Household Transitions in Grassland Settlement: The View from Kansas

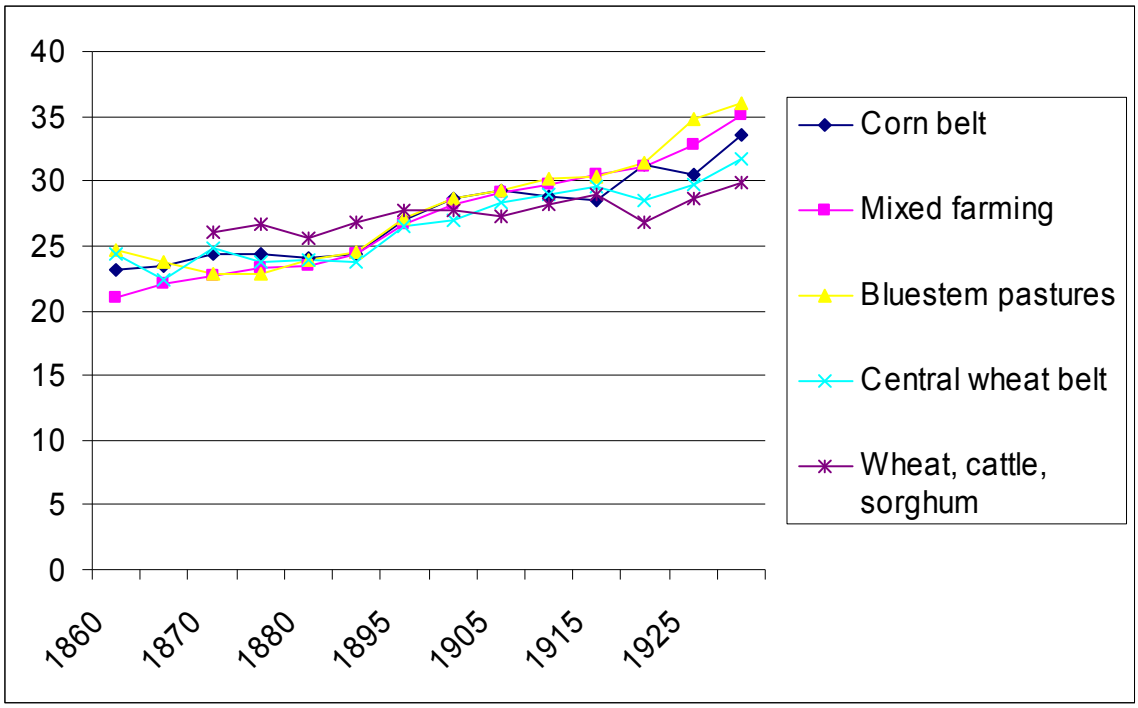
Myron P. Gutmann, University of Michigan
Susan Hautaniemi Leonard, University of Michigan
Glenn Deane, University of New York Albany

Household composition under different economic and cultural settings has long been a topic of demographic research, often focusing on the economic drivers of family size (e.g. Demos 1970; Greven 1970; Lockridge and Kreider 1966; Lockridge 1968, 1970; Swedlund 1978). From an earlier search for commonalities, this work has moved towards understanding the components of variation in households across cultural and economic change (Bouchard 1994, 1996; Gjerde 1997; Gjerde & McCants 1999; Loewen 1993; Sylvester 2001, 2003). Family labor has historically been a key aspect of farm life, legitimizing a labor-oriented approach to exploring household composition in rural settings and the expectation that composition and land use may be closely linked (Alston, Libecap & Mueller 1999; Cunningham 2000; Moran, Brondizio, Mausel & Wu 1994; Perz & Walker 2002; Sylvester 2001). Recent research on settlement in North America, including our work in Kansas, suggests that frontier communities were populated not just by families at the formation stage but by mature households that could benefit from the labor contributions of children nearing marriage age (Flory & Guest 1988; Gjerde & McCants 1999; Gutmann, Pullum-Pinon, Deane & Witkowski 2006; Leonard and Gutmann 2005; Sylvester 2001; Widdis 1998). The relationship of household lifecycles to farm size, practice, and division, and to changes in land use and farming practices have been the subject of scholarly inquiry from Chayanov to the present (see de Sherbinin 2006 for an overview; and for examples, Barbieri, et al 2005; Foster and Rosenzweig 2002; Moran, et al 2005; Walker, et al. 2002; Walsh, et al 2005).

