

Making Sense of Male-Female & Husband-Wife Equalities & Inequalities

Douglas R. White, U.C. Irvine; Greg Truex, C.S.U.N.

The three sections of this article illustrate why cross-cultural research has not worked for some key social science questions and has worked for others. The three sections involve interpretation of causality from correlations, causality not based on correlations, and maps pertinent to understanding aspects of male-female and husband-wife equalities and inequalities. The first example is by an author versed in sexology that was given an early version of the SCSS database (Murdock and White 1969, 2008) with hundreds of variables and used the statistical program Spss¹ to compute correlations between pairs of variables and frame the results in terms of sexology, a priceless example of how not to do cross-cultural research. The other examples are illustrative of hypotheses but not state-of-the-art. DeWy approaches (Dow 2007, Eff and Dow 2007, 2009) and a forthcoming Wiley Companion to Cross-Cultural Research addresses some of the deficiencies in the last two examples.

1. A Literal Interpretation of Causality from Correlations

Reiss (1986) chose six SCCS variables that confront the reader with an ordered network where each variable is correlated, presumably causally, with two or more others. His belief is that correlation represents causality when properly ordered. From left to right in Figure 1 the variable numbers are v3 (dependence on agriculture), v570 (patrilineal kin groups), v270 (class stratification), v54 (father closeness to infant), and then three variables where the meanings of variables in the Figure 1 are confusingly reversed: v51 (mother weakly involved with infant; care from other women a low code value), v625 (machismo, high code value for low); these arrows point to a final dependent variable, v626 (lack of belief that women are inferior, mistakenly reversed in Reiss's diagram below). The last three variables are positively correlated but the author misinterpreted the definition of v51.

Reiss (1986:90) felt that his results were surprising, "given the limitations of the cross-cultural data..." (He also observed that the diagram in Figure 1 "presents a way of understanding the societal factors that promote male power and status over female power and status. There are surely other factors, but they are not represented in this diagram because I had to restrict myself to what variables were measured and were useable.")

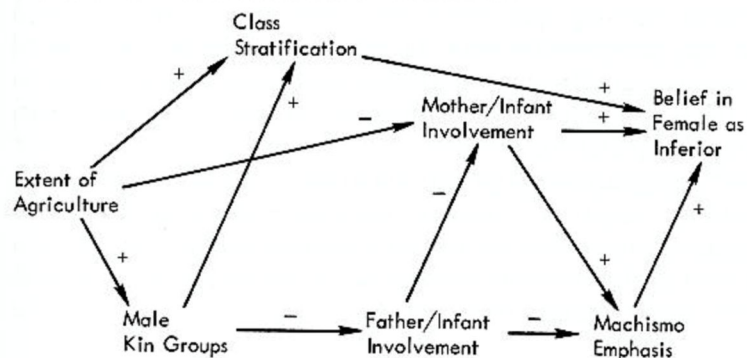


Figure 1: An Erroneous "Causal" Network of Variables (Reiss 1986)

Figure 2 shows a relabeling that keeps most of the arrows in Figure 1 positive (ten rather than seven), with the lower right quadrant variables renamed or redefined for all-positive arrows (reversing the labels of v626 and v664, and taking the intended meaning in SCCS of variable v51). The leftmost triangle adopts all-positive arrows by reversing the labels of v270, v3, and v570 to reverse their high values to **Low**, while keeping the positive signs among them along with positive v570-v54 and v270-v626 pairings.

Reiss gives us a confusing puzzle in his original and the reconstructed graph but the variable v54 (Father closeness to infant) correlates with v570 **Low** Male kin group, v664 **Low** Machismo, and, when v51 is correctly defined as Mother's Involvement in getting help both from other women and from her husband the conundrum of Reiss's misunderstanding is resolved: the high value of v54 for those of v51 means that the father contributes to his wife's infant care, often along with help from other women in her family. The high value of v54, together with the high value of v51, that wife contributes little to child care, co-occurs only in the SCCS case of Rome, with care of aristocratic infants by slaves while father is relatively close. This is consistent with a generally positive relationship between the two variables and consistent with Reiss's reversal of the definition of variable v51 in Figure 1, showing a negative correlation. But Reiss's failure to puzzle out variable v51 makes his model incomprehensible, as does his reliance on correlations.

