Methods in Year 50: Preserving the Past and Preparing for the Future

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Summary
Background: Founded in 1962 and, therefore, the oldest international journal in medical informatics, Methods of Information in Medicine will publish its 50th volume in 2011. At the start of the journal’s sixth decade, a discussion on the journal’s profile seems appropriate.

Objectives: To report on the new opportunities for online access to Methods publications as well as on the recent strategic decisions regarding the journal’s aims and editorial policies.

Methods: Describing and analyzing the journal’s aims and scope. Reflecting on recent publications and on the journal’s development during the last decade.

Results: From 2011 forward all articles of Methods from 1962 until the present can be accessed online. Methods of Information in Medicine stresses the basic methodology and scientific fundamentals of processing data, information and knowledge in medicine and health care. Although the journal’s major focus is on publications in medical informatics, it has never been restricted to publications only in this discipline. For example, articles in medical biometry, in or close to biomedical engineering, and, later, articles in bioinformatics continue to be a part of this journal.

Conclusions: There is a continuous and, as it seems, ever growing overlap in the research methodology and application areas of the mentioned disciplines. As there is a continuing and even growing need for such a publication forum, Methods of Information in Medicine will keep its broad scope. As an organizational consequence, the journal’s number of associate editors has increased accordingly.

1. Nothing is as Constant as Change!

With the onset of the year 2011, volume 50 of Methods of Information in Medicine has begun. At the end of this year, the journal, stressing “the basic methodology and scientific fundamentals of processing data, information and knowledge in medicine and health care” ([1], aims and scope) celebrates its 50th birthday. Methods is the oldest international journal in medical informatics.

Half a century is not much in the history of mankind. Yet, during these five decades our world has significantly changed and science, including scientific communication and publication, is no exception.

In 1962 an ‘iron curtain’ existed between west and east, dividing even states like Germany and many families. The Nobel Prize in Physiology and Medicine was awarded to Francis Crick, James Watson and Maurice Wilkins “for their discoveries concerning the molecular structure of nucleic acids and its significance for information transfer in living material” [2]. The novelist Herman Hesse (“Steppenwolf”), recipient of the Nobel Prize in Literature in 1946, passed away in that year.

In January 1962 Methods of Information in Medicine published its first issue. Fig. 1 shows an excerpt of the journal’s first title page. A photo also taken from issue 1/1962 of Methods (Fig. 2) gives a good idea of scientific inquiry at this time. It is taken from a report about an international medical informatics conference, which took place in 1961 in West-Berlin, Germany [3]. During this conference a new generation of punch card sorting machines was presented, providing better opportunities for analyzing biomedical and health data.

2. Objectives of this Report

With this report the Editor, the two Associate Editors, and the Senior Consulting Editor, constituting the Core Editorial Board of Methods, want to report on:

● the new opportunity to have online access to all Methods publications since the journal’s inception in 1962 (Section 4),
● the recent strategic decisions regarding the journal’s aims and scope as well as its editorial policy (Section 5),
● the organizational consequences with respect to these decisions (Section 6), and
● the benefits and risks related to these decisions (Section 7).

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First, it might be helpful to recall the journal’s development during the last decade (Section 3).

3. The Journal’s Development During the Last Decade

As mentioned, *Methods of Information in Medicine* stresses the basic methodology and scientific fundamentals of processing data, information and knowledge in medicine and health care. This aim existed from the beginning, expressed by Founding Editor Prof. Gustav Wagner as the “methodology of medical research, information and documentation” in the journal’s first issue (Fig. 1), or as stimulating the exchange of results from original research about “medical data, information and knowledge”, as stated by Prof. Jan van Bemmel when he succeeded Dr. Wagner as Editor [4].

During the last ten years, the journal’s aims and scope have been tightened as well as kept up-to-date regarding new research directions. New opportunities and requirements in publishing as well as changes in access to published material account for many of the improvements we have made in the last decade and about which we have written several editorials:

- In 2001 the journal’s aims, scope and editorial policies were confirmed, when new editors took over [5].
- In 2002 improved support for open access to scientific information was established [6, 7]. Copyright authorization for personal, non-commercial use, including educational use, was explicitly granted to authors.
- Also in 2002 online access to published articles was launched [6, 8].
- In 2003 the already then close ties with IMIA, the International Medical Informatics Association [9], were strengthened, when *Methods* became an official journal of IMIA [10].
- In 2005 it was announced that the annual number of *Methods* issues would increase from five to six [11]. This was necessary because of the continuously high submission rate of manuscripts, and, although the journal’s acceptance rate has been reduced (to about 30% today), the number of accepted papers was too high for timely inclusion in five issues.
- In 2006 *Methods* participated in a joint effort with leading journals in biomedical and health informatics on good scientific conduct regarding manuscript submissions [12]. The motivation for the editorial was, among others, an increasing number of plagiarism attempts and multiple parallel submissions.

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Fig. 1 Title page of *Methods of Information in Medicine*’s first issue (excerpt)
In 2007 electronic publishing of accepted articles ahead of print (‘preprint online’) was introduced [13].

