

# The recent history of the IEA: an analysis of IEA Congress presentations since 1961

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**Abstract.** In this paper we review historical material relating to the growth and coverage of past IEA meetings and congresses. In particular, we report on presentations at IEA Congresses dating back to the first one in Stockholm in 1961. A content analysis of Congress proceedings was carried out and we present findings on changes since 1961 covering: numbers and nationalities of conference participants and the types of topics presented at Congresses. Our findings point to evidence of widening participation at the conferences, in particular delegates drawn from Asia, South East Asia and the Far East. In addition, some topics (e.g., physiology, methodological papers and studies of workload) appear to have waned in popularity over the period, whereas some topics (e.g., ODAM, Cognitive Ergonomics) have grown in popularity. We discuss these findings in the light of other evidence covering historical trends and developments within human factors and ergonomics.

Keywords: IEA History, IEA Congress, developments within human factors and ergonomics.

## 1. Introduction

In the 50 or so years since the first IEA Congress in Stockholm in 1961 much has changed within the world of human factors and ergonomics. A number of publications relating to the history of human factors and ergonomics have appeared in the last few years. These cover the history of the discipline within specific countries (e.g., UK [1, 2, 3], USA [4, 5]) as well as covering the origins and early history of the IEA [6, 7]. Most of the publications have charted trends and development over time including changes to the subject matter of HF and ergonomics, as well as the origins of papers (e.g., nationality, industry, and consultancy). The main aim of the papers in the symposium “Looking Backwards and Forwards: Celebrating the Recent History of the IEA” is to pause for reflection and to probe a little bit deeper into these changes.

In this paper, we examine trends and developments as they relate to contributions to the 17 congresses which have taken place over the period 1961-2009. More specifically, we examine data relating to: (a) the growth of contributions to the congresses; (b) the nationalities of authors presenting at the congresses over the period; and (c) the subject matter of papers

presented at the congresses and how these have changed over time.

## 2. Methods

A content analysis was carried out on the papers published in the proceedings from the 16 congresses over the period 1961-2009. In one case (the Warsaw Congress in 1979) data was unavailable at the time of analysis and is therefore not reported in our results. The content analysis involved calculating the total number of presentations at each of the congresses and using a categorization scheme to assess trends and changes in topics. The categorization scheme utilized 18 categories covering aspects of the application domain of presentations, subdisciplines within ergonomics (e.g., physiology, HCI and cognitive ergonomics) and papers focusing on methodology.

## 3. Findings

### 3.1 Number of presentations and nationalities

Figure 1 shows a graph of the number of paper presentations since 1961. With only two exceptions (the Korea and China Congresses), each triennial period has seen a growth in the number of papers presented.

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The nationality of presenters has also changed a great deal as the IEA has evolved and membership has spread to other parts of the world outside of the original founding Societies of the IEA (i.e., largely USA and Europe such as HFES and the IEHF). During the 1970's the Congress was dominated by papers from Europe and the USA. Since the 1980's papers from Asia, South East Asia and S. Africa became more common. At the Beijing 2009 Congress for example, presenters were drawn from over 50 different countries spread across the globe. Alongside delegates from China and Japan, sizeable groups of participants were drawn from South America, Australia and New Zealand.

### 3.2 Topics and themes

A closer examination of the types of papers presented at the Congresses since 1961 illustrates some of the trends in terms of the growth and decline of topics. Figures 2 and 3 show examples of some of the topics which have grown and declined in popularity over three time periods (1961-1973, 1976-1994 and 1997-2009).

Topics such as ergonomic methods and methodology, as well as work on workload, physiology and product design show the most pronounced decline in numbers. By contrast, research on cognitive ergonomics, human-computer interaction, organisational design and management (ODAM), and studies examining the relationship between work and health, have increased in prominence. A number of topics have remained stable over the period (i.e., little change, moderate increases or decreases in presentations). These include: studies of ageing, work on international standards and research on education and training. It is also interesting to note that during the first decade of the Congresses (1961-73) the most popular topics were physiology and ergonomic methods. By the middle period (1976-94) the most popular topics were methods, followed by ODA and HCI. Between 1997-2009 little had changed, however paper reporting on Human-Systems Interaction and papers covering particular application domains (e.g., Transport, Aviation, Healthcare) are coming to be prominent.

