

Center for Supply Chain Research

Smith's Ratio Rule in Minsum Scheduling

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Thursday, September 19, 2002

1130ME Conference Room starting at 3:30 p.m. with an informal discussion to follow

Abstract: In 1956, Wayne E. Smith proposed a simple sequencing rule, now known as Smith's ratio or Weighted Shortest Processing Time (WSPT) rule: sequence the jobs in nondecreasing order of their ratio of processing time to weight. This rule plays a central role in minsum scheduling, when the objective is to minimize a weighted sum of completion times. Smith proved its optimality for the simplest minsum scheduling problem, when all jobs are simultaneously available for processing on a single machine. We review some of the many extensions and related results in the past 46 years since Smith's seminal result. The main themes addressed in this talk include an interpretation of Smith's rule as a greedy algorithm for certain supermodular polyhedra; a geometric representation using two-dimensional Gantt charts; extensions to problems with release dates and parallel machines; and recent results on the analysis of on-line heuristics for deterministic and stochastic minsum scheduling.

Maurice Queyranne is a Professor of Management Science in the Operations and Logistics division, Faculty of Commerce and Business Administration at the University of British Columbia, Vancouver, Canada. His research interests are in Operations Research, in particular in Combinatorial Optimization, and in Logistics and Operations Management. His current research concerns submodular systems, polyhedral combinatorics, revenue management, and various approaches to scheduling problems. He received the Award of Merit from the Canadian Operational Research Society in 1998 and was the Chair of the INFORMS George Nicholson Student Paper Competition in 2001. During Fall 2002, he is a visitor at the Institute for Mathematics and its Applications (IMA) at the University of Minnesota, Minneapolis, as part of the thematic program on Supply Chain and Logistics Optimization.

Hosted by: Professor Saif Benjaafar, (612) 626-7239, <saif@umn.edu>.

Informal Faculty Luncheon at the Loring Pasta Bar: Thursday, September 19, 2002, 11:45 a.m.
Meet together in 1100ME to go with other faculty to lunch.
Professor Queyranne will be able to attend.

For further information regarding this and other Center for Supply Chain Research seminars, contact Saif Benjaafar <saif@me.umn.edu> or visit our website at <www.ie.umn.edu/cscr>.