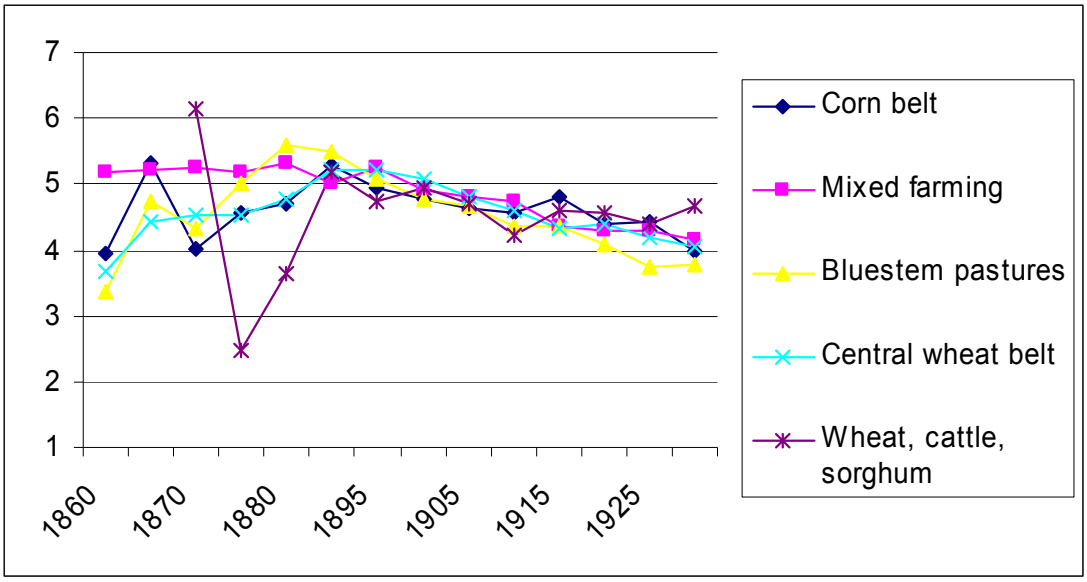
The human transformation of the grassland ecosystem of the U.S. is as dramatic as any described in an ever-expanding literature about how people have converted primary forests and grasslands into human-altered landscapes. What is equally remarkable is that the process of initial change had run its course more than 50 years ago, its impact long ago completed and well-documented by aerial photographs, censuses and surveys. Nowhere are the data better than they are for the state of Kansas. The Demography and Environment in Grasslands Settlement project takes advantage of the remarkable history and striking documentation of the human transformation of the Kansas grasslands to better understand the core transformations in land use and family dynamics. In order to capture the environmental variability of Kansas, we have assembled a linked database of farm and family census records for twenty-five townships scattered across the state. The data available include censuses of individual farms and farm families at regular intervals over a long period of time, as well as information about soils, weather, irrigation sources, and land ownership. We link these unique individual-level materials to shed light on the demographic and agricultural behavior of farmers and farm households, and the environmental and social impacts of those behaviors.

