines connexes;*

(4) *organiser les Congrès Internationaux d'Histoire des Sciences et les Congrès Internationaux de Philosophie des Sciences, ainsi que des Colloques Internationaux;*

[4]The quotes from Feys are cited after [21].

(5) *contribuer au maintien de l'unité de la science en général et à l'établissement de liens entre les différentes branches du savoir humain;*

(6) *s'efforcer de favoriser le rapprochement entre historiens, philosophes, savants, soucieux des problèmes de méthode et de fondement que posent leurs disciplines respectives.*

This is similar to the aims stated in the DLMPS statutes.[5]

We should briefly bring Figure 1 up to date. In 1987, DLMPS changed the name "National Members" to "Ordinary Members" because of some political sensitivities. At its General Assembly in Beijing in 2005, DHS added "and Technology" at the end of its name and became DHST. And finally in 2011, DLMPS joined CIPSH, the *Conseil International de la Philosophie et des Sciences Humaines*, which in turn is affiliated to UNESCO (our sister division DHST had joined CIPSH in 2001). In some loose sense, CIPSH is to the Humanities as ICSU is to the Sciences. The *International Social Science Council* (ISSC) was the third such organisation, covering the social sciences. ISSC and ICSU merged in 2018 to form the *International Science Council* (ISC).

2 Pennies from heaven

The institutional structures by themselves don't give many clues about the motivations driving the whole machine. The motivations that chiefly concern us here are money and scientific research. Again it will be helpful to begin the discussion with diagrams (Figures 2 & 3). The financial situation today is very different from what it was fifty years ago, so we need diagrams to illustrate both the old situation and the new. These diagrams should be read only as broad indications; one can too easily alter the numbers by adjusting the classifications.

We start with the funds that come to DLMPS from ICSU. UNESCO, which gets its money from countries in the United Nations, makes regular subventions to ICSU. The United States of America, although they withdrew from funding UNESCO in 1984 and resumed in 2003, continued to make substantial contributions to the ICSU grant fund separately through its National Science Foundation. The United States of America withdrew funding from UNESCO again in 2012, and it remains to be seen how this affects the funding of ICSU (and CIPSH, which is in a similar position to ICSU).

For several decades, ICSU passed on a large part of these subventions as grants to its member unions without close scrutiny. But in 1996, an external

[5] Cf. *Statutes of the Division of Logic, Methodology and Philosophy of Science and Technology of the International Union of History and Philosophy of Science and Technology*, 6 August 2015, published on the website of the DLMPST.

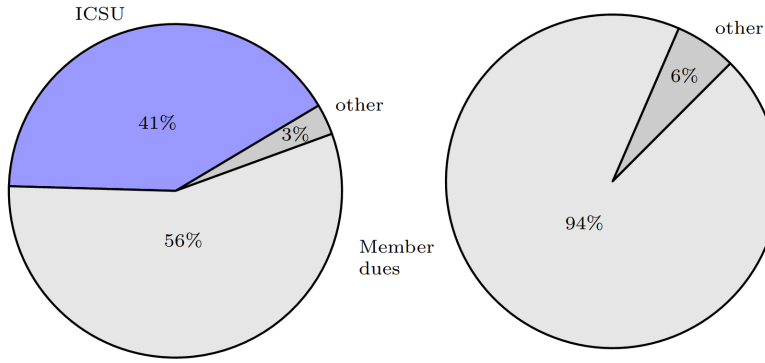

FIGURE 2. DLMPS income. *Left.* 1960s. *Right.* Today (2011).

assessment recommended that ICSU should be more strategic in its allocations.[6] As a result, since 2002 ICSU has awarded grants by competition and peer review, and only for international multidisciplinary ventures in certain announced priority areas. These changes had a dramatic effect on the funding of Unions, as Figure 2 shows for DLMPS. In fact the only grant from ICSU that came to IUHPS since 2002 and before 2014 was a sum in 2004 to allow DHST to set up databases of bibliographical and archival sources. Figure 3 shows the effect on our outgoings. For a while DLMPS supported only its own meetings and some joint activities with DHST, though since 2012 it has also distributed some small grants to conferences sponsored by members. The money that DLMPS puts into the international congresses held every four years is a small fraction of the cost of these congresses, but it serves to prime the pump. In past decades the sale of Congress Proceedings has brought in some income, but today we no longer expect to make any profit on publications.

