

# The travelling artistic patrimony

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Starting from a data base that raises, during the period 1992 to 2000, the exhaustive list of the loans of works of art from the 47 french museums belonging to the RMN to *all other* museums in the rest of the world, we add an additional data base which includes the loans from *all these others* to the RMN during the same period. Both of these are huge lists of the pieces of art that belong to a travelling artistic patrimony.

Then, we constructed an econometric model to study the network of loans between the more significant museums appearing in this data base. Using the methodology of logit models for social networks<sup>1</sup>, we made a symbolic map where all these museums are such positioned that the *euclidian distance* between the museums located on the map means *the probability of lending* from the ones to the others. Thus the observed loans during the period lead to construct the lending predictive structure which the patrimony is travelling through.

An interpretation of this econometric model is given with the help of the newtonian model which transposes the gravitational analogy to social studies<sup>2</sup>. In this model, the "*attraction*" between museums is depending of the inverse distance between them. Of course the metric distance between museums play a very little role in the story, and this is why the construction of a symbolic space is needed<sup>3</sup>.

We thus obtain big areas where the museums are gathered in *groups*. Constellations of museums can be shown to be well-related to observed loans in reporting them back on the symbolic map as "*arrows*" between museums that are lending others. The dynamic of all these groups, and links, can be followed in observing how some museums migrate from given areas to others at different period of time and how constellations of museums move relatively the ones to the others.

Finally, we address the question of why such lending structures appear and how they transform. The conservatives of the museums are wanting to *see* pieces of art gathered in exhibition for many purposes, including scientific ones, and this is the reason why they contribute in making travelling the part of the patrimony they hold. Of course, this contribution is costly and risky and we study how the structure of costs and risks is related to the network formation<sup>4</sup>.

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<sup>1</sup>Anderson, C.J., Wasserman, S., Crouch, B., A *p*\* primer : logit models for social networks, *Social Networks*, 21, 37-66, 1999.

<sup>2</sup>Bossuyt, Audrey, Broze, Laurence, and Ginsburgh, Victor (1998), On invisible trade relations between Mesopotamian cities during the third millennium B.C., à paraître dans *The Professional Geographer*.

<sup>3</sup>Hoff, P.D., Raftery, A.E., Handcock, M.S., Latent space approaches to social networks analysis, *Journal of the American Statistical Association*, 97, 2002.

<sup>4</sup>Goyal, S., Bala, V., A Strategic Analysis of Network Reliability, *Review of Economic Design*, 5, 3, 205-229, 2000. Goyal, S., Janssen, M., Non-Exclusive Conventions and Social Coordination, *Journal of Economic Theory*, 77, 34-57, 1997. Goyal, S., Joshi, S., Networks of Collaboration in Oligopoly, *Games and Economic Behavior*, 43, 57-85, 2002. Goyal, S., Joshi, S., Unequal connections, dt, April 2003.