## 4. Discussion

Over a period of more than 50 years it is not surprising to find some changes within the types of topics presented at Congresses. We would expect that Congress presentations would to some extent reflect scientific and wider societal developments. What is

surprising is that what might be considered to be 'core' topics of ergonomics, at least in the early days of the discipline, have declined in popularity. Papers reporting findings covering physiology for example, have consistently declined since 1961. Topics such as disability and product design appear to have also declined. In many ways this is surprising given the fact that both areas represent important and active areas of research within ergonomics. Similarly, papers reporting findings or experiences in relation to methodology within ergonomics have declined. The study of methods is a key part of ergonomics, but does not seem to be reflected in the recent IEA Congresses.

Analysis of this kind in many respects raises more questions than answers. The finding that presentations covering physiology have declined in number for example, contradicts other data [e.g., 1] which shows that within the academic journals the subject is still very popular. One explanation is that as the Congress has grown in size it has become more practice oriented, as compared to catering to an exclusively academic audience. In other cases, the explanation of growth in some topics may be easier to explain. The phenomenal growth of papers in the area of work and health for example, reflect the growth of topics such as MSD's and manual handling alongside the impact of legislation and the increasing importance of developing nations within the IEA [6]

## 5. Limitations and future work

Our content analysis was based on session titles and did not include a detailed analysis of individual papers (e.g., paper abstract). In addition, there is a need for further work refining the categorization scheme and comparing inter-rater content judgments. We hope to include these changes in our future work. Finally, there is a need to compare our findings with other content analyses of publications within human factors/ergonomics (e.g., scientific journals).

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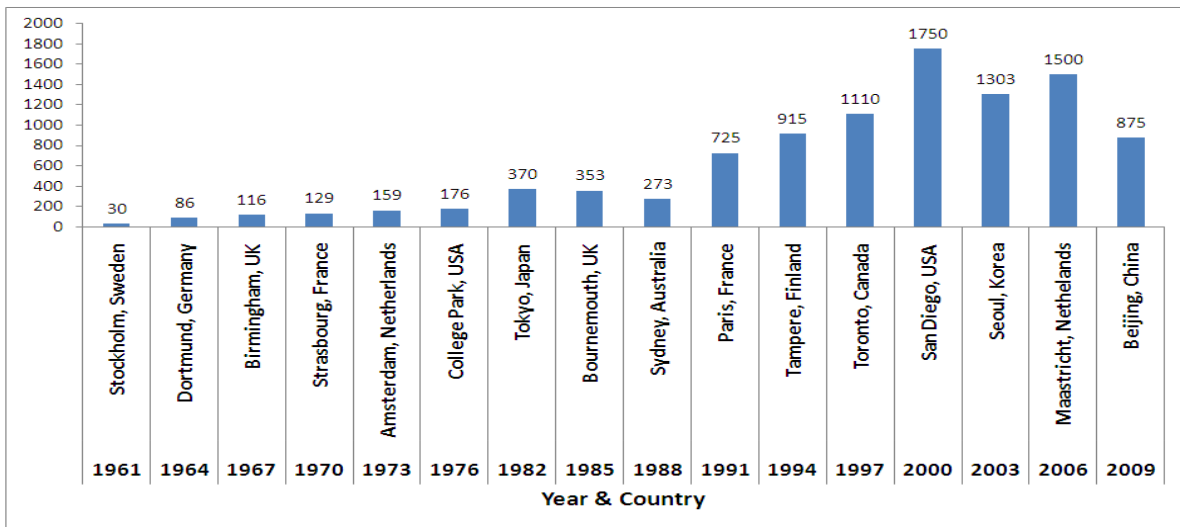


