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# Using an ethnostatistical analysis to interpret data: the Nike case

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**Abstract**

This study reviews a 1997 study released by Nike to resolve wage controversies in subcontracted Asian factories. An ethnostatistical analysis is provided to show how the application of the three levels of ethnostatistics can help us understand differing interpretations of the same data. The current analysis is evidence of the way in which context, assumptions and methodology, and rhetoric and language can influence the outcome of quantitative studies. The current study is an important methodological note because academic researchers are being called to answer important questions regarding the global operations of transnational corporations. This raises the question of our role as academic researchers and what standards, such as validity and reliability, should be met. *Organization Management Journal* (2008) 5, 119–131. doi:10.1057/omj.2008.12

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**Introduction**

Ethnostatistics is “the study of the construction, interpretation, and display of statistics in quantitative social research” (Gephart, 1988: 9). Ethnostatistics is an attempt “to bridge the gap between quantitative and qualitative research” (Gephart, 1988: 6). Ethnostatistics helps us understand how statistics in quantitative research are created and their meaning and, thus, helps us identify problems in the creation and interpretation of statistical data.

The fundamental concern of ethnostatistics is in describing, analyzing, explaining, and understanding how statistics are actually accomplished and used in the research process. Ethnostatistics thus examines the qualitative aspects of doing statistical analyses, and treats statistical analyses as sources of insight into social processes that underlay scientific knowledge. (Gephart, 1988: 11)

Ethnostatistics, then, is a qualitative study of the quantitative research process involved in the creation and use of statistics. There are three levels for ethnostatistical analyses:

1. First-order ethnostatistical studies focus on how the statistic is constructed, “the activities, meanings, and contexts involved in producing variables and statistics” (Gephart, 1988: 13), studies of the cultural features of groups of scientists at work, and studies of the social enterprise of creating statistics.
2. Second-order ethnostatistical studies focus on the assumptions and the appropriateness of the statistical techniques used.
3. Third-order ethnostatistical studies focus on the rhetoric and use of language as a tool of persuasion.

We seek to demonstrate the application of ethnostatistics and show that it is a useful tool in understanding and interpreting statistical data from quantitative studies. Ethnostatistics has been used to examine a variety of work (Boje *et al.*, 2006; Kilduff and Oh, 2006; Mills *et al.*, 2006). We use a historical document that was highly publicized and very controversial at the time of its release, and we analyze it from the three levels of ethnostatistics. In 1997, a wage study was released by Dartmouth College's Amos Tuck School of Business (Calzini *et al.*, 1997). The Tuck study concluded that Nike, Inc. paid adequate wages to factory workers, yet numerous critics found flaws with the study and its subsequent conclusions (Greenhouse, 1997; Boje, 1998; Landrum and Boje, 2000). Through the use of ethnostatistics, we seek to explain how divergent readings of the same statistical report are possible. The focus of our paper, "Using an Ethnostatistical Analysis to Interpret Data: The Nike Case," is on methodology and not on Nike company practices.

### First-order ethnostatistics

First-order ethnostatistical studies focus on how the statistic is constructed, "the activities, meanings, and contexts involved in producing variables and statistics" (Gephart, 1988: 13). These are studies of the cultural features of groups of scientists at work and studies of the social enterprise of creating statistics. First-order studies observe the researchers at work, interview the researchers, and examine their documents to better understand how the statistics were produced; first-order studies are an ethnographic study of the data collector and the data collection process. This typically involves "direct empirical observation of the actual behaviors and natural practices of statistics producers" (p. 13). Although we cannot observe the Tuck researchers at work *ad hoc*, we can examine the context for a better understanding of the activities and meanings behind the creation of the study and the statistics.

In the mid- and late-1990s, Nike was highly criticized for wage and labor practices in their foreign factories. CBS' 48 Hours aired a segment on 17 October 1996 showing Nike's subcontractor plants in Vietnam. Women and children were working in substandard conditions in Nike factories. On 20 March 1997, Thuyen Nguyen of Vietnam Labor Watch released his findings of Nike labor practices in Vietnam. He criticized Nike for paying low wages, working employees to the point of exhaustion, physical abuse of workers by man-

agement, and restricted water and bathroom privileges for employees.

On 20 March 1997, Mr. Thuyen Nguyen, an investment banker of Vietnam Labor Watch released a qualitative study (Nguyen, 1997).

About 35,000 workers at five Vietnamese plants – more than 90 percent of them young women – put in 12-hour days making Nike shoes. Though labor costs amount to less than \$2 a pair, the shoes retail for up to \$180 in the United States. The Vietnamese workers earn \$2.40 a day – only slightly more than the \$2 or so it costs to buy three meals a day. It is a common occurrence to have several workers faint from exhaustion, heat and poor nutrition during their shifts beatings are common Nike clearly is not controlling its contractors, and the company has known about this for a long time workers interviewed by VLW say they are not allowed to use the bathroom more than once in an 8-hour shift and are allowed to drink water only twice per shift. Both the water and the bathrooms are controlled by card or hat systems – workers must request the card or hat from their supervisor before they are allowed to use the facilities. The VLW report notes that the number of cards or hats are limited to 3 cards for 78-person assembly line and 4 cards for a 300-person line. Violating this rule three times can result in dismissal. (Vietnam Labor Watch, 1997: 3–4)