Also in 2007 an electronic table of contents (eTOC), to be distributed via e-mail for its subscribers after a new issue of Methods has appeared, has been implemented and in 2007 the journal’s Student Editorial Board has been inaugurated as well [14].

In 2008 a manuscript submission and review system was launched [15].

In 2010 free access to Methods’ papers was significantly extended and opportunities for open access publishing were introduced [16].

4. Providing Online Access to all Methods Publications since its Initiation in 1962

We are proud to announce that, from this year forward, all articles that have ever been published in Methods can now be accessed online.

Until last year, Methods papers could be downloaded from the journal’s website only from 1999 (volume 38) forward.

In a joint effort between the Schattauer Publishing Company and the Peter L. Reichertz Institute for Medical Informatics, all remaining papers, i.e. those published between 1962 (volume 1) and 1998 (volume 37), were scanned, indexed, and stored in the online archive of Methods. As far as possible those articles have also been (re)indexed in Medline so that they can not only be searched, but also directly accessed through PubMed.

In order to do original and relevant research and/or to identify promising future research directions, it is important to know of and to learn from past research experience [17]. As Methods is the oldest international journal in medical informatics we thought it important to archive the history of our field.

A complete set of all volumes of Methods is available in many libraries worldwide, including paper publications of the journal’s first decades. As ordering paper publications from libraries has, during the last decade, significantly decreased and the online presence of journal publications has become a standard approach for accessing literature, we are convinced that this step is urgently necessary. It is our hope that other, related, journals will follow.

5. On the Scope of Methods: Medical Informatics – and Beyond

5.1 On the Journal’s Scope

Let us again refer to the scope of Methods of Information in Medicine. From the beginning, the journal’s scope has been to stress the basic methodology and scientific fundamentals of processing data, information and knowledge in medicine and health care. Since “good medicine and good health care demand good information” [1], the vision statement and heading of the journal’s aims and scope section), Methods publishes original papers, reviews, reports, opinion papers, letters to the editor, and editorials in medical informatics and related disciplines, such as bioinformatics, biomedical engineering and medical biometry.

Since the journal’s foundation the editors were in agreement that although medical informatics (or, more broader, biomedical and health informatics) and the other disciplines mentioned have different scientific origins and foci, it is important to provide a scientific forum that comprehensively comprises research publications on the methodology and scientific fundamentals of processing data, information and knowledge in biomedicine and health care. Work in this area does not always strictly belong to one or the other discipline. The same can be observed for their application areas. Three examples are mentioned here:

- Traditionally we can see such overlaps in the area of knowledge-based decision support for diagnosis and therapy, where some, more deterministic methods can be better viewed as an approach in medical informatics and some, more
probabilistic methods as an approach in medical biometry.

● Recently overlaps between methods of medical biometry and of bioinformatics became obvious, e.g. for analyzing microarrays.

● Constructing and applying sensor technologies for measuring (e.g. vital) signs of human bodies has traditionally been an area mainly investigated in biomedical engineering. In the context of pervasive health care, for instance, questions on appropriate health care processes and on appropriately storing data from sensor systems in health records have also become important. Hence, health-enabling technologies and sensor-enhanced health information systems are new and emerging areas of investigation in medical informatics.

These few examples show that a publication forum covering a broader scope which is not restricted to just a single discipline seems to be necessary.

5.2 Examples from Recent Publications

In reviewing some recent publications in Methods, we may see this broad scope including such overlaps, just by looking at a few examples.

As the journal’s major focus is on publications in medical informatics, we can mainly find publications in traditional areas of this discipline such as electronic patient records [18] and health information systems (HIS); those addressing a variety of questions on HIS architectures [19]; HIS processes [20]; HIS standards [21]; or evaluation of HIS [22]. There were also publications in other traditional areas of medical informatics such as knowledge-based decision support [23] or biomedical signal [24] and image [25] processing. Other publications dealt with ontologies [26] or with the analysis [27] and retrieval [28] of certain documents from medicine and health care.

Publications on education in biomedical and health informatics [29] are traditionally included as well as ‘meta’-reflections on medical informatics as a discipline [30]. Close links to the International Medical Informatics Association can be identified through reports on IMIA activities [31] and even by IMIA white papers being published in Methods [32].

Traditionally Methods also tries to introduce new research areas. In its last volume this has been done, for example, for affective medicine as a research area [33].

Close to biomedical engineering are recent Methods publications in the area of health-enabling technologies and ambient assisted living [34]. Traditionally biomedical signal and image processing were and still do overlap with topics in biomedical engineering.

Papers with a focus on bioinformatics [35] and interrelationships to translational medicine [36] have been published as well as articles from medical informatics, e.g. dealing with modeling aspects [37], evaluation strategies [38], simulation [39], and health applications [40].

A closer look at these publications reveals that, for example, in [27] statistical methodology (which can be seen as belonging to the field of medical biometry) is applied to solve a problem in medical linguistics (which can be seen as a method in medical informatics). [28] uses document retrieval methodology combined with imaging methodology (both are within the field of medical informatics, however within different areas). [34] is very close to biomedical engineering. Without using methodologies from traditional medical informatics areas, however, questions on pervasive health care cannot be appropriately solved. [35] obviously has to deal with methodology from bioinformatics and medical informatics in order to appropriately deal with research questions in personalized medicine. The same holds for [38] with respect to bioinformatics and medical biometry, and for [39] with respect to medical biometry and medical informatics. More examples of such overlaps could easily be found.

5.3 Continuing and Strengthening the Journal’s Editorial Policy

We can observe that, during the last few years, many journals tend to narrow their scope and, for example, concentrate on some areas of biomedical and health informatics. We also discussed adopting such an approach within the journal’s Editorial Board, and, in particular, within the Core Editorial Board. We came to the conclusion that we should maintain the journal’s broad scope, as both the necessity as well as the scientific attractiveness and relevance for such a journal is apparent.

We still see the need to provide opportunities to communicate and discuss research covering more than one of the mentioned disciplines. In fact, it seems to us that this need has become even more urgent. We are convinced that our disciplines in particular and science in general will benefit from keeping continuity and even strengthening this broad scope of Methods. Moreover, we expect and hope that this step may help promote these scientific disciplines in appropriately communicating such research to an international audience.

6. Organizational Consequences: Extending the Core Editorial Board

As a consequence of this decision, the number of the journal’s Associate Editors (currently two) will be extended to four colleagues from 2011 on. In addition to better sharing the workload of managing the review processes of the increased number of submitted manuscripts, we also wanted to broaden the range of competencies within the Core Editorial Board for appropriately reviewing manuscripts and identifying new research approaches to be discussed and reviews and/or special topics to be invited.

We cordially welcome Prof. Olaf Gefeller and Prof. I. Neil Sarkar as new Associate Editors in our team. Dr. Gefeller is professor of biometry and epidemiology, and director of the respective department in the Institute for Medical Informatics, Biometry and Epidemiology at the University of Erlangen-Nürnberg, Germany. Dr. Sarkar is Director of the Biomedical Informatics Program at the University of Vermont, USA. Besides their competencies in biomedical and health informatics, both
colleagues will in particular bring their competencies in bioinformatics (N.S.) and medical biometry (O.G.) to our editorial work. Therefore, beginning with issue 1, 2011, the Core Editorial Board of Methods of Information in Medicine consists of Reinhold Haux (Braunschweig and Hannover) as Editor-in-Chief, Dominik Aroinsky (Nashville), Olaf Gefeller (Erlangen), Tze Yun Leong (Singapore) and I. Neil Sarkar (Burlington) as Associate Editors, and Alexa McCray (Boston) as Senior Consulting Editor.

7. Potential Risks and Benefits

Authors and readers of journal publications expect from their editors and publishers high-quality publications of original and relevant topics in their field. Publications should be published in a timely manner and easily accessed. They also rate their journals on current assessment measures like a journal’s impact factor. We see a certain risk in keeping the journal’s broad scope (with good reasons otherwise) with respect to this factor.

On the other hand, analyses on published papers showed that papers with a broader methodical scope were also highly quoted and contributed to the journal’s impact. In 2010 Methods’ impact factor was 1.690, the highest ever in the history of the journal (but not the highest, e.g., in the list of medical informatics journals). Balancing specialization and generalization in the methodology of processing and storing data, information and knowledge in medicine and health care will remain a challenge for a journal with such a broad scope as Methods. As in the past we will put our first editorial priority on quality and content of articles, and we will continue to ensure that Methods publications are part of a highly ranked journal.

8. Nothing is as Constant as Change?

With these changes we hope to keep continuity in the aims and scope of Methods of Information in Medicine. As good medicine and good health care demand good information, Methods wants to continue to be a forum for good scientific communication, hopefully also for the future decades of this prestigious journal.

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As so often we are grateful to Schattauer Publishing Company and, in particular, to Dieter Bergemann as the Publisher and Andrea Schürg as the Director for Journals at Schattauer that these changes have been made possible.

We also want to take this opportunity to once again express our thanks to the journal’s editorial board members and all other reviewers. The considerable effort and time that they devote to reviewing submitted manuscripts ensures that only high-quality manuscripts are accepted for publication in Methods.

References

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To our Readers

New Opportunity – Online Access to all Methods Publications

We are proud to announce that from 2011 onwards all articles of Methods (www.methods-online.com) from 1962 – the journal’s inception – until the present can be accessed online (Fig.).

Methods as the oldest international journal in medical informatics therefore provides now an archive of the history of this field.

In a joint effort between the Schattauer Publishing Company (www.schattauer.com) and the Peter L. Reichertz Institute for Medical Informatics, all remaining papers, i.e. those published between 1962 and 1998, were scanned, indexed, and stored in the online archive of Methods.

As far as possible those articles have also been (re)indexed in Medline so that they can not only be searched, but also directly accessed through PubMed.

After accessing www.methods-online.com, go to the "Archive" subpage. All articles beginning from the first issue in 1962 are now available as pdf documents.