We have begun to examine these issues at the township and household level in settlement-era Kansas by looking at variation in family lifecycle as close to initial settlement as possible and as communities move further from the settlement process, considering variation in family lifecycle timing in the context of differences in environmental factors, land-use, and ethnicity. In Kansas, settler households ran the gamut from hotels filled with men in their 20s through young families just starting out to families headed by those in midlife with many members available for labor. Over time, households tended to look more like one another, and more like households in the larger region and nation. Although this pattern applied broadly across Kansas, there were also broad environmental and land use differences both in the timing and trajectory of the distribution of households at different stages. Ethnicity and the settlement process itself are the key factors in the rising proportions of smaller and older households we see from early settlement up to the Dust Bowl years.

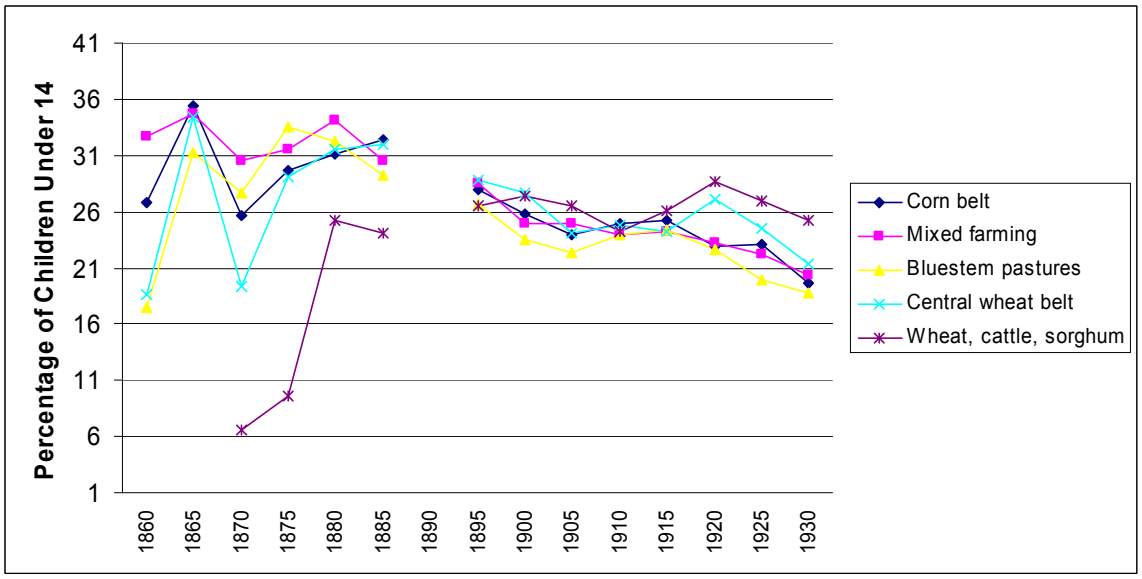
Mean age of household heads by land-use zone, 1860 - 1930



Mean household size by land-use zone, 1860 – 1930



Internal household dependency by land-use zone, 1860-1930



This phase of our research extends these cross-sectional comparisons of individuals within households by using longitudinal data on households to model transitions from one household lifecycle location to another. The timing and type of household transitions are interesting in understanding population dynamics (Akkerman 2005), an understudied empirical and theoretical issue in work developing the theory of the role of household life cycles in land use in frontier settings (Walker 2006). We will ultimately analyze household transitions in relationship with transitions in farming practices and changing farm size. Falling internal household dependency under household lifecycle theory frees the household to attempt riskier production practices, in the case of the

Amazon a move to commercial crops, but in the Great Plains where agriculture was always commercially oriented, riskier economic strategies might include investment in new technology (e.g., tractors), new corps (e.g., sorghum or new varieties of wheat), or higher value crops that are less well suited to the natural environmental endowment (e.g., corn). Unlike in the Amazon case, our work shows that we cannot assume that colonist households were young households with high percentages of young children. In-migrating households with greater resources of either wealth or labor could extend their cultivated land more rapidly than those without workers or the ability to hire others to undertake the heavy work of plowing the tough prairie sod with animal power. This economic edge may have made them more successful in remaining on the land and in increasing land holdings controlled by the settler household in combination with new households formed by children as they reached adulthood.