By mid-1997, dozens of activist organizations were questioning why despotic sweat shop, child labor, and physical abuse practices of the 19th century were being tolerated at the end of the 20th century, especially by a US corporation such as Nike that commodifies a progressive, ethical, and profitable image in its ads and sponsored sporting events. Philip Knight and Nike, Inc. were under attack for labor practices in their foreign plants. In response, they held press conferences, took out newspaper ads, and tried to divert the negative publicity. Nike's response style had been defensiveness and denial (Landrum and Boje, 2000). In retrospect, it is likely that they wanted validation that their global practices were not as bad as the accusations stated.

They hired labor rights activist Andrew Young to independently assess the enforcement of their Code of Conduct in Asian factories. In addition, Nike needed a study that would "develop a clear and current perspective on the suitability of wages and benefits paid to its Vietnamese and Indonesian contract factory workers" (Calzini *et al.*, 1997: 4). "Tuck faculty undertook a similar wage-and-needs study of Disney workers in Haiti. In the face of overwhelming evidence to the contrary, Tuck's study gave Disney a clean bill of health" (O'Rourke, 1998: 1). Tuck is known as conservative and for conducting favorable studies for other corporations on their foreign labor practices (Campaign for Labor Rights, 1998: 1).



Nike contacted Dartmouth College, Amos Tuck Business School professors Joseph Massey and Eugene Mihaly to supervise the study through the Tuck Center for International Business. The consulting project was turned over to a team of five first-year MBA students and all research expenses were paid by Nike. The students were divided into two teams, one went to Indonesia and one went to Vietnam.

First-order ethnostatistics examines who produces the statistics as well as who the statistics represent. Data were collected and statistics produced by five students in the MBA program under the supervision of two professors. As Gephart (1988) points out, "Those who collect data may be different from those who apply higher-order statistical procedures to the data, and may have different interests or concerns (Bodgan and Ksander, 1980)" (p. 15).

The data were being gathered "to determine how well suited [Nike] wages are to the local economies and whether they are sufficient to allow the workers to sustain a reasonable standard of living for themselves and their families" (Calzini *et al.*, 1997: 4) and were intended to represent factory workers. However, after meeting with Vietnamese factory managers, the students reported, "... in order to obtain a broad and unbiased sample, our survey more broadly targeted local residents of the VS and VJ areas rather than just factory workers" (Calzini *et al.*, 1997: 5). They go on to explain

It became evident to us that the factory workers would not be an "objective" population to sample, given that many of the workers had already been surveyed and interviewed extensively by both NIKE Labor Practices and outside consultants. The fear was that many of the factory workers had become fully aware of the intent of these surveys and were no longer motivated to respond in an unbiased fashion. Because of this possibility, we decided to extend ourselves to surveying residents within the local vicinities surrounding the factories to collect the information we sought. (Calzini *et al.*, 1997: 10-11)

As a result, the study selected two of the five Vietnam factories, the Sam Yang Vietnam Company factory (VS) and the Chang Shin Vietnam Company factory (VJ) and surveyed their surrounding community residents. These two factory communities were selected because they represent the lowest and highest mean wages paid, according to a Nike Labor Update Survey from 5 August 1997, and the lowest and highest government-mandated minimum wages (Calzini *et al.*, 1997). The research teams randomly selected 78 households in the VS

community and 68 households in the VJ community. Every third house along main streets, side alleys, and hamlets were surveyed. The teams were accompanied by independent translators; therefore, the task of first-level ethnostatistical analysis becomes even more difficult because data were collected and translated through a third party. Given the predominance and importance of the family unit, the researchers collected household data, divided it by number of household members, and then made adjustments for economies of scale to create individual profiles. Thus, the data in the Tuck study represent randomly selected local residents of the communities in which the Nike subcontract factories are located rather than representing the factory workers themselves and, without transcripts, we cannot be certain of any translation or cultural difficulties encountered in collecting data and creating the statistics.

Through the use of first-order ethnostatistics, we examine the context within which the statistics were created as well as who created the statistics and whom the statistics represent. Nike was in the midst of criticism and crisis over manufacturing in their subcontracted factories. Highly respected figures with a history of "favorable studies" were contracted to examine the claims of critics. Nike's brand and reputation were at stake and the results of the studies would have an important impact on Nike's image. Data for the study under question here were collected from community residents instead of factory workers and were collected by translators accompanied by students who were supervised by professors.

### Second-order ethnostatistics

Second-order ethnostatistical studies focus on the assumptions and the appropriateness of the statistical techniques used. Second-order studies are reflective, critique the practices used in constructing the statistics, and offer more appropriate alternatives. We seek to critique the assumptions and methods of the Tuck study and offer alternative analyses of the data.

The study has been the subject of widespread analysis since its release in 1997. Nike officials have contended the study is both valid and reliable. Several authors and activists have questioned the validity and reliability of the study (Campaign for Labor Rights, 1997, 1998; O'Rourke, 1997, 1998; Boje, 1998; Landrum and Boje, 2000) but without doing an empirical reanalysis of the findings or

subjecting the interpretations to recognized validity criteria.