Figure 1: Number of presentations at IEA Congresses 1961-2009

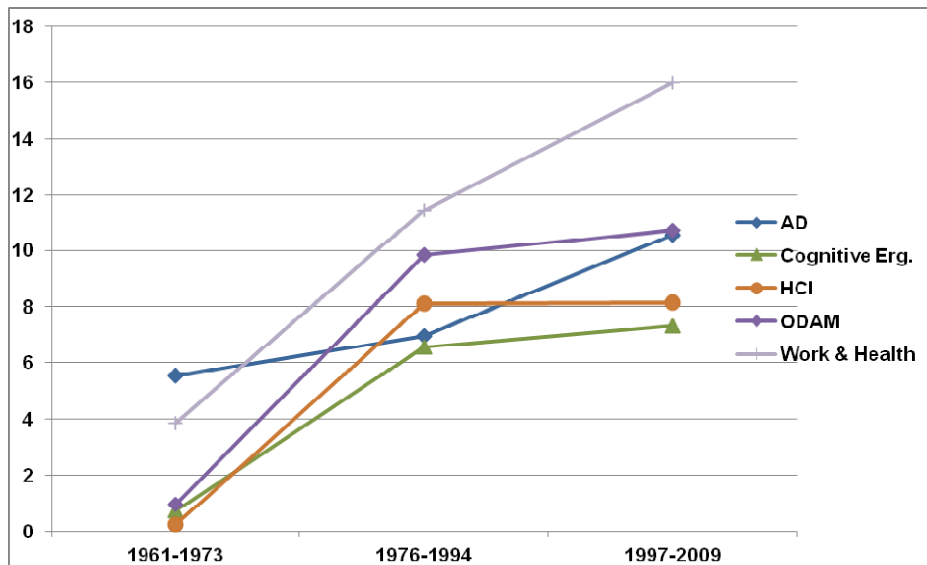


Figure 2: Topics declining in popularity since 1961 (% of total papers, AD = Application Domain)

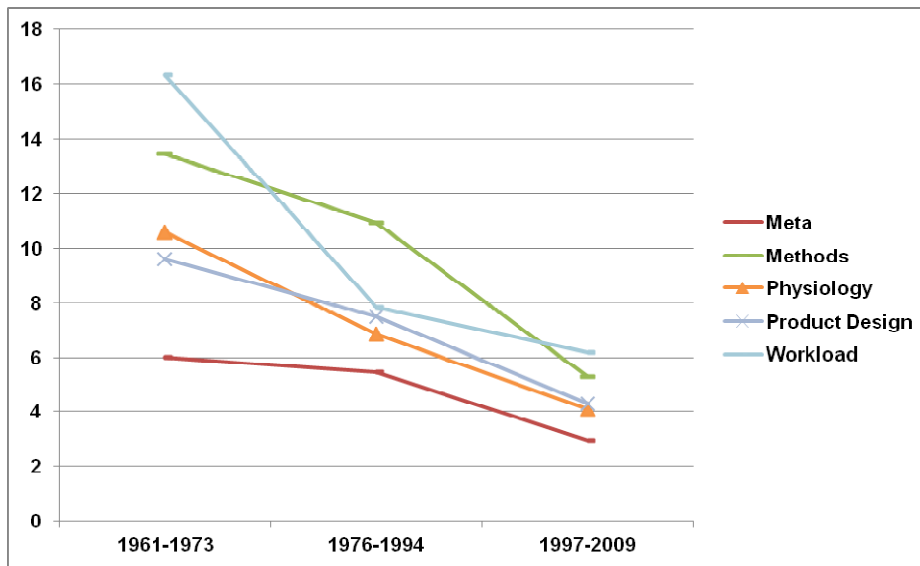


Figure 3: Topics increasing in popularity since 1961 (Meta = Papers covering general and discursive topics in ergonomics – e.g., the future of the subject)