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Cultural Lag: An Underestimated Issue in Postmodern Society

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Contents

Articles

Explaining Donald Trump's Support: Cultural Lag or Cultural Backlash? 1
Kathrine Rocha, Chris Sabetta, and Roger Clark

The Advent of Autonomous Vehicles: A Transportation Revolution 11
Helmut E. Reinhardt

The Drug Overdose Epidemic: Deaths of Despair or Deaths of Addiction? 17
Marissa Botelho, Jennifer Lemos, Jessica Souza, and Roger Clark

Culture, Change, and Cultural Lag: A Commentary and a Challenge 27
Josephine A. Ruggiero

Film Reviews

Film Review of "Robot & Frank" 30
Emily Stier Adler

Film Review of "The Circle" 33
Helmut E. Reinhardt and Josephine A. Ruggiero

Etcetera 35

Explaining Donald Trump's Support: Cultural Lag or Cultural Backlash?

By

Katherine Rocha, Chris Sabetta and Roger Clark

Rhode Island College

Abstract

The authors employ Ogburn's (1922) concept of cultural lag to gain insight into why Donald Trump's supporters voted for him in the 2016 Presidential election. Rocha, Sabetta, and Clark posit that economic and technological changes created a sense of ill being, or malaise, among a large portion of the white working class and that this malaise made voters unusually susceptible to the populist themes of the Trump candidacy. The authors analyze Gallup's (2017) "State of the States" poll results for 2016 to examine the degree to which Trump's margin of victory over Clinton in the 50 states (data from The Cook Political Report 2017) can be explained by the variables of 1) the percentage of state residents who identify as Republican or who identify as independent but say they lean Republican and 2) a state's score on Gallup's overall "Well-Being" index." This index is comprised of five elements of well-being that are the core components of the best possible life: purpose, social, financial, community and physical." The authors report that, *at the state level,* once the degree to which a population identified as Republican was controlled, there was a strong, negative correlation between its overall well being and Trump's electoral margins. Rocha, Sabetta, and Clark use the American National Election study data from 2016 and 2012, at the *individual* level, to show that the 2016 election was *unusually* influenced by attitudes that constituted a kind of cultural backlash to progressive viewpoints about blacks, immigrants, gays and lesbians, and women. The data show that these attitudes had stronger controlled associations with a vote for Trump than measures of current economic and educational deprivation.

Keywords: cultural lag, economic insecurity, cultural backlash, populism

INTRODUCTION

Asked why Donald Trump won the 2016 Presidential election, pundits give about as many answers as there are, well, pundits. Answers include, for example, Comey's announcement of the reopening of the Clinton investigation; Hillary Clinton's poor candidacy; Mrs. Clinton's e-mail scandal; Russian interference in the election process; the fact that Presidents are not elected by popular vote; Trump's supporters' addiction to "The Apprentice;" and so on.

Although these answers may each have some validity, none is particularly sociological. And none feels like an adequate answer to the basic question: what made a sufficient slice of the American populace so ready and perhaps eager to vote for a political novice, with some evident *peccadillos*, that any of these peculiarities, or even some combination of them, could tip the scale? This really is the central question of this paper, one that we address through two lenses: a cultural lag lens and a cultural backlash lens. The former leads us to believe that support for Trump's candidacy was born out of economic insecurity in a substantial part of the electorate. The latter, that it was the result of a resentment of a "silent revolution" in attitudes, a revolution that deprived many whites of their sense of privilege in American society.

LITERATURE REVIEW

Using the "Cultural Lag" Lens

We thought that the theme of this issue of ***SBG***, cultural lag, might hold the clue to Donald Trump's electoral success. We knew that at least one faction of Trump supporters (e.g., white working-class men and their families) had experienced a buffeting by the winds of economic and technological change. While such changes also affected working-class people of other racial and ethnic backgrounds, white working-class men and their families were more susceptible to Trump's campaign themes about job creation and job security.