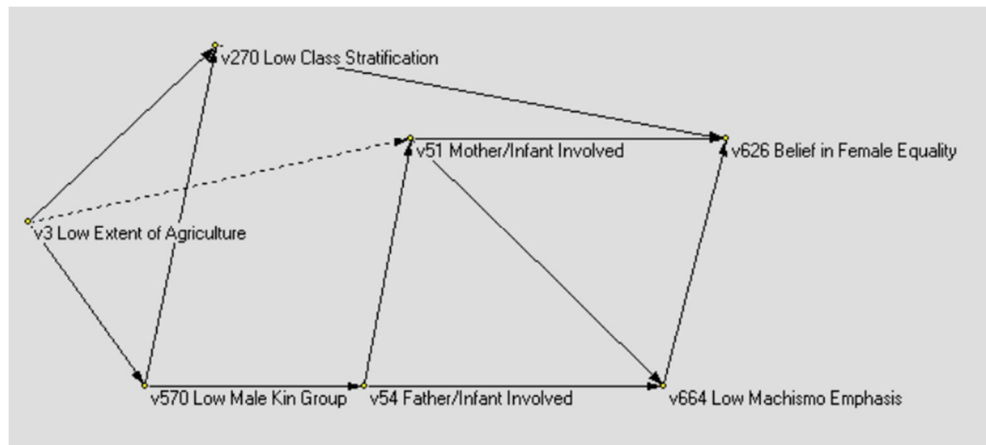


Figure 2: A Reconstruction of Figure 1 with Corrective Names and Arrows

Figure 2, in short, provides simplified arrows with more consistent naming of variables. If taken as advice to students as against Reiss's procedures: Do not base a network of variables on correlations. Investigate your variables and precisely what they mean. Do not rename or reverse directions of your variables if possible.² Do not expect networks that have all-positive clusters with negative effects between them.

2. A Provisional Network of Causalities not based on Correlations but DEf Wy

Figure 2 illustrates multiple DEf Wy (Eff 2004, Dow 2007, and Eff and Dow 2009) two-stage regression models that have variables in common. The variables have high data quality. The Figure shows, at its base, from left to right, the following SCCS named dependent variables denoted by blue or green nodes: v676 Male-Female

Creation Myths (similar to those of Native Australians), v626 Belief that Women are not Inferior (associated with Hunter-Gatherers), v51 Father helps Mother with Infant (associated with Husband-Wife closeness), and v621 Husband-Wife Equality. This network is accurate given the actual data, unlike that of Reiss (1986). Along the top of this network are new independent variables beginning with v826 Female contribution to subsistence, followed by types of parental care for children: v369 (Mother Caretaker for Early Boys), v54 (Father Close to Early Boys), and v53 (Father Close to Late Boys). Those at the top are independent variables for the dependent variables at the bottom, derived from Def Wy models, and the gray circles just below the dependent variables show differences in positive versus negative effects of the independent variables. Grey nodes at the bottom give the percentages of Language versus Distance of Wy for each DEf Wy model.