Households change simply as a process of time – all surviving members age, some to become more useful and some to become less so. Members are added, either through the birth of children which increases internal dependency, or by the addition of adults (whether related or not) which decreases internal dependency. Finally, household members leave to form their own households whether locally or distantly.Were households with many working-aged adults more compositionally stable during the earlier settlement period? Was an aging household head equally predictive of household division in the ranching areas of western Kansas as in the wetter Eastern townships where crop farming was more predictable? Were female-headed households more likely to undergo a transition? Were large families more likely to undergo a transition than families with fewer children? Did new endogenous households, those split off from existing households, look or behave differently than new exogenous households formed by new migrants (Barbieri et al 2005)? We estimate a series of three-level (or mixed) regressions with repeated measures (*time* is therefore the first-level unit) of household form nested within households and households nested within environmental region, to look at household transitions that model change in household life cycle location between censuses based on household characteristics at the beginning of the interval. The dependent variable is change, with independent variables such as the duration of residence, age of household head, the number of working age adults, the number of dependent children, and sex of the household head, as well as the sub-regional land-use characteristics used above.

In the Demography and Environment in Grasslands Settlement project, we hypothesize a human imprint on the Plains environment where the cumulative impacts of household-level processes on landscape-level dynamics were the result of historical give and take between family forms and land use: where humans and their demographic priorities altered landscapes, where land-use choices changed in response to monitoring of ecological processes, and where altered landscapes engendered further cycles of change. In this paper we explore household lifecycle transitions across land-use areas of Kansas from earliest Euro-American settlement through the development of a land-use system that remains the visible organizing principle of the landscape to this day.

References cited:

Akkerman, Abraham 2005. "Parameters of Household Composition as Demographic Measures." *Social Indicators Research* 70:151-183.

Alston, Lee J, Gary D Libecap, and Bernardo Mueller. 1999. *Titles, conflict, and land use the development of property rights and land reform on the Brazilian Amazon frontier*. Economics, Cognition, and Society. Ann Arbor: University of Michigan Press.

Barbieri, A.F., R.E. Bilsborrow, and W.K. :Pan. 2005. "Farm Household Lifecycles and Land Use in the Ecuadorian Amazon. Population and Environment 27(1):1-27

Bouchard, Gérard. 1994. Family Reproduction in New Areas: Outline of a North American Model. *Canadian Historical Review* 75, no. 4: 475-510.

Bouchard, Gérard. 1996. *Quelques arpents d'Amérique population, économie, famille au Saguenay, 1838-1971*. Montréal: Boréal.

Carter, Susan B., et al. 2006 *Historical Statistics of the United States*, Millennial Edition. Cambridge University Press: Cambridge.

Cunnigham, Hugh. 2000. The Decline of Child Labour: Labour Markets and Family Economics in Europe and North America since 1830. *Economic History Review* LIII, no. 3: 409-28.

de Sherbinin, Alex. 2006. "Rural Household Micro-Demographics, Livelihoods and the Environment." Background Paper, Population-Environment Research Network Cyberseminar, 10-24 April 2006. www.populationenvironmentresearch.org

Demos, J. 1970. *A Little Commonwealth: Family Life in Plymouth Colony.*New York: Oxford University Press.

Florey, Francesca A. and Avery M. Guest. 1988. Coming of Age Among U.S. Farm Boys in the Late 1880s: Occupational and Residential Choices. *Journal of Family History* 13: 233-49.

Foster, Andrew D. and Mark R. Rosenzweig. 2002. "Household Division and Rural Economic Growth." *The Review of Economic Studies*, 69(4):839-869.

Gjerde, Jon. 1997. *The minds of the West ethnocultural evolution in the rural Middle West, 1830-1917*. Chapel Hill: University of North Carolina Press.

Gjerde, Jon and Anne McCants. 1999. Individual Life Chances, 1850-1910: A Norwegian-American Example. *Journal of Interdisciplinary History* 30, no. 3: 377-405.

