

Editors' Note

This *Liber Amicorum in Memoriam of Jo van Nunen* is a collection of Jo's own work and the contributions of his friends and colleagues. In the first part, we first show Jo's co-author graph: a graph containing all his co-authors as nodes. Two co-authors are connected if they co-authored at least one paper together with Jo. Then, we present four papers of Jo taken from the ten papers that he marked as his most important papers over the years. These papers were reprinted with the permission of their publishers. The editors of this *Liber Amicorum* want to acknowledge the publishers for this reprint permission.

The first of Jo's papers selected for this book is one of his first publications, written together with his promoter Jaap Wessels. This paper has a strong mathematical character, clearly showing Jo's roots as a mathematician. The second paper deals with reverse logistics and product recovery. It was one of the first papers on this subject, and shows that Jo was indeed one of the founders of this research field. The next paper describes the results of Jo's cooperation with IBM on spare-parts management. This project resulted in several other joint research projects with IBM. Based on these projects, Jo was awarded by IBM with the Faculty Award from the IBM Zürich research laboratory in 2007. The last paper shows Jo's interest in sustainable supply chains. He also clearly advocated sustainability as the scientific director of Transumo (Transition to Sustainable Mobility). In detail, the selected papers of Jo are the following:

- Nunen, J.A.E.E. van, Wessels, J., (1978). A Note on Dynamic Programming with Unbounded Rewards. *Management Science*, 24 (5): 576-580. Published by INFORMS.
- Thierry, M., Salomon, M., Nunen, J.A.E.E. van, Wassenhove, L.N. Van, (1995). Strategic Issues in Product Recovery Management. *California Management Review*, 37 (2): 114-135. Published by the Haas School of Management, Berkeley.
- Fleischmann, M., Nunen, J.A.E.E. van, Graeve, B. (2003). Integrating Closed-Loop Supply Chains and Spare-Parts Management at IBM. *Interfaces*, 33(6), 44-56. Published by INFORMS.
- Quariguasi Frota Neto, J., Walther, G., Bloemhof-Ruwaard, J.M., Nunen, J.A.E.E. van, Spengler, T. (2009). From Closed-Loop to Sustainable Supply Chains: The WEEE Case. *International Journal of Production Research*, 37 (2): 114-135. Published by Taylor & Francis.

The second part of this *Liber Amicorum* contains 23 great contributions by 46 authors. These papers were divided into five sections: (1) building the foundations for innovation; (2) seducing the customer and managing resources; (3) creating sustainable distribution and logistics; (4) making ports and transport networks smarter; (5) managing business networks using information technology.

The first section contains four contributions, dealing with interdisciplinarity and the role of quantitative models in different environments. It starts with "De Integraal van Nul is Nul" ("The Integral over Zero is Zero") by Peter van Baalen. This paper describes the discussions leading to the inter-disciplinary educational program of the RSM: is having a mono-disciplinary background a *must* or a *hinder* for students to understand inter-disciplinarity? Jo clearly advocated the first opinion in a mathematical way by the title of this contribution. "Innovation in Railway Planning Processes" by Leo Kroon and Gábor Maróti presents the results that were obtained by the application of planning support systems in the logistic planning processes of Netherlands Railways: efficiency and service improvements in the logistic plans, and efficiency and throughput time improvements in the planning processes. This is very much in line with Jo's belief. In "Modellen: Hoe Kan het Anders?" ("Models: How to Do it Differently?") Jacob Wijngaard is somewhat more skeptical about the effects of planning support systems in operational planning processes. He considers the current generation of planning support systems as too complex. He suggests an agenda for integrating longitudinal empirical and engineering research to improve this situation. Berend Wierenga describes "The Interface of Marketing and Operations Research", focusing on the use of quantitative models within

Marketing. These models were first borrowed from Operations Research, but later the field of Marketing models developed as an independent field within Marketing. Customer-centric marketing provides new opportunities for the link between Operations Research and Marketing.

