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Daciberg Lima Goncalves (dlgoncal@ime.usp.br), Departamento de Matematica - IME-USP, Caixa Postal 66281 - Ag. Cidade de Sao Paulo, Sao Paulo, SP 05311-970, Brazil, and **John Guaschi*** (guaschi@picard.ups-tlse.fr), Laboratoire de Mathematiques Emile Picard, UMR CNRS 5580, Universite Paul Sabatier, 31062 Toulouse cedex 9, France. *From dynamical systems to surface braid groups.*

Two fixed points x, y of a continuous map f of a topological space X into itself are *Nielsen equivalent* if α is homotopic to $f \circ \alpha$ for some arc α from x to y . This may be formulated algebraically as the Reidemeister equivalence problem for f . If X is a finitely-punctured disc then we show that this problem may be reformulated as an honest conjugacy problem in the Artin braid groups. This enables one to use topological and dynamical invariants to help decide the Nielsen and Reidemeister equivalence problems. The key is the splitting of the Fadell-Neuwirth short exact sequence (Artin combing). We discuss the splitting of the Fadell-Neuwirth sequence for braid groups of closed surfaces, including some recent work in the non-orientable case. We end with some remarks on finite subgroups of the sphere braid groups. (Received September 24, 2006)