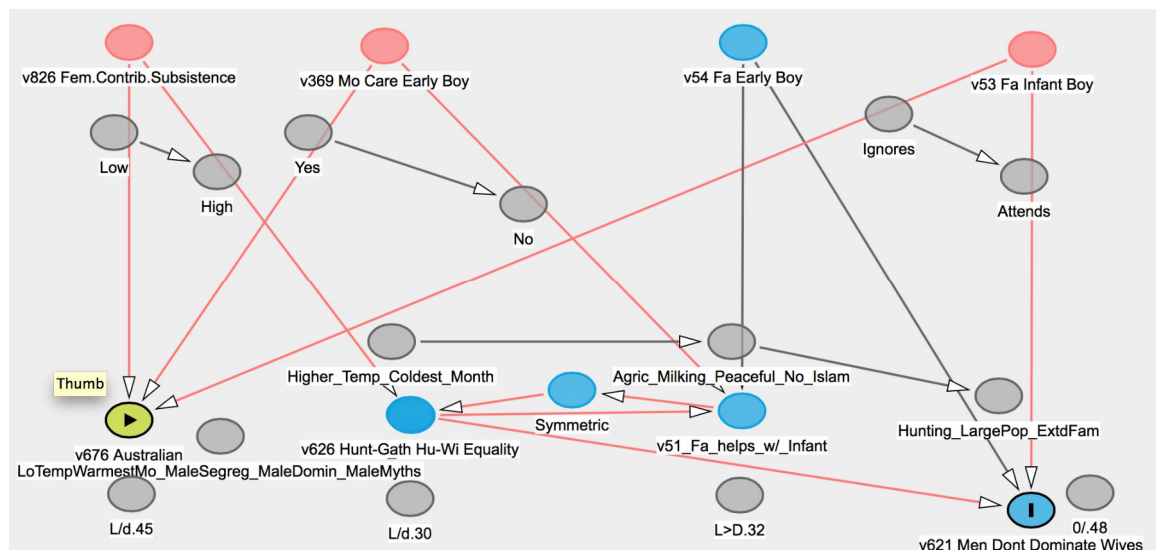


Figure 3: As above, SCCS variable v621 (Husband-Wife Equality as “Men don’t dominate their wives”) among blue colored variables is predicted by blue node v626 Hunter-Gatherer relations of Hu-Wife equality and above right by a pink node for v53 father’s concern for infant boys and also – just to the left – by upper blue node v54 father’s concern for early age boys. Three of the upper variables measure parental concern with children: above right, V53 also predicts v676 to the lower left, v676 “Australian Type of Gender relations” (with Male Creation Myths) for half of the sample, which is also predicted negatively by upper left v826, i.e., by female contributions to subsistence. V51 is the unusual variable from Figure 2 for which mothers don’t receive help from other women but are helped with infants by their husbands with whom they share a bed or room.³ V54 father care for early boy also predicts v51, father care for infants. That 3rd column of variables represents the most peaceful societies, with milking and agriculture, and without Islam.

The networks of variables modeled in Figure 2 lack controls for autocorrelation, had been an enduring problem but is solved in a Chapter of the Wiley Companion (White n.d.). Such models would lack distortions of potentially causal relations if each independent variable were not significantly correlated with any of

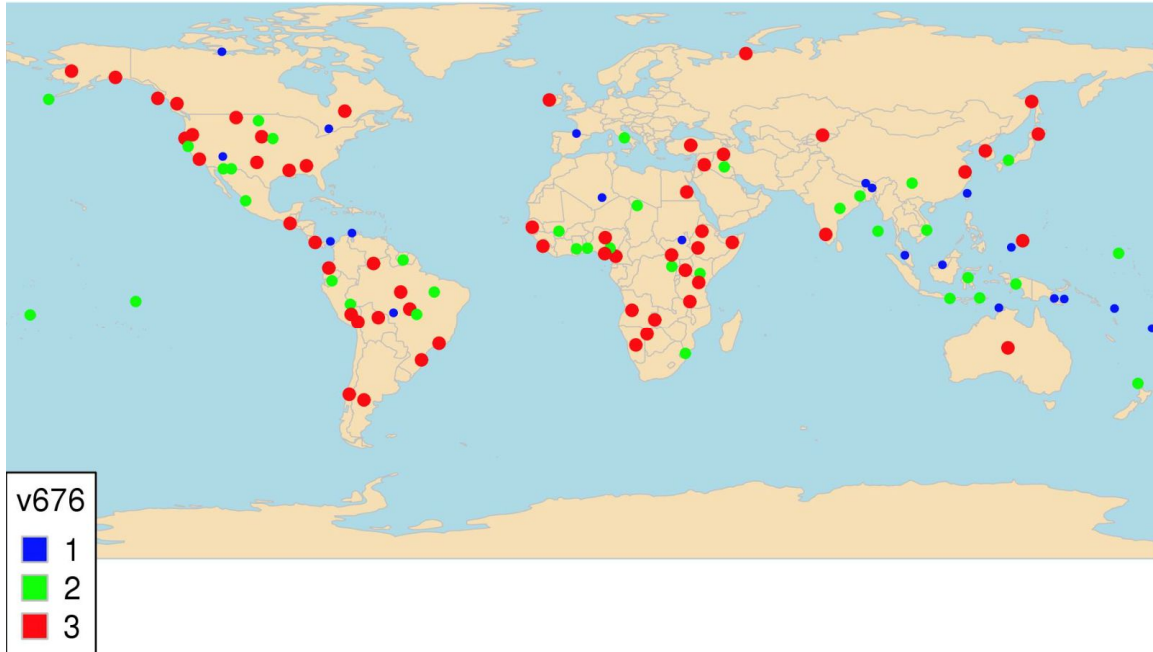
the error terms for the more restricted models in which those independent variables occur. Modeling the full network of effects is a problem that goes back to Sewall Wright (1921, 1923, 1924) and the methods of path analysis, which are in principle soluble but outside the range of this Companion.