As supplementary information, it can be reported that one of the eight ICSU grants for 2014 was awarded to IUHPS/DLMPS for a project on *Cultures of Mathematical Research Training.* The grant application was supported by the *International Mathematical Union* and its *International Commission for Mathematical Instruction.* To quote from the project specification:

> This project aims to mobilize the energies of a currently very active research area (the study of *Practice and Cultures of Mathematics*)

[6] Cf. *Review of the ICSU Grants Programme, 2001–2006. Report of a CSPR Review Committee*, February 2007. Available on the website of the ISC.

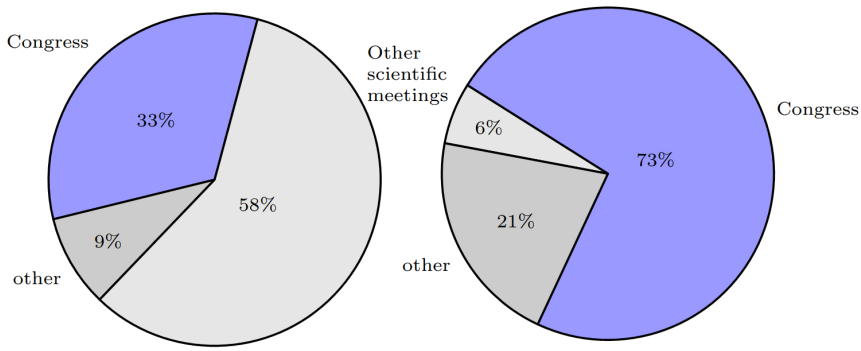

FIGURE 3. DLMPS expenditure. *Left.* 1960s. *Right.* Today (2011).

> to provide the theoretical and empirical resources for designing improvements to the training of the next generations of mathematical researchers and the improvement of research education in developing countries.

As Figure 2 shows, virtually all of our present income comes from our members, both Ordinary and International. Common prudence dictates that we should aim to know what these members reckon they are paying for.

3 Our members and what they pay for

ICSU has no individual members. In its early days it had only two kinds of member: national bodies and international unions. That was partly because ICSU was, so to say, a meta-level association. Its job was to deal with governments or national academies, and to set up and support scientific associations like the international scientific unions. The unions themselves were not meta-level associations in this sense, but they still tended to have structures that copied those of ICSU. The members of a union would be national committees (often administered either by national scientific academies or by national subject societies) and international scientific societies. Our own union IUHPS is a cipher, but its two divisions still both have this style of membership.

The fact that our members represent societies and institutions means that there is a kind of inertia built into our income: institutions that paid this year are likely to carry on paying next year too, because otherwise they would have to make a decision to stop. This could be dangerous for us, because it tends to hide the question whether we are delivering what our

members are paying us for. In fact the position is quite complicated and the remarks below are partly guesswork.

3.1 National academies and research councils

About half our members, and two-thirds of our Ordinary Members, are committees of national academies or national research councils. These bodies pass on money from their national governments. Probably most of them reckon that by supporting DLMPS they are supporting science and contributing to the aims of the United Nations as expressed in ICSU. The Canadian National Research Council knows that it is supporting international congresses of DLMPS, and it requests reports from Canadian scientists who attend these congresses; but my impression is that this amount of diligence is very unusual. Some grant-giving bodies ask DLMPS for a copy of our financial report but apparently pay no particular attention to the involvement of logicians or philosophers of science in their countries.

Of course ICSU has its own activities, e.g., government-level conferences like Rio+20. Let me mention two others that are likely to appeal to national academies. The first is the sharing of expertise between different international scientific bodies. Three recent examples are:

(1) In 2010, IUHPS was invited to nominate a member for the advisory board of the annual Gruber Cosmology Prize, worth half a million dollars. We nominated a historian of cosmology proposed by a member of DLMPS Council.

(2) In 2011, IUHPS was invited to support the application of the International Council for Industrial and Applied Mathematics to become a Scientific Associate of ICSU. We sent a positive answer, citing the methodological importance of mathematical modelling.

(3) In 2011, ICSU consulted its members for their comments on its draft ICSU Strategic Plan, 2012–2017. Since the Strategic Plan is largely about environmental issues and the integration of science into governmental planning, IUHPS found nothing to say about it. But perhaps DLMPS should have commented on the proposed *Principle of Universality* for science.

ICSU consultations can be tedious to handle, and often DLMPS is unlikely to have anything to offer. But we could (if membership lists are kept up to date) pass down some consultations to our member societies and national committees. This could help to keep them in touch with the activities of ICSU that they are supporting with their fees.

The second activity of ICSU is its work to protect the free movement of scientists. There is a permanent need for this work, but it was particularly

valuable in the days of the Iron Curtain. E.g., DLMPS consulted ICSU for help in getting visas for East European invitees to the Salzburg Congress in 1983.