Five papers contribute to the second section. For a number of years, Jo had a true passion for the research area of revenue management. This section starts with a paper related to this subject titled “Demand Management in E-grocery at Albert.nl” by Niels Agatz, Moritz Fleischmann, Evsen Korkmaz, Roelof Kuik, Martin Savelsbergh, Boudewijn Canrinus, Coert de Neve, and Remco Kok. It reports a multiple year research collaboration between RSM and Albert.nl on demand management opportunities in e-fulfillment. Hans Quak describes in “Naar Oplossingen in Stedelijke Distributie: Van Bestrafen naar Belonen” (“Towards Solutions in City Distribution: From Punishments to Rewards”) an approach to solve several problems in city distribution. This approach is based on principles from revenue management, thereby following Jo’s strong belief that rewards are more effective than punishments. In the third paper of this section, “The Economics of Privacy Protection in the Online World: A Business Perspective,” Piet Ribbers reports on a joint study conducted within the EU project PRIME (Privacy and Identify Management for Europe). It discusses privacy protection in the online world and the technology that could support the user in privacy protection. A well-known issue in Internet retailing is the extent to which e-retailers are able to capture the attention of the firm’s potential customers. The fourth paper of this section is related to this general theme. More specifically, the gender effects that Jo always commented on. Ting Li and Jan van Dalen authored “Switching from Offline to Online Shopping: The Role of Gender.” Their findings suggest that women and men differ in their perceptions of online shopping. Women perceive higher risks towards online shopping and are less likely to make future online purchases. The last paper is titled “Spare Parts Management at IBM: Capturing the Value of the Customer and Product Returns,” written by Ben Gräve, Muhammad Jalil, Moritz Fleischmann, Michiel Kuipers, Eleni Pratsini, Harold Tiemessen, and Rob Zuidwijk. The paper reflects on the collaboration between RSM and IBM in which Jo played a pivotal role, and it reports on the work by three (former) Ph.D. students of Jo.

The topic of the third section on distribution and logistics has always been a favorite of Jo. For instance, he hosted the International Workshop on Distribution Logistics on several occasions. His friend and colleague Bernhard Fleischmann also attended and organized these workshops. His contribution “The Impact of the Number of Warehouses on Inventories in a Distribution System” is very much in the spirit of these workshops. He shows that a well-known rule-of-thumb in distribution network design relies on the EOQ formula and is therefore usually not valid. In the contribution “How to Balance Quality and Logistics in Food Supply Chains,” Paul van Beek also provides new insights beyond the EOQ formula by considering the optimization of distribution costs including the costs of cooling a food product with order size and cooling temperature as decision variables. Another shift in mindset is presented by Piet van der Vlist, Ton de Kok, and Tom van Woensel in their paper “Ship As Soon As You Can, Don’t Wait Till You Have To!” They present the concept of Supply Chain Synchronization, which has been developed in a large industry project in which Jo played an active role. Kees Ruijgrok in his paper “The Money Lies on the Street: The Problem is How to Pick it Up” elaborates on one of the characteristic one-liners by Jo, and he reflects on the reasons behind the failure of promising projects. René de Koster explores the use of simple mathematical rules in warehouse management in “Warehouse Math”, inspired by the fact that Jo was also a mathematician. In “A Sustainable Future for Closed Loop Supply Chains” (CLSC), Jacqueline Bloemhof, Erwin van der Laan, Luk Van Wassenhove, and Rob Zuidwijk describe historical developments in the field of CLSC. Jo was one of the founders of this field. The authors explain that CLSC is currently recognized as a relevant area, both scientifically and practically, and that it has the potential to develop into a mature science coping with aspects like product design, and economical, environmental, and political issues.

The topic of the fourth section, port and transportation, is another field which Jo very much enjoyed. Intermodal transport is very much related to the growth of the port of Rotterdam and Jo has been very active in this domain. As scientific director of Transumo, he further developed the research on sustainable mobility. In the contribution “Electronic Footprints in Transport Management” Peter

Nijkamp and Irene Casas provide an in-depth discussion on a topic which Jo addressed many times, namely the potential benefits and drawbacks of tracing individual movements by using information and communication technologies, for example in traffic. Albert Veenstra and Rob Zuidwijk in their paper “The Future of Seaport Hinterland Networks” develop a vision on future intermodal networks, inspired by recent innovations in the port of Rotterdam. Robert Stahlbock and Stefan Voß also contribute to the field of container logistics with their contribution “Improving Empty Container Logistics: Can it Avoid a Collapse in Container Transportation?” by providing a comprehensive literature review on the management of empty containers. Hugo Roos provides food for thought by discussing “An Unsettled Question in Transport Economics: The Importance of Excess Capacity in Transport Infrastructure.”