Were Tuck methods appropriate for the research question under study? Nike wanted a study that would “develop a clear and current perspective on the suitability of wages and benefits paid to its Vietnamese and Indonesian contract factory workers” (Calzini *et al.*, 1997: 4). The Tuck researchers sought to measure spending, discretionary income, and savings. However, due to the predominance of extended families in single households, Tuck chose to conduct the study at a household level of analysis rather than at an individual level of analysis. Household figures were then transformed into estimates of individual averages by dividing household figures by the number of occupants, “with adjustments where appropriate to account for household economies of scale” (Calzini *et al.*, 1997: 15). Figures were further adjusted to simulate a single person’s living style.

This methodology and the conclusions of this study were brought into question (O’Rourke, 1998). O’Rourke cites three main problems with the Tuck report:

- (1) the data collected by the Tuck team lead to different conclusions than they report; (2) their methodology is seriously flawed; and (3) analysis of the “suitability of wages and benefits” at Nike factories would require a significantly different study. (O’Rourke, 1998: 3)

O’Rourke provides an excellent discussion in each of these areas.

For example, Tuck intended to survey factory workers at all five Vietnamese locations. However, after meeting with management, “it became evident to us that the factory workers would not be an ‘objective’ population to sample” (Calzini *et al.*, 1997: 10–11). The Tuck team then decided to survey residents within two factory communities. “In order to obtain a broad and unbiased sample, our survey more broadly targeted local residents of the VS and VJ areas rather than just factory workers” (Calzini *et al.*, 1997: 5). They randomly selected households by choosing every third house and conducted personal interviews. The two communities selected had the lowest and highest government-mandated minimum wages. This method allowed Tuck to use community household data and extrapolate Nike factory workers’ wages, without ever interviewing Nike factory workers to obtain information.

Average factory wages paid were figures given to the team by the factory management, not figures

gathered directly from the workers themselves. Management reported the average wage paid at VJ to be \$56.30 per month and at VS to be \$47.73 per month. Through their data collection method, the research team was able to fortuitously interview some Nike factory workers. O’Rourke (1998) points out that an examination of the data collected in the study shows that the average wages reported by VJ workers were 475,135 dong or \$40.95 per month. Furthermore, O’Rourke notes that eight of those workers reported monthly wages at 300,000 dong or \$25.86 per month, which is below the government-mandated minimum wage of \$35 per month. Likewise, seven VS workers reported wages below the government-mandated minimum wage in that area of \$45 per month.

Among some of the Tuck findings, the authors assert that non-Nike community wage earners are saving between 47 and 49% of their income, so Nike workers at two sites (VS and VJ) can do the same (Calzini *et al.*, 1997: 24). In another chart, Tuck makes it seem that Nike (subcontract) workers in Vietnam are able to save as much as 44% of their \$46.35-a-month wages as discretionary income (Calzini *et al.*, 1997: 29). An earlier study by Vietnam Labor Watch (1997) does not match the Tuck findings. In this Vietnam Labor Watch (1997) study, which interviewed 35 Nike workers, Thuyen Nguyen concluded that workers were losing weight and had to write home for money.

To further our second-level analysis and to demonstrate how assumptions and the appropriateness of the statistical techniques used can influence outcomes, we obtained the actual extended report, including all its appendices and data set, and offer a reanalysis of the original survey data for Vietnam to explore basic issues of reliability and validity. Data in Indonesia were collected in a different manner and for that reason are being excluded from this note. We used data from the Tuck Consulting Group’s appendix (Calzini *et al.*, 1997), cleaned up errors, and made what we think are more reasonable calculation procedures. We reconstructed Tuck’s statistics.

Tables 1 and 2 compare Calzini *et al.*’s (1997: 26–28) spending profile displays with our new calculations in Tables 3 and 4. The “new” results (Tables 3 and 4) agree with the Vietnam Labor Watch (1997) study. Nike workers in both Vietnam plants are earning wages far below community living standards and are *not* able to make ends meet. But, how does Tuck construct a story so different from Vietnam Labor Watch and our analysis? A closer



**Table 1** Does a typical individual spending profile indicate that VS and VJ minimum wages are sufficient to allow for savings? (Tuck)

	VS (\$)	VJ (\$)
Factory mean wage	44.83	47.41
Food	12.93	15.52
Housing/rent	3.45	3.45
Clothing/footwear	2.84	2.84
Utilities (electric, water, gas/wood, fuel)	1.90	1.90
Transport	0	0
Health care	1.03	1.29
Education	0	0
Total essentials	22.16	25.00
Phone	0.69	0.69
Entertainment	0	0
Other taxes, deductions	2.33	2.33
Total nonessentials	3.02	3.02
Total expenditures	25.17	28.02
Discretionary income	19.66	19.40