Besides these activities, ICSU has committees that rely on the unions for their membership. From 2011 to 2014, Maria Carla Galavotti sat on the ICSU Executive Committee; she was nominated by IUHPS on the proposal of DLMPS. In 2005, Deborah Mayo from DLMPS was one of the authors of the ICSU working group report on science and society.[7] In 2008, Susan Lederer became a member of the ICSU Publication Ethics Committee on the proposal of DHST.

3.2 Subject societies

There remain the other half of our members, who are not supported by government-funded bodies. Nearly all of these are supported instead by societies devoted to logic or philosophy of science, or both; some are national and some international. It often seems that random factors have decided whether the societies are primarily devoted to logic or to philosophy of science, and it is possible that we have missed out on support in some countries where the logicians and the philosophers of science were not close to each other. We also have only minimal contact with societies of logicians or philosophers of science in South America. The reasons for this are no doubt partly historical, but we observe that our fellow Division has done much better than us in South America; their Congress took place in Rio de Janeiro in 2017.[8]

Our supporting societies represent working logicians and philosophers, and they are more likely to support activities that are directly helpful to these working researchers. In the days when ICSU provided grants, these grants often supported smaller meetings and workshops of the kind that researchers relish. Those days are over, and that's a threat to our income. We saw this, e.g., in Britain in the early 1990s, when the government-funded Royal Society and British Academy stopped paying dues for international unions, and the national committees for these unions had to call on scientific societies instead. The British Logic Colloquium at that date was unable to meet its share of the cost, and for a while Britain dropped to a lower category of membership in DLMPS.

The fact that the international scientific unions don't have individual members comes into play here, because it means that there are no DLMPS scientific activities that individual researchers can feel they are involved in. In fact until 2011, DLMPS was an extreme case. There were just two ways in which individuals could be involved with DLMPS. The first was

[7] Cf. *Science and Society: Rights and Responsibilities. ICSU Strategic Review*, 2005, available on the website of the ISC.

[8] CLMPST 2023 will be held in Buenos Aires in July 2023.

as officers or members of committees, and the second was as participants in congresses or other meetings organised by DLMPS. The officers had a heavy commitment to DLMPS, and the congress organisers an even greater one, but none of the others did. Participants in meetings registered for the meetings and didn't even need to know what DLMPS is. There were the national committees, but in too many cases the committee had lapsed—we found one case where the committee consisted of one person who had died ten years earlier. Sometimes the only task of these committees was to decide who would be delegates at the four-yearly General Assemblies.

Many of the unions have taken steps to involve individuals in actual scientific work. E.g., the *International Union of Radio Science* (URSI) has ten special-subject commissions and a larger number of working groups. The brief of its *Commission on Radio Astronomy* includes "observation and interpretation of cosmic radio emissions from the early universe to the present epoch".[9] The *International Union of Pure and Applied Physics* has twenty special-subject Commissions; the *Commission on Physics Education* goes back to 1960. I think none of these have an open membership, but they do involve quite large numbers of individuals in more than just bureaucracy. Our fellow Division, DHST, has for many years had special-interest commissions; at least some of them have membership open to any interested individuals, and newsletters are circulated to all members. The DHST website currently (as of 2022) lists five inter-union commissions, thirteen historical commissions, three inter-division commissions, and three scientific sections.

The 2011 General Assembly of DLMPS made a bid to increase the involvement of individual logicians and philosophers of science. It adjusted the statutes so as to allow commissions in the same style as DHST. It set up four commissions, three of them with open membership. One of those three was the Teaching Commission, which has for many years been a commission of DHST and is now an inter-division commission. The other two were new: a *Commission on Philosophy of Technology and Engineering Sciences* and a *Commission on Arabic Logic*. Another inter-division commission followed in 2015, the commission for *History and Philosophy of Computing* (HaPoC). The aim is for DLMPS to make itself more responsive to the needs of researchers.

4 The name of the Division

When our sister division added "and Technology" at the end of its name and became DHST, this was a natural step for them to take. The *International Committee for the History of Technology* had been a Scientific Section of DHS since 1968, and several commissions of DHS already had a strong technology component—e.g., the *Scientific Instruments Commission*. So the addition did no more than reflect the facts on the ground.

[9] Cf. the website of URSI.

In June 2008, Claude Debru, on behalf of the French National Committee of History and Philosophy of Science, wrote to DLMPS urging us to go down the same road and add "technology" to our scope. We put this to the General Assembly in Nancy in 2011, and the result was a pair of resolutions:

First, the General Assembly agreed in principle that "philosophy of science" in the stated scope of the Division should be expanded to "philosophy of science and technology", and that the Executive Committee should bring to the 2015 General Assembly proposals for changes in the statutes and the name of the Division to give effect to this expansion.