What makes a high-performing, sustainable supply chain involving a network of businesses? A question Jo has closely looked at in the last couple of years. In the fifth section, the authors Peter Vervest, Diederik van Liere and Martijn Hoogeweegen offer an alternative view in their paper “Unchaining - Why Supply Chains and Business Networks are Different”. They argue that “companies grouped as business networks can have different ways to handle the amplifier effect and do not need to have full access to market information data, and may not require joint informational control.” It has been a collective dream of Jo and Kees van Hee to have a service robot, where a human operator remotely controls the robot while the robot is performing his task at a distance location. In this innovative paper titled “Teleoperated Service Robots: a new Industrial Revolution”, The author further elaborates on the idea and argues that this decoupling of locations between where an operator resides and the actions and performance could cause a new industrial revolution. Hans Moonen, Jos van Hillegersberg, and Arthur Oink discuss cloud computing in their paper “In the Cloud the Sky is No Longer the Limit.” The authors reflect on their collaboration with Jo and argue that technological innovation, on which Jo could elaborate so enthusiastically, remains a source for business innovation. They in particular discuss multi-agent systems and their potential impact on organizational forms. In the last paper “Software Agents Supporting Decision-Makers in Complex Flower Business Networks,” Eric van Heck and Wolfgang Ketter explore the use of software agents to support decision making in complex business network. They illustrate the idea in the context of Dutch Flower Auctions, a research collaboration with a long-term partner FloraHolland, and propose a multi-disciplinary research agenda.

Finally, we would like to thank the authors of the papers for their efforts to bring together such a great collection of contributions on a relative short notice. We thank Dinalog for their willingness to sponsor the book, and in particular Wim Bens (preface) and Sophie Zijp (cover) for their contributions. We thank Evelien van der Hurk for the photo contributions to this book and for her editorial assistance. Last but not least, we would like to thank Ingrid Waaijer for helping us in copy-editing the book.

There were three types of mathematicians: those who can count, those who can't count, and there was Jo. We thank him for having been the source of inspiration of which this book testifies.

The editors,

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Jo's Co-Author Graph

The graph on the next page represents Jo's co-authors. The graph is based on a total number of 133 publications that were obtained from a list prepared in January 2010 by Jo himself. Each node in the graph is one co-author. The total number of co-authors happens to be 99. Thus, together with Jo, that makes exactly 100 authors. Furthermore, in Chinese the number 9 has the same pronunciation as "久", meaning long-lasting and forever. So "Jo + 99" means: Jo will be with us forever.

Note that Jo himself does not appear as a node in the graph, in order to keep the graph as much as possible readable. An edge between two co-authors in the graph indicates that there is at least one paper co-authored with Jo by the two co-authors together. Note that we could identify just one single publication that was produced by Jo completely on his own: his Ph.D. thesis from 1976: "Contracting Markov Decision Processes". Obviously, this publication could not be represented in the graph.

For each co-author, the number of papers co-authored with Jo is indicated numerically. Also the font size of his or her name is an indication of the number of papers co-authored with Jo. Furthermore, the width and the style of an edge between two co-authors indicate the number of papers co-authored with Jo by the pair of co-authors. The wider the line, the more papers are co-authored with Jo by the pair of co-authors. Furthermore, solid lines represent 1 or 5 papers. Dashed lines indicate 2, 3 or 4 papers.