**Table 2** Do average VS and VJ wages (for two) better match household expenditure levels? (Tuck)

	VS (\$)	VJ (\$)
Factory mean wage	95.43	112.59
Food	51.72	51.72
Housing/rent	0	0
Clothing/footwear	3.97	5.78
Utilities (electric, water, gas/wood, fuel)	9.31	7.76
Transport	12.93	12.93
Health care	6.03	3.88
Education	5.60	8.62
Total essentials	89.57	90.69
Phone	5.86	4.31
Entertainment	1.03	4.31
Other taxes, deductions	4.66	4.66
Total nonessentials	11.55	13.28
Total expenditures	101.12	103.97
Discretionary income	(5.69)	8.62

examination of how Tuck's statistics were constructed is necessary. If the tables were recalculated using means instead of medians, then workers in Table 2, on average, would be losing  $-\$55.84$  and  $-\$34.15$  at VS and VJ, respectively. The use of the median statistic, while common in this type of study, favors Nike by understating income and expense distributions in the area. It may also be a misrepresentation to sample only on the main streets, and alleyways where there are many small shops, restaurants, and possibly substandard conditions (in alleyways) where wages may be much lower.

**Table 3** Does a typical individual spending profile indicate that VS and VJ minimum wages are sufficient to allow for savings? (Landrum and Boje calculations)

	VS (\$)	VJ (\$)
Factory mean wage	44.83	47.41
Food	25.86	25.86
Housing/rent	4.49	3.45
Clothing/footwear	0.75	1.44
Utilities (electric, water, gas/wood, fuel)	2.55	2.23
Transport	2.59	2.59
Health care	1.84	2.64
Education	3.59	5.50
Total essentials	41.68	43.70
Phone	1.47	0.097
Entertainment	0.26	1.00
Other taxes, deductions	2.33	2.33
Total nonessentials	4.05	4.29
Total expenditures	45.73	47.99
Discretionary income	(0.90)	0.58

**Table 4** Do average VS and VJ wages (for two) better match household expenditure levels? (Landrum and Boje calculations)

	VS (\$)	VJ (\$)
Factory mean wage	95.46	112.60
Food	51.72	51.72
Housing/rent	15.09	3.45
Clothing/footwear	3.95	5.75
Utilities (electric, water, gas/wood, fuel)	13.15	14.68
Transport	12.93	12.93
Health care	8.41	6.21
Education	5.57	8.62
Total essentials	110.82	103.36
Phone	5.86	4.31
Entertainment	1.03	4.31
Other taxes, deductions	4.66	4.66
Total nonessentials	11.55	13.28
Total expenditures	122.37	116.64
Discretionary income	(26.91)	(4.04)

From Table 1, we conclude that Nike (VS and VJ) wages are no match for the household expenditure levels in the vicinity of these Nike factories. In Table 2, Tuck finds that the median household size in the community is four persons with two income earners. But there are rounding and other errors, as well as misrepresentations which spin out a story of VS workers only losing  $\$5.69$ , while VJ workers retain  $\$8.62$ . After cleaning up the errors and misrepresentations, the more realistic figures are a loss of  $\$26.91$  and  $\$4.04$ , respectively (Table 4). Therefore, even using the more conservative

Tuck spending profiles of Table 2, the recalculations (Table 4) show findings that are grossly different.

In Table 1, Tuck, compares workers in two factories (VS and VJ) to its sample of 300 adults living in 146 households around the factories.<sup>1</sup> It is not actually measuring Nike worker's budgets, only their wages. The budget expenditure items come from a survey of non-Nike households. The more obvious question is why not interview the workers themselves instead of a contrived sample of local families with non-Nike wage earners.

For example, for food costs they use a median per household member figure from a community survey (i.e., \$12.93 and \$15.52 for children and old folks averaged in), instead of the per wage earner figure (\$25.86 in both) we selected (from p. 29 of their appendix).

In Table 2, Tuck uses the wage earner food value, which we employed in Table 3, but this time treats housing/rent costs as zero, by claiming the "vast majority of [community] residents own their own homes" (Calzini *et al.*, 1997: 28). But, in the appendix to the Tuck report, they show families in the area have median housing/rent expenses of \$15.09 and \$3.45 for VS and VJ, respectively. Furthermore, when we look at the Tuck report, we see that "the only single person households we encountered were those of factory workers who had come from distant provinces" (Calzini *et al.*, 1997: 17). They go on to report that "VJ has attracted a large number of workers who are not natives of the Dong Nai province" (Calzini *et al.*, 1997: 12). In Indonesia, the Tuck study shows that 161 of the 314 respondents (51%) live away from home and pay rent. Therefore, we include local housing costs in the budget because excluding them restricts workers to Nike's dorm housing and because in Tuck's report they stress the importance of the family living situation in Vietnam.

There is also a misrepresentation in health care costs. They assume that the 5000 dong mandatory medical deduction is adequate to cover worker health care costs. This procedure is questionable because it invalidates the comparison to what local household members spend on health care, which is the point of doing their comparative study. Furthermore, the exclusion of social insurance expenses results in understated costs.

Under utilities costs, Tuck's procedure treats firewood and cooking fuel as mutually exclusive items. This does not allow that families may in fact use both sources in varying amounts. Additionally, Tuck's calculation procedures treat electric and

water as part of the dorm costs. Therefore, total fuel costs are not considered.