Greven, P. 1970. *Four Generations: Population, Land, and Family in Colonial Andover, Massachusetss.*Ithaca: Cornell University Press.

Gutmann, M. P., S. M. Pullum-Piñón, K. M. Witkowski, and G. D. Deane. 2006. "Land Use and the Family Cycle in the Settlement of U.S. Great Plains". Revise and resubmit: *Social Science History*.

Leonard, Susan Hautaniemi and Myron P. Gutmann. 2005. "Variation in Household composition on the Moving Kansas Frontier." Annual Meetings of the Social Science History Association, November 3-6, 2005, Portland, Oregon

Lockridge, Kenneth. 1968. Land, Population, and the Evolution of New England Society, 1630-1790. *Past and Present* XXXIX: 62-80.

Lockridge, Kenneth A. 1970. *A New England Town: The First Hundred Years* .New York: W.W. Norton and Company, Inc.

Lockridge, Kenneth and Alan Kreider. 1966. The Evolution of Massachusetts Town

Government, 1640 to 1740. *William and Mary Quarterly* 3, no. 23 (1966): 549-74..

Loewen, Royden K. 1993. *Family, Church, and Market: A Mennonite Community in the Old and New Worlds, 1850-1930.*Urbana: University of Illonois Press.

Moran, E. F., E. Brondizio P., Mausel & Y. Wu. 1994. Integrating Amazonian vegetation, land-use, and satellite data. *BioScience* 44, no. 5: 458-76.

Moran Emilio F., Eduardo S. Brondizio and Leah K. VanWey 2005. "Populationand Environment in Amazonia: Landscape and Household Dynamics." In *Population, Land Use, and Environment,* Barbara Entwisle and Paul C. Stern, eds. National Academies Press: Washington, D.C. pp.106-134.

Perz, Stephen G. and Robert T. Walker. 2002. Household Life Cycles and Secondary Forest Cover Among Small Farm Colonists in the Amazon. *World Development* 30, no. 6: 1009-27.

Swedlund, Alan C. 1978. Historical Demography as Population Ecology. *Annual Reveiw of Anthropology* 7: 137-73.

Sylvester, Kenneth Michael. 2001. *The limits of rural capitalism family, culture, and markets in Montcalm, Manitoba, 1870-1940*. Toronto: University of Toronto Press.

Sylvester, Kenneth M. 2003 "Immigrant Parents, Ethnic Children, and Family Formation in the Early Prairie West." *Canadian Historical Review*, 84 (4): 585-612.

Walker, Robert, Emilio Moran, and Luc Anselin. 2000. "Deforestation and Cattle Ranching in the Brazilian Amazon: External Capital and Household Process." *World Development* , 28(4):683-699.

Walker, R.T., S. Perz, M. Caldas, L.G.T. Silva. 2002 "Land uses and land cover change in forest frontier: the roles of household life cycle. International Regional Science Review 25(2): 169-199.

Walker, Robert. 2006. "Linkages between household lifecycles and land-use change." Panel Contribution to Population-Environment Research Network Cyberseminar on Rural Household Micro-Demographics, Livelihoods and the Environment, 10-24 April 2006. www.populationenvironmentresearch.org

Walsh, Stephen j., Ronald R. Rindfuss, Pramote Prasartkul, Barbara Entwisle, and Aphichat Chamratrithirong 2005. "Population Change and Landscape Dynamics: The Nang Rong, Thailand, Studies." In *Population, Land Use, and Environment,* Barbara Entwisle and Paul C. Stern, eds. National Academies Press: Washington, D.C. pp. 135-162

Widdis, Randy W. 1998. *With scarcely a ripple Anglo-Canadian migration into the United States and Western Canada, 1880-1920*. McGill-Queen's Studies in Ethnic History. Montreal, Ithaca: McGill-Queen's University Press.