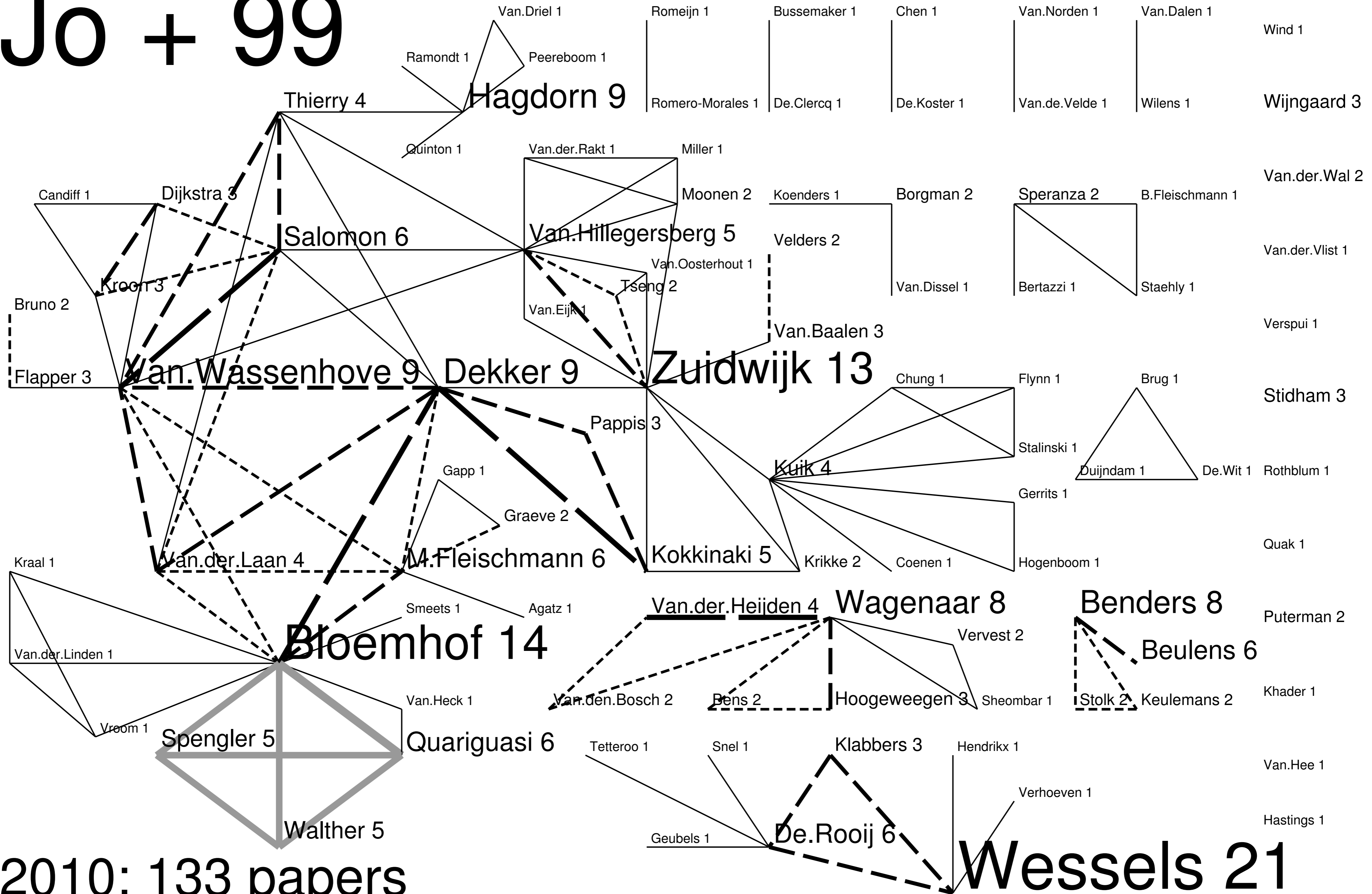
The graph clearly shows a number of connected components. First, there are the isolated points. These represent papers written by Jo and one co-author. Then there are the single edges. These represent papers co-authored by Jo and a pair of authors. Then there are several larger components, e.g. the *early* components around Benders and Wessels, and a *later* component around Wagenaar. Finally, there is the large and complicated component shown at the left-hand side of the graph. This graph does not show much structure, but there are some clear subgraphs, for example the subgraphs around Bloemhof, Dekker, Van Wassenhove, and Zuidwijk.

Obviously, a paper co-authored by Jo and n co-authors gives rise to a clique of size n in the graph. The largest such cliques are the cliques of size 5 formed by the following quintets of co-authors: (Dekker; Van der Laan; Van Wassenhove; Salomon; and Thierry) and (Dekker; Van der Laan; Van Wassenhove; Bloemhof; and Moritz Fleischmann).

In principle, a clique can be formed based on combinations of papers. For example, a triangle where each of the three authors co-authored 2 papers and each pair of co-authors co-authored 1 paper can be the *direct* result of one paper co-authored by the three co-authors combined with 3 papers co-authored by a single co-author, or the *indirect* result of three papers each one co-authored by a pair of co-authors. However, the latter phenomenon does not occur in the graph. Thus each clique of size n is the result of a single paper co-authored by Jo and the n co-authors appearing in the clique.

Moreover, if there is a clique of size n in the graph in which each edge occurs at least m times, then there are at least m papers co-authored by Jo and the n co-authors appearing in the clique. Knowing this property of the graph allows one to uniquely reconstruct the compositions of the co-author teams of the papers. For example, the component around Wagenaar consists of the following papers: 2 x (Van den Bosch; Van der Heijden; Wagenaar); 2 x (Van der Heijden; Wagenaar); 2 x (Bens; Hoogeweegen; Wagenaar); 1 x (Hoogeweegen; Wagenaar); 1 x (Sheombar; Vervest; Wagenaar) and 1 x (Vervest).

Jo + 99



2010: 133 papers