There are also errors in their calculations of utility costs. For VS, 50,000 + 45,000 should equal 110,000, not 102,000. For VJ, 45,000 + 45,300 without rounding equals 90,300.

The inclusion of electric and water as part of dorm costs is a questionable procedure because it restricts workers to dorm housing, it invalidates a meaningful comparison to the local citizen's living budget, and because they report that "nearly all the homes we survey [SIC] had electricity wired into house" (Calzini *et al.*, 1997: 18). Lastly, there were differences in calculating mean and median electric expenses for households between the two factories. For VS per household figures, if there was no electric expense it was calculated as zero. For VJ per household figures, if there was no electric expense it was omitted. These differences distort mean and median figures.

Tuck's calculation procedure in estimating phone costs is to allow each worker a four phone call budget at 2000 dong per call at a public telephone (8000 dong per month). This is a misrepresentation because it under-represents a comparison to what local Vietnamese citizens spend on their phone calls. They show that the expenditures reported in the household surveys were 17,562 dong per household member in VS and 15,380 dong per household member in VJ. The 8000 dong per month allowance is approximately half of the per household member expenditure reported in the survey.

Tuck does not allow for any transportation costs, which would restrict workers from leaving the factory except on bicycle. For VJ, where most workers are from other areas, it would mean no budget to visit families. They also report that average monthly gasoline expenditures for motor-bikes were 164,387 dong for VS and 178,487 dong for VJ, yet no individual figure was calculated. They report that most VS and VJ workers commute to work by bicycle but no costs are calculated to allow for the purchase of the bicycle.

For entertainment expenses, Tuck's procedure is not to allow workers any entertainment expense. According to Tuck, no entertainment costs were calculated since "recurring entertainment costs are highly uncommon for single person households" (Calzini *et al.*, 1997: 27). This is a misrepresentation of their comparison to local living situations and it is questionable because it changes the definition of a "nonessential" expense by disallowing all entertainment. The survey results indicate that many



households rented videotapes regularly (1–2 per week) at a cost of 1000–2000 dong per tape. This should equal a household average of 4000–16,000 dong per month and, to be consistent, should be converted into an average individual expenditure. The authors reported that televisions, VCRs, and radio/cassette players were common but did not include these expenses.

Tuck's procedure for calculating education costs disallows any education cost for single workers. No education costs were calculated since "single factory workers typically do not attend school" (Calzini *et al.*, 1997: 27). This procedure would not allow workers to save for their future education, and once again invalidates comparison to what local Vietnamese citizens are investing in their education.

We find another error in Tuck's calculations of wages. Informants number 520 and 550 do not match the actual minimum wage paid of 527 and 548, respectively, on page 5 of the Tuck report (in thousands).

Lastly, Tuck states that "approximately 48% of households surveyed in both the VS and VJ areas can save either regularly or from time to time" (Calzini *et al.*, 1997: 24). However, when the researchers encountered a Nike worker in the household surveyed, they noted that "they very rarely accumulate personal savings on a recurring basis either for emergency purposes or for anticipated future expenditures such as education" (Calzini *et al.*, 1997: 7).

We performed regression analysis as another way of analyzing the Tuck data. Regression allows us to determine if statistically significant relationships exist between variables, such as Nike employment and discretionary income.

We first performed regression analysis on the two groups (VS and VJ) to determine if there were significant differences. The analyses showed no significant differences between the two factory communities in terms of household income, discretionary income, savings, spending, or household size. We also found that the number of dependents was not a significant predictor of household income, savings, or spending.

We found that both the number of Nike workers in the household and the number of non-Nike workers ("Other") were significant predictors of household income. The  $R^2$  was 0.343. The  $R^2$ -value tells the variance accounted for in the dependent variable when all the independent variables in the model are combined. The  $b$ -value for Nike

was 350,594.5 and the  $b$ -value for Other was 448,459.2. The  $b$ -values show how much the dependent variable (household income) will change for every one-unit change in the independent variable (number of Nike or non-Nike workers in the household). Only Other was a significant predictor of household savings, with a  $b$ -value of 63,171.43. Other was also a significant predictor of household spending, with a  $b$ -value of 170,959.5.

Both the number of Nike workers and non-Nike workers in a household are significantly related to household discretionary income. The  $b$ -values for both Nike and Other were 262,237.6 and 302,479.8, respectively.

In regressions of interaction terms, there was a multicollinearity problem. Centering the data corrected the multicollinearity but the interaction terms were still not significant.

What these regressions tell us is that, despite Tuck's report that VJ community households had higher income levels and expenditures than did VS community households, there were no statistically significant differences in the two communities in terms of household income, discretionary income, savings, spending, or household size.

Significant correlations are shown between Other and household income, household savings, and household discretionary income. The number of Nike workers in the household was not significantly related to any of these variables. Again, this is inconsistent with what would be expected from the Tuck conclusions.