3. Maps Pertinent to Understanding aspects of male-female and husband-wife equalities and inequalities

The following Maps show worldwide imputation of the dependent variables in Figure 3, *from left to right*, reversed variables r626, r51, and original variables v676, v621 of order of codebook categories),⁴ with r626 and r51 showing reverse ordering of variables.⁵ The first two show the spread of female equality to males as common to the region of Malayo-Polynesian cultures and sea voyages (v676) but additional clusters elsewhere of beliefs of the inferiority of women:

v676: female (**blue**) versus male (**red**) symbolism, when both present (**green**).

r626: Gender equality (**blue**) versus male belief in female inferiority (**red**).



Map 1 Female (**blue**) versus male (**red**) symbolism (probably early evolution), **Green** for both male and female symbolism.



Map 2 Female equality (blue nodes) versus male belief in female inferiority (red).

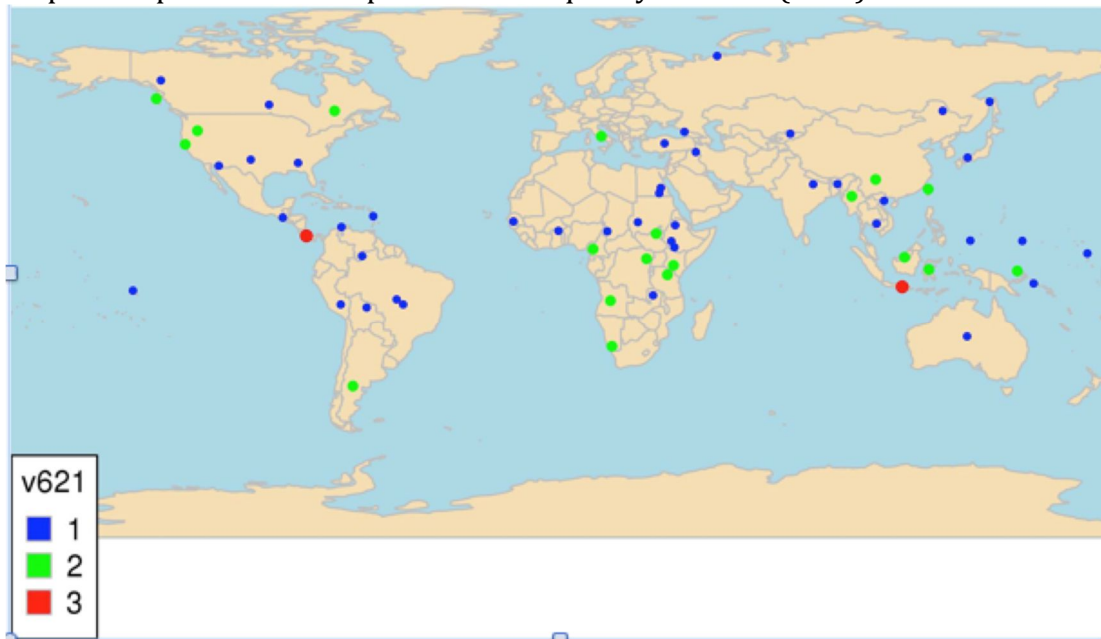
Map 3 shows the degree of Non-Maternal Care for infants and the commonality of Mother's care for infants: v51: Mother's exclusively (n=5 largest brown), Mother's care for infants with help from other women (n=144 large to smaller brown), minor help from husbands (n=10 yellow), (n=1 for Rome: aristocratic mothers nurse. slaves care for infants).



Map 3 Degree of Non-Maternal Care for infants: Mother's exclusively (n=5 largest brown), Mother's care for infants with help from other women (n=144 large to

smaller brown), minor help from husbands (n=10 **yellow**), (n=1 for Rome: slaves care for infants, mothers' nurse). Map 3 is a map of a variable that was confusing to Ira Reiss (1986), who did not have access to mapmaking and did not interpret the v51 variable of help in non-maternal care for mothers of infants, which could come from the husband or from other women, e.g., female relatives or slaves, in the example of classical Rome.

Map 4 completes these maps for v621: Equality of wives (**blue**) with husbands.



Map 4 Dominance of wives is coded (n=2 **red**), Equality **green** (n=19 and scattered), male belief in Dominance over wives (n=42 **blue**), and 123 societies with missing data. Here the Malayo-Polynesian area has beliefs in male dominance in contrast with Maps 1 and 2 with female symbolism and equality in Malayo-Polynesia.