Secondly, the General Assembly asked the Executive Committee to consult with the officers of DHST with a view to changing the name of the Union so as to include technology.

The main reason for proceeding this way was to avoid getting the issue of principle mixed up with debates about the future name of DLMPS. In fact it seemed to many people that just adding T at the end would give a rather monstrous acronym: DLMPST. We tried this acronym on some spell checkers and got back among other things DEMIST, PLUMPEST, ALMOST, DIMMEST and DUMPSITE. Should one or more of the letters be dropped?

4.1 Where did L, M, PS come from?

We know what the organisers of the 1960 Stanford Congress thought these letters stood for [16, p. vi]:

> [Stanford] was in fact the first international congress to include a large number of papers on both mathematical logic and the methodology and philosophy of science.

So for the Stanford team, L was for 'mathematical Logic', M was for 'Methodology of science', and PS was for 'Philosophy of Science'.

The name 'Logic, Methodology and Philosophy of Science' could have come from Gonseth back in 1949. Of course if there is evidence against this, then I defer to it; but I know none.

As to mathematical logic: we saw that already in 1947 Gonseth's society was called the International Society of Logic and the Philosophy of Science. Logic was an old interest of Gonseth's. In 1937, he had published a long essay "Qu'est-ce que la logique?" [9, pp. 11-94]. True, that essay was historical rather than mathematical, and even the chapter on Whitehead and Russell's *Principia Mathematica* hardly contains any formulas. But his essay "Philosophie Mathématique" [9, pp. 95–189], published in 1950, is undoubtedly about mathematical logic, including axiomatic set theory and Gödel's incompleteness theorem—even though it does tend to confirm Feys's epithet "rather literary". We might add that although some mathematical

logicians were certainly repelled by Gonseth's approach to the subject, others found it a stimulus; Gerhard Heinzmann documents this in the case of Bernays [12].

As to methodology of science: this phrase goes back to the nineteenth century. In Britain it was popularised by William Hamilton of Edinburgh in his lectures in the 1830s and 1840s [15, Appendix; p. 496]:

> The Science of Science, or the Methodology of Science—falls into two branches. ... The former—that which treats of those conditions of knowledge which lie in the nature of thought itself—is Logic, properly so called; the latter,—that which treats of those conditions of knowledge which lie in the nature, not of thought itself, but of that which we think about, ... has been called *Heuretic* ... The one owes its systematic development principally to Aristotle, the other to Bacon.

Speaking in Nancy, it's appropriate to mention that Henri Poincaré used the phrase in the Introduction to his *Science et Méthode* in 1908 [17]:

> *Je réunis ici diverses études qui se rapportent plus ou moins directement à des questions de méthodologie scientifique.*

By the 1940s the notion of scientific methodology was in free circulation among philosophers of science. So it's no surprise that we can document it from Gonseth: "*Essai sur la Méthode Axiomatique*" [4], "*une méthodologie dialectique ouverte*" [5], "*la méthodologie juste en psychologie*" [6], "*La méthodologie des sciences peut-elle être élevée au rang de discipline scientifique?*" [7], and "*Essai sur la Méthodologie de la Recherche*" [8].

In short, the full name "Logic, methodology and philosophy of science" and the parsing of it in the preface to the 1960 Stanford Proceedings could quite easily have come from Gonseth. This is not to say that they would have meant the same to Gonseth as they did to other members of the Division.

4.2 A name for the future of DLMPS?

The 2011 General Assembly left it to the new Executive to decide on the future name of the Division. It may be superfluous for me to say anything about it here, but I'll make a few remarks anyway.

The two divisions sit together as representing philosophy of science and technology on the one hand and history of science and technology on the other. So there is no conceivable case for dropping the PS. The situation is different for both the L and the M, but for different reasons.

In the case of M, there is a case for dropping it straight away. The case is that it no longer represents anything distinctive about DLMPS. In the mid 20th century it was common to distinguish methodology from traditional philosophical areas like epistemology and ontology. By advocating "methodology of science", one would be supporting philosophy of science

but distancing oneself from metaphysics. E.g., Herbert Feigl published in 1954 a paper with the title "Scientific method without metaphysical presuppositions" [3]. His opening words were:

> As the title of this article indicates, I contend that there are no philosophical postulates of science, i.e., that the scientific method can be explicated and justified without metaphysical presuppositions about the order or structure of nature.

On this interpretation the only reason for retaining the M would be to bracket off certain aspects of the philosophy of science that some people don't want to be associated with. That doesn't strike me as an adequate reason.