Interestingly, the analyses showed that each addition of one Nike worker into the household would increase the household income by 350,594.5 dong or \$30.09 per month. Each addition of one non-Nike worker into the household will increase the household income by 448,459.8 dong or \$38.49 per month. This indicates that being employed outside of the Nike factory contributes more to the household income than does being employed in a Nike factory. These figures also seem inconsistent with what is reported as factory mean wages and factory base wages. According to Calzini *et al.* (1997), the Nike Labor Update Survey conducted prior to the Tuck study indicated that the factory mean wages were 553,668 (VS) and 653,080 (VJ), and the factory base wages were 526,640 (VS) and 547,520 (VJ). Therefore, we expect that the addition of a Nike worker into the house would increase household income by more than the 350,594.5 dong indicated in our regression.



Each addition of one non-Nike worker into the household will increase household savings by 631,71.43 dong or \$5.42. There was no significant relationship between Nike workers in a household and savings. This suggests that households without Nike workers have discretionary income that can be contributed toward household savings, but that households with Nike workers are not able to have savings. This finding supports O'Rourke's (1998) observation that no VS workers reported any savings and that overall only 18 Nike workers reported any savings. Although the Tuck report noted that the Nike workers rarely have any savings, they concluded that the factory workers have enough income to generate significant discretionary income.

Each addition of one Nike worker into the household will increase the household discretionary income by 262,237.6 dong or \$22.51 per month. Each addition of one non-Nike worker into the household will increase the household discretionary income by 302,479.8 dong or \$25.96 per month. These findings indicate that non-Nike workers in the household contribute to discretionary income more than would a Nike worker in the household.

The results of these analyses contradict many of Calzini *et al.*'s (1997) findings. These results use data provided by Calzini *et al.* (1997) in their appendices. The results suggest that having non-Nike workers in the household increases household income, discretionary income, and household spending. Having non-Nike workers in the household is the only significant predictor of household savings.

Further problems exist in the Tuck calculations. In the Tuck report, housing rental expenses for VS are actually calculated based upon two respondents rather than from all those surveyed in the VS community. Likewise, the housing rental expenses for the VJ area are actually calculated based upon eight respondents rather than from all those surveyed in the VJ community. Similar procedures were used in reporting savings figures. The Tuck figures were actually based on a small subset of those surveyed (only those who reported having savings) rather than being based upon all of those surveyed (most of whom had no savings to report).

Another error occurs in Tuck's calculation of the utility expenditures for the VJ community. Tuck reports a mean of 58,869 and median of 45,000, yet the correct figures should be 51,015 and 40,000,

respectively. A similar calculation error occurs in reporting the mean social insurance expenses per household of the VS community.

The Tuck data, adjustments, errors, and omissions, in our view, grossly distort the data reliability, and invalidate the point of their study: a comparison of Nike workers' wages and expenses to that of local community profiles.

Through the use of second-order ethnostatistics, we reviewed and critiqued the assumptions and methodology used in the Tuck study. To further illustrate the significance of second-order ethnostatistical analysis, we used the data from the Tuck study and incorporated our own assumptions and methodology to reflect how the same data can yield vastly different interpretations.

### Third-order ethnostatistics

Third-order ethnostatistical studies focus on the rhetoric and use of language as a tool of persuasion. Third-order studies are concerned with how studies are targeted toward a particular audience and how they use language to create a validity and reality that convinces and persuades the audience.

Meaning is indexical, or given by our choice of words used in interpretation and description and by the context in which these words are embedded; meaning is not in the numbers, they can be interpreted differently. Thus, differences in conclusions can be traced to differences in interpretations and not to the numbers themselves (i.e., our regression uses their numbers but the interpretations are different).

How did Nike and Tuck use rhetoric to validate their study? Nike suppressed the fact that this was an MBA student project. Rather, they emphasized that this was a study done by Tuck in order to establish credibility. They also suppressed the conflict of interest inherent in the fact that they paid for this research.

According to then-President and COO of Nike, Thomas Clarke, "This study marks the first instance where a research team from a prestigious business school has been able to examine wages and expenditure patterns using two highly reliable sources – the actual household spending of the workers themselves and the World Bank" (Nike, 1997).

The Tuck researchers further legitimated the study by stating in the press release that "the faculty/MBA student team from Dartmouth's Tuck School have also conducted business analyses and research for other global companies including Disney, Citibank,



Motorola and Hewlett Packard” (Nike, 1997). This statement reflects an attempt to gain credibility by suggesting that they are in good company.

The researchers, however, overlook inconsistencies in their own report. For example, they noted that the VJ government-mandated minimum wage is \$35 per month and the VS government-mandated minimum wage is \$45 per month. However, they report that “the VJ area has noticeably higher income levels than the VS area” (Calzini *et al.*, 1997: 12) and “higher levels of expenditures” (Calzini *et al.*, 1997: 13).

The Tuck report concluded that Nike employees have substantial discretionary income and are able to acquire adequate standards of living. They also cite James Rockwell, President of American Service Company of Hanoi, in stating that “the average annual income in Vietnam today is approximately \$220 while the average annual income of a Nike worker is \$384” (Calzini *et al.*, 1997: 10). The Tuck study confirms Mr. Rockwell’s statement by adding, “our research indicates that the annual income for NIKE workers in the VS and VJ factories, calculated using factory base wages, amounted to \$545 and \$566, respectively... and suggest that the factories’ base wages are meeting or exceeding government mandated minimum wage levels” (Calzini *et al.*, 1997: 10).