The contrasts between female symbolism and equality in Maps 1 and 2 contrast with that of Map 4 is a common contrast in the sexual division of labor. For Malayo-Polynesia area and sea voyages, for example, males (husbands) are the canoers and navigators who may believe in their dominancy over wives, while females (wives) are the core of the social organization. The distribution of aspects of male-female and husband-wife equalities and inequalities do not form a single scale or dimension but a series of aspects important of human social organization and evolutionary time series. While the Malayo-Polynesia area and sea voyages have a fairly homogeneous evolutionary spread, major continents have evidence of different interspersions that would require more specific investigation of evolutionary processes including spatial dispersion and migration and language family dispersion. The Dow-Eff R code and its use in the CoSSci open access software provides a medium for more specific, region by region, investigation.

4. Conclusion

The four maps in Section 3 show distribution of aspects of male-female and husband-wife equalities and inequalities in relation to how types of parental care for children – v369 (Mother Caretaker for Early Boys), v53 (Father's Closeness to Infants), v54 (Father's Closeness to Early Age Children) – along with v836 (Female Contribution to Subsistence) – which help to interpret the different aspects of the variables mapped geographically and aspects of dispersion of aspects of male-female and husband-wife equalities.

5. Acknowledgements

Useful comments on the manuscript were also given by my co-editor Anthon Eff and Malcolm Dow. White greatly appreciated Santa Fe Institute support as an SFI external faculty member for sponsorship of four yearly Causality/Robustness Working group Meetings, from 2010-2013, and from the Max Planck Institute for Mathematics in the Sciences, which sponsored a fifth meeting in Leipzig in 2011, also directed at completion of the present project. Much appreciated are the benefits of interactions with scores of SFI researchers, visitors, and staff as well as chapter authors of the Wiley Companion for Cross-Cultural Research.

6. References.

- Dow, Malcolm M. 2007. Galton's Problem as multiple network autocorrelation effects. *Cross-Cultural Research*, 41, 336-363.
- Eff, E. Anthon. 2004. Does Mr. Galton Still Have a Problem? Autocorrelation in the Standard Cross-Cultural Sample. *World Cultures* 15(2):153-170.
- Eff, E. Anthon and Malcolm M. Dow. 2009. How to Deal with Missing Data and Galton's Problem in Cross-Cultural Survey Research: A Primer for R. *Structure and Dynamics: eJournal of Anthropological and Related Sciences* 3(3), Article 1.
- Murdock, George P., Douglas R. White. 1969. Standard Cross-Cultural Sample. *Ethnology* 8(4):329-369. <http://escholarship.org/uc/item/62c5c02n> On-line edition 2008.
- Nagarajan, Radhakrishnan, Marco Scutari and Sophie Lèbre. 2013. *Bayesian Networks in R with Applications in Systems Biology*. Springer (US).
- Reiss, Ira L. 1986. *Journey into Sexuality: An Exploratory Voyage*, Published 1986 by Prentice-Hall, Englewood Cliffs, New Jersey.
- White, Douglas R. n.d. *Male-Female and Husband-Wife Equalities and Inequalities*. Wiley Companion to Cross-Cultural Research. Wiley.
- Wright, Sewall. 1921. Correlation and causation. *Journal of Agricultural Research* 20: 557-585.
- Wright, Sewall. 1923. The theory of path coefficients: A reply to Niles' criticism. *Genetics* 8: 239-255.
- Wright, Sewall. 1934. The method of path coefficients. *Annals of Mathematical Statistics* 5: 161-215.

7. Footnotes

¹ SAS is a good alternative to Spss but neither have the advantages of Dow-Eff Def R code and the open access CoSSci system.

² In Maps 2 and 3 I do reverse the directions of variables because it makes visual comparisons easier for one region while for Map 4 comparisons or several continents make for clear contrasts among variables.

³ Ira Reiss's (1986) on-line book published by Prentice Hall that contained a massive misinterpretation of the SCCS v51 variable based on the mistaken axiom that "Correlation is causality," which for a short time was a mantra of Raoul Naroll in the initial part of his HRAF presidency (communication of Ira Reiss and stated by Naroll to D. R. White in a visit during White's first year at UC Irvine).

⁴ Numbering of ordinal categories for the second and third categories for Maps are reversed from those in the SCCS codebook.

⁵ These slides were made by focusing on outcomes of the CoSSci options for making map images using one or both the options, for Color Maps or for Black and White maps with green convex hulls that link the series of similarly ordered societies. They can be inserted into word files as "Screen Shots" (using command-shift 4) that will result in saved Screen Shot images named as in Screen_shot_2013-07-24_at_5.47.05_PM.png, and pasting the screen shot into a *.doc file.