Feigl's usage of "method" or "methodology" was not the only one. Tarski had a distinctive view of the matter. His fullest account of it is in the Introduction to the 1941 English version of his book *Introduction to Logic and to the Methodology of Deductive Sciences* [19], and it appears unaltered at least up to the 1961 edition, though it has been shortened in the posthumous 1994 edition.

Tarski distinguishes between "methodology of deductive sciences" and "methodology of empirical sciences". Methodology of deductive sciences is what Tarski elsewhere calls metamathematics (e.g., [18, p. 342]). It is a part of logic, and a part that Tarski strongly associates himself with. Methodology of empirical sciences "constitutes an important domain of scientific research", and logic is valuable for it. But: "logical concepts and methods have not, up to the present, found any specific or fertile applications in this domain" [19, p. xiii]. Tarski comments that this could be a permanent and necessary feature of the subject. He continues:

> It should be added that, in striking opposition to the high development of the empirical sciences themselves, the methodology of these sciences can hardly boast of comparably definite achievements—despite the great efforts that have been made. Even the preliminary task of clarifying the concepts involved in this domain has not yet been carried out in a satisfactory way. Consequently, a course in the methodology of empirical sciences must have a quite different character from one in logic and must be largely confined to evaluations and criticisms of tentative gropings and unsuccessful efforts. [19, p. xiv]

Tarski doesn't spell out what he regards as the tasks of the methodology of empirical sciences—indeed he suggests that some concepts need to be clarified before we can do that properly. But the comparison with metamathematics sends a strong message. A methodologist of an empirical science should ideally aim to find a suitable formal language in which to carry out the science, with suitable meanings for the primitive terms. Then she should

look for suitable axioms. Here part of her task will be to find appropriate criteria for the suitability of the axioms. As Tarski explains in [20, p. 366],

> one of the main problems of the methodology of empirical science consists in establishing conditions under which an empirical theory or hypothesis should be regarded as acceptable.

He offers his truth definition as a help here, which suggests that he has in mind a methodologist using a formal metatheory. The oral remarks of Tarski in 1953 reported in [2, p. 250f] point in the same direction.

Tarski makes a few further remarks about "the methodology of empirical science" in [20], but I don't think they help us much here. What is helpful, and perhaps unexpected, is [20, § 19] in which he vigorously dissociates himself from attacks on "metaphysical elements".

> When listening to discussions in this subject, sometimes one gets the impression that the term "metaphysical" has lost any objective meaning, and is merely used as a kind of professional philosophical invective. [20, p. 363]

So he uses a very different language from that of Feigl above.

To my eye, not a single one of the papers on particular empirical sciences in the proceedings of the 1960 Stanford congress [16] is written under the paradigm that Tarski has in mind above. From his remarks in 1941, I doubt that this would have surprised Tarski himself. And given the general usage of the word "methodology", it seems unlikely that Tarski would have expected many people outside a group of loyal followers to interpret the M in DLMPS in line with his own account of "the methodology of empirical sciences". So even a deference to Tarski would hardly give us reason to insist on keeping the M.

By contrast the word "logic" certainly does mark a major area within the scope of DLMPS. DLMPS Congresses continue to attract top quality speakers in all branches of mathematical logic. Two of the international members of DLMPS are specifically devoted to logic, and several national members have a particular interest in it. Since logic is not a subset of philosophy of science, or indeed of philosophy at all, it follows that as things are at present, there is no question of dropping the L from DLMPS.

But the world moves on. Around 1950 some logicians—Bocheński in particular [21]—wanted an affiliation of "logic" to ICSU in order to get a wider recognition for modern logic. In this they succeeded magnificently. But logic today gets incomparably more recognition from its role in computer science than it does from the title of DLMPS. Logicians now have so many international outlets that they depend on DLMPS much less than a few decades ago, and this trend will probably continue.

Also in 1955, mathematical logic had stronger links with foundations than it does today. E.g., mathematical model theory, which was still finding its feet in 1955, is now a branch of mathematics like any other; it has interesting foundations but it is not itself a contribution to foundations. So the links between mathematical logic and philosophy of science grow weaker.

There are already signs that mathematical (as opposed to philosophical) logic may eventually part company from DLMPS. The trend is for fewer papers in mathematical logic to be submitted to DLMPS congresses. It seems very likely that DLMPS congresses will continue to attract philosophical work that uses mathematical logic, but less of the straight mathematics will find its way there. The General Assembly in Nancy was the first one to which the *Association for Symbolic Logic* sent no delegates; this was certainly an unintended accident and not a policy decision, but there is a message in the accident.

My own reaction would be to let rivers find their own natural course. The L in DLMPS should be secure for some decades to come.

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