Additional rhetoric of Nike executives point to anecdotal evidence as support for the Tuck findings. A Nike production director in Vietnam, Jarmo Vahtervuo, stated that “when the factory opened two years ago, workers rode on bicycles or walked. Today, many Tae Kwang workers have moved up to motorscooters, thanks to the wages they receive from the factory” (Manning, 1997).

Within our statistical reanalysis of the data, we, too, have incorporated rhetoric to lend credibility to our own analysis of the data. Through the use of third-order ethnostatistics, we are cautioned to be aware of rhetoric and language that is used for the purpose of persuasion. Rhetoric and language can help legitimize even the most controversial material, as we have demonstrated.

We have examined a historical document from three levels of ethnostatistics. First-level analyses attempt to review and understand the context within which statistics were created. Second-level analyses attempt to review and understand the statistics themselves. Third-level analyses attempt to review the rhetoric and language used to make the statistics persuasive. We conclude that ethnostatistics is a reasonable procedure for framing a

study to help understand quantitative work and the resultant varying interpretations that are possible. However, further analyses need to be done on the data set. Future research could break out household occupations into the same five categories provided by Tuck. The data should then be coded to determine differences in occupation category related to the dependent variable. There is currently too much missing data to analyze income in terms of specific occupations, such as a Nike factory worker.

### Conclusion

We cannot be the arbitrator of truth and fantasy. From an ethnostatistics viewpoint, different researchers will assemble the numbers, interpretations, and generalizations differently. We recognize that even our analysis is but one interpretation of the data. What we have attempted to show with an ethnostatistics analysis is that the bifurcation of qualitative and quantitative data is false. Researchers need to understand both statistics and rhetoric for a thorough analysis of the data of any study.

We selected a historical document that was quite controversial at the time of its release. Amidst controversy surrounding the labor practices of subcontracted factories, Nike contracted with Tuck Business School to conduct a study “to determine how well suited [Nike] wages are to the local economies and whether they are sufficient to allow the workers to sustain a reasonable standard of living for themselves and their families” (Calzini *et al.*, 1997: 4). The resultant study was favorable toward Nike and concluded that Nike employees have substantial discretionary income and are able to acquire adequate standards of living. This study created additional controversy because of its methodology and because the results countered activists’ claims, worker claims, and media reports.

We reviewed this study applying an ethnostatistical analysis. We used first-order ethnostatistics to examine the context in which the study was created and concluded that during this time of turmoil, Nike needed supporting evidence that their wages were reasonable and they contracted with highly respected figures with a history of favorable corporate reports. We used second-order ethnostatistics to examine the assumptions and appropriateness of the techniques used in constructing the data and used our own assumptions and methodology to show how the same statistics can yield different results. We used third-order ethnostatistics to examine the study’s use of



rhetoric and language as a tool of persuasion and concluded that the report and press releases surrounding the report were replete with tools of rhetorical persuasion, as was our own reanalysis and reinterpretation of the data.

This study demonstrating the use of ethnostatistics is an important methodological note because academic researchers are being called upon to answer important wage and labor conditions of transnational corporations. A growing number of academics are studying corporations such as Coca-Cola, Disney, Monsanto, McDonalds, and Nike from various points of view. There is an ethical responsibility for researchers to fully examine issues under study and to ensure reliability and validity. The ethnostatistics approach gives a framework for assessing particular issues of reliability and validity in ways that bridges both qualitative and quantitative interpretation. The criticisms of the Tuck study and the current analysis are evidence of the way in which context, assumptions and methodology, and rhetoric and language influence the outcomes of quantitative studies.

### **Post-script: an update on Nike events since the Tuck report**

As stated at the outset, the focus of our paper is on methodology and not on Nike company practices. Therefore, we felt it was important to write a post-script to provide an update on events since the timeframe of our paper. Tuck has never issued any statement or response to the criticisms of their students' report. Nike has made some encouraging, albeit slow, changes since the Tuck report was issued in 1997.

Tired of the negative publicity and image being generated, in late 1997, Nike decided to set the industry standard for reform (Emerson, 2001). This decision was followed by the CEO Phil Knight's 1998 landmark speech to the National Press Club in which he vowed coming changes, which were still criticized as a public relations move rather than an effort at substantial change at the time (Boje, 1998; Landrum, 2000). The 1998 Kaskey vs Nike case over truth in advertising also proved to be a significant moment in Nike's development. As later disclosed in their 2005–2006 corporate responsibility report, it caused them to be critically introspective and to re-examine their business model (Nike, 2006a). As a result of the Kaskey vs Nike lawsuit, Nike no longer makes claims in its ads that it has resolved the sweatshop issue. In addition, there are no longer references to

“transparency” of labor practices being made on Nike's websites. Nike decided to spend money on pursuing social accountability instead of fighting court cases, and Kaskey donated the settlement money to the same goal.

One of the first improvements was noticed by critics Dara O'Rourke and Garrett Brown even before the Kaskey settlement when, in 1999, they were invited to tour a Nike factory outside Ho Chi Min city, and they noted improved air quality, improved ventilation, reduced use of hazardous chemicals, and manager training on safety issues (Greenhouse, 1999). However, the Fair Labor Association (FLA) (2001) report and a study of O'Rourke and Brown (1999) noted that significant health and safety compliance issues still remained. The activist organization, Global Exchange, also noted that Nike had increased Indonesian wages and improved health conditions, but they pointed out that Nike “still has a long way to go” (Global Exchange, 1999). Since 1999, Nike claims to have greatly improved labor practices in its contract factories.

However, there are some indications that there are still lingering labor practice issues (Boje and Schipper, in press). In 2001, as Kuk Dong factory workers in Mexico went on strike and Jonah Peretti tried to personalize Nike shoes with the word “sweatshop,” Tim Connor's (2001) research on Nike progress toward Phil Knight's 1998 promises complained about slow progress in a web piece published by Global Exchange entitled, “Still Waiting for Nike to Do It.” Yet, Nike issued its first corporate responsibility report in 2001, which documented continued labor problems and abuses alongside claims of improvement in factories making their products.

Due to ongoing litigation in the Kaskey vs Nike case, corporate responsibility reports were not issued for the next 2 years, but Nike did begin allowing random factory inspections by the FLA in 2002. They also cut back production in Thailand as political turmoil allowed unions to form and wages to increase, following a pattern of fleeing countries where expectations were higher for wages and working conditions (Schipper and Boje, 2008; Landrum, 2000; Dhume and Tkacik, 2002).

In 2004, after the Kaskey vs Nike case was settled out of court, Nike released their second corporate responsibility report (Nike, 2004). This report revealed further problems in factories but announced the company's plan to become a global leader in corporate responsibility. During 2004,



Nike expanded FLA factory monitoring beyond labor conditions and began including environmental and safety inspections (Bernstein, 2004) while gaining additional notice for its turnaround efforts (Zadek, 2004).

In its 2005–2006 corporate responsibility report, Nike disclosed its full list of supplier factories. It was the first major footwear and apparel company to do so. This disclosure won the praise of many for its transparency and movement toward more responsible practices (Murray, 2005; Teather, 2005). Despite the disclosure of difficulties in labor, environment and health and safety standards, Nike reiterated its intention to become a leading corporate citizen and suggested that it was seeking large-scale systemic change within the footwear and apparel industry by addressing the root causes of problems, not just a solution to the symptoms. The report was still viewed as “more rhetoric than action” by Global Exchange critic Neil Greenburg as reported in a Fox News web report by AP writer Sarah Skidmore (2007). Nike’s actions continued to be viewed as public relations maneuvers by critic Jeffrey Ballinger and others (Vasil, 2006). In an ironic twist, Nike endured criticism after dropping a soccer ball supplier for repeated labor violations (Montero, 2006).

In 2005, Nike was able to meet the Calvert fund’s requirements for being a good corporate citizen for the first time (Smitherman, 2005). During the same year, the company was ranked 31st on *Business Ethics* magazine’s 100 Best Corporate Citizens for the first time (*Business Ethics*, 2005).

In 2006, a Canadian magazine that focuses on corporate social responsibility, *Corporate Knights* (2006), named Nike to its list of 100 most sustainable corporations in the world. *Business Ethics* magazine (2006) listed the company as 13th of the 100 Best Corporate Citizens, and *SustainAbility* recognized the company for transparency and sustainability reporting (Nike, 2006b). However, as Boje and Schipper (in press) point out, transparency does not imply integrity or openness.

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In 2007, 10 of the 35 Nike plants in Vietnam endured strikes as labor problems persisted (Rovell, 2008). Although their Vietnamese practices have been dubbed “the industry gold standard,” workers who had been on strike revealed that they were abused and make barely enough to live (Rovell, 2008). Nike responds that they pay a “competitive wage” rather than a living wage (Rovell, 2008). The Vietnamese factory workers’ claims and the Nike response are reminiscent of the difficulties of the 1990s. At the same time, Nike moved up to third place on *Business Ethics*’ list of 100 Best Corporate Citizens (2007).

To what degree has our and others’ critique of Nike had a favorable impact upon changing labor practices? Progress has been slow for Nike. While the critics are not convinced that a turnaround has occurred, there is increasing evidence that the company is slowly moving toward improved conditions. In its public relations campaign, it is strategically using all the appropriate corporate responsibility-focused news networks to promote its presence and make the case that there has been incremental progress. Nike is no longer on the defensive; rather it has emerged victorious and is successfully using labor issues and the media to its advantage. Yet absent the outside pressures of the 1990s, Nike is not moving as quickly as its critics would like to win the race to reform. We believe that the ethnostatistical methodology approach we have taken is a way to assess empirical and rhetorical claims being made in the monitoring of labor practices. It is an emerging research approach that can help sort out hyperbole from substantive analysis.

## Note

<sup>1</sup>VS, 78 households were sampled; VJ, 68 were sampled; total of 146 households (p. 7). A total of 149 VS and 151 VJ adults were interviewed to benchmark households in the vicinity of each factory to represent workers in 5373 in VS and 6376 in VJ.



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