The sources of this buffeting have been well documented. By the 1960s, in fact, the switch to a knowledge-based economy in the United States had begun and the industrial economy began to thin. Managers and engineers, always interested in increasing productivity, produced automated factories that employed fewer people. By the 1970s, corporations began to replace old factories with new ones in countries with low-cost labor. Initially this loss of manufacturing jobs hit black men hardest, but by the 1980s the losses hit less-educated whites as well (Kenschaft, Clark and Ciambrone 2016: 41-42). The more recent acceleration of computing power, what Thomas Friedman (2016) calls "the supernova," promises to threaten the traditional working-class job market even more.

The effects of all this economic and technological change have been uneven in the United States, as elsewhere. Real family incomes for the top 20 percent of families rose by a little over 75 percent between 1967 and 2013. Meanwhile those for the next 40 percent rose by less than 30 percent, and have actually fallen substantially since 2000, and those for the next 40 percent have risen much less, and also fallen since 2000 (Reeves 2015). Social scientists as politically disparate as Charles Murray (2012) and Robert Putnam (2015) have pointed to an increasing bifurcation in the experiences, opportunities, and prospects for children between what Murray calls "The New Upper Class" and the "New Lower Class." Murray demonstrates convincingly that this divide is as significant among white Americans as it is among any other group.

The relationship between the income inequality and opportunity inequality has not been simple or instantaneous. Murray (2012) and Putnam (2015) both suggest that it took decades for economic troubles "to undermine family structures and community supports" (Putnam 2015: 228). As marriage became less common and divorce more common among the "new lower class," children experienced gaps in parenting, developing lower commitments to education and lower chances for intergenerational mobility. Fear regarding and resentment for these situations was natural, as well as for government actors who continued, as one of Hochschild's (2016: 52)) respondents put it, "come down on the little guy," over-regulating the little guy, but under-regulating guys at the top.

In his 2015 book, *Our Kids: The American Dream in Crisis*, Putnam under-scored the potential for "antidemocratic extremism" that the presence of a new lower class, faced increasingly with few personal opportunities, but also few opportunities for their children, poses. As he put it:

> [U]nder severe economic and international pressures . . . the "inert" mass might suddenly prove highly volatile and open to manipulation by anti-democratic demagogues at the ideological extremes (pp. 239-240).

So one view of Trump's victory suggests that many of his supporters were victims of long-term economic upheaval in the U. S., seeking to express their dissatisfaction with the way the country had left them and their children behind. They voted for Trump, according to this view, because he spoke to their economic insecurities and promised to create the jobs that would enable them to once again achieve respectable middle-class status for themselves and a hopeful future for their children. An added benefit was that Donald Trump promised to shake up the Washington establishment.

More generally, Donald Trump has been viewed as embodying the characteristics of a populist candidate, one who extols the wisdom of "ordinary people" ahead of the views of elites (e.g., media pundits and elected politicians). Populism, according to Inglehart and Norris (2016: 6-7) is a philosophy that often favors the personal power of charismatic leaders, preferring direct majoritarian democratic rule over a system of checks and balances. Donald Trump's embrace of these

principles, the cultural lag perspective implies, made him particularly attractive to people with less education, lower levels of income and wealth, and a greater sense that the economy was failing because it promised to address their economic insecurities.

Therefore, the cultural lag perspective led us to propose the following four hypotheses:

Hypothesis 1: People with lower incomes would have been more likely to vote for Trump than people with higher incomes.

Hypothesis 2: People with less wealth would have been more likely to vote for Trump than people with more wealth.

Hypothesis 3: People with less education would have been more likely to vote for Trump than people with more education.

Hypothesis 4: People who felt the economy was doing badly would have been more likely to vote for Trump than people who felt the economy was doing well.

Using the "Cultural Backlash" Lens

"Cultural backlash" refers to a reaction against progressive cultural movements. The cultural backlash perspective can be seen as focusing on second-level, attitudinal implications of economic and technological change, especially for people who may previously have seen themselves as privileged in society, but now feel victimized by liberal movements and attitudes. This perspective suggests that there has been a "silent revolution" in values in many Western nations, coinciding with the rise of knowledge-based economies (e.g., Inglehart 1977), that has been associated with a rise of multiculturalism, advocacy for environmental protection, human rights, and gender equality. Like many such "revolutions," this one has inspired a backlash most particularly among those who have seen their privilege and status challenged by liberals and by economic change. These revolutions have left many whites feeling, as Arlie Hochschild's (2016) book title states, *Strangers in Their Own Land*.

Hochschild's qualitative research into the lives and convictions of conservatives, who, in her study, were largely white, uncovers deep-seated fears of being culturally eclipsed. Her Louisiana respondents did in fact fear economic decline, but were conceivably even more motivated by resentments about "line cutters," groups who seem, through affirmative action programs of the federal government, to have been given a leg up in colleges and universities, jobs and welfare programs. Hochschild summarizes:

> Women, immigrants, refugees, public sector workers—where will it end? Your money is running through a liberal sympathy sieve you don't control or agree with. These are opportunities you'd have loved to have had in your day—and either you should have had them when you were young or the young shouldn't be getting them now. It's not fair (2016: 137).

Hochschild is careful about labeling her respondents, and by extension other, primarily white, conservatives, as racist, sexist, anti-immigrant or homophobic. Many, she implies, probably are racist by definitions used by sociologists—e.g., believers "in a natural hierarchy that places blacks at the bottom" (2016: 147). She points out, however, that most are explicitly not racist by their own definitions of the word—people who use the "N" word or who hate blacks. We too would like to avoid such labels.

Donald Trump spoke to the sense of unfairness felt by many "new lower class" whites. He openly criticized immigrants from Mexico and Muslim countries, and was cheered. Openly demanded that "Black Lives Matter" protesters be kicked out of his rallies, and garnered vocal crowd support. Hochschild makes this observation about a rally she observed:

> He [Trump] was throwing off not only a set of "politically correct" attitudes, but a set of *feeling rules*—that is, a set of ideas about the right way to feel regarding blacks, women, immigrants, gays . . . (2016: 227).

The cultural backlash perspective led us to propose a number of other hypotheses about the 2016 presidential election. Specifically, we came to expect:

Hypothesis 5: People who feel that blacks have *not* been particularly disadvantaged are more likely than others to have voted for Trump.

Hypothesis 6: People who would like to halt immigration into the country are more likely than others to have voted for Trump.

Hypothesis 7: People who feel that discrimination against gays and lesbians is tolerable are more likely than others to have voted for Trump.

Hypothesis 8: People who feel that discrimination against women is tolerable are more likely to have voted for Trump than others.

Our reading of the cultural lag and cultural backlash perspectives together led us to believe that, at the state level, those state populations expressing the greatest overall well being would be less likely to vote for Trump than those expressing the least overall well being. Hence, we proposed our last (ninth) hypothesis:

Hypothesis 9: At the state level, Trump's margin of victory will have been inversely related to the proportion of the population expressing a sense of overall well being, even once the proportion of the population of the population classifying itself as Republican is controlled.

RESEARCH APPROACH and PRINCIPAL VARIABLES

This article is based primarily on secondary analysis of two timely data sets: Gallup's (2017) "State of the States" poll results for 2016 and the American National Election Study (ANES) for 2016 and 2012.[1] We use the Gallup data to determine the degree to which Trump's margin of victory (or defeat) over Clinton in the 50 states (data from The Cook Political Report, 2017) can be explained by two variables: the percentage of state residents who identify as Republican or who identify as independent but say they lean toward Republican and a state's score on Gallup's overall "Well-Being" index, "made up of five elements of well-being that are the core components of the best possible life: purpose, social, financial, community and physical." Our goal is to ascertain the degree to which a lack of "well-being," the closest measure of state-wide despair we have found, can account for Trump's success, above and beyond what could have expected based on the political identification of states' populations.

Since 1948, ANES has employed a sample of American voters in every presidential election in order to help researchers determine the characteristics and attitudes of voters that led to the election result in each presidential election. We use the ANES data to determine how various indicators of voter economic insecurity and cultural backlash, at the individual, rather than at the state, level may have contributed to Trump's electoral success. We choose indicators based on their availability in both the 2012 presidential election, involving primarily Mitt Romney and Barack Obama and in order to estimate their relative salience in the 2016 election. Comparing the two elections is crucial for determining the degree to which certain characteristics and attitudes stand out in the 2016 election. Thus, for instance, even if we find that a concern about immigrants distinguished Trump voters from Clinton voters, we cannot be sure that this attitude was particularly salient in the 2016 election unless we can determine that it was less important in previous elections.

Our dependent variable in the 2016 election is whether a respondent voted for Clinton (coded 0) or Trump (coded 1). Our dependent variable in the 2012 election is whether s/he voted for Obama (coded 0) or Romney (coded 1).

We use four measures of economic status and possible insecurity as independent variables. Three of these tap respondents' economic condition and the fourth, an attitude towards the economy. The first independent variable is a measure of family income (INCOME).[2] The second independent variable is a rough measure of wealth, based on whether a respondent claimed to own stock or not (STOCK). The third independent variable is a measure of education (EDUCATION).[3] The fourth independent variable is a measure of economic condition (ECONOMY).[4] The cultural lag perspective leads us to expect that people with lower family income, without stocks, with less education and with negative ratings of the economy are more likely to have voted for Trump than people with higher incomes, with stocks, with more education and with positive ratings of the economy.

We also have four measures of the degree to which respondents are gripped by a negative reaction to progressive value changes—that is, are part of a cultural

[1] The ANES data were available through Berkeley University's (2017) "Survey Documentation and Analysis" website.

[2] INCOME has 28 categories, ranging from "under $5,000" to "$250,000 or more."

[3] EDUCATION has five categories, ranging from "less than a high school credential" to "a graduate degree."

[4] ECONOMY is operationalized by a respondent's rating of the economy on a five-category scale from "very good" to "very bad."

backlash against certain categories of people. One measure has to do with the degree to which they disagree with the statement that "Blacks have gotten less than they deserve" (BLACKS). A second measure focuses on the degree to which they think the media should pay less attention to discrimination against women (WOMEN).[5] A third measure is whether they say "no" to the question "should laws protect gays and lesbians from job discrimination" (GAYS). And the fourth measure, a four-category scale measuring the degree to which respondents think that government should define unauthorized immigrants as felons and send them back to their home countries (IMMIGRANTS). Unfortunately, in regard to measuring anti-immigrant feeling, this last variable does not have the greatest face validity in the 2016 ANES survey. An alternative measure of this variable was available in the 2016. We could not use the alternative variable because there was no comparable indicator present in the 2012 survey.[6] However, analyses not presented here suggest that the more valid, alternative measure of anti-immigrant feeling actually shows a stronger association with presidential choice than IMMIGRANT, so using the variable IMMIGRANT in our analysis probably offers a conservative estimate of the degree to which anti-immigrant sentiment drove Trump voters.

We use five control variables in our analyses: political party affiliation; race; gender; age; and the importance of religion to the respondent.[7] Republicans were undoubtedly more likely to vote for Trump than voters with other political identifications.[8] We expected that Republicans, whites, males, older voters, and people who said religion was important would be more likely to vote for Trump than non-Republicans, non-whites, females, younger voters and people who said religion was not important.

RESULTS

We report results from Pearson correlation and linear regression analyses for overwhelming theoretical considerations, despite the fact that many of our variables do not meet the assumptions required of such statistical techniques.[9] Normally, it would be preferable to use logit or probit regression analysis, for instance, when the dependent variable is dichotomous, especially when one of the categories of the variable is relatively rare. But rarity is not a problem for the dependent variables in this analysis: all four candidates—Trump, Clinton, Romney and Obama—received substantial proportions of the votes. And simple linear regression provides statistics—in this case, standardized regression coefficients (betas)—that enable the comparison of the strength of controlled associations of various independent variables on the dependent variable. These are crucial comparisons for this study. In analyses *not* reported in this paper, we have done logit regression and find that results are stable over the two types of regression regime (i.e., for simple linear and logit regression).

Our initial research question had to do with how much of Trump's margins at the state level, which is, after all, how elections are decided, could be accounted for in terms of general malaise, dissatisfaction or despair among the electorate. We therefore regressed Trump's margin at the state level on two variables: one, the percentage of state residents self-identifying as Republican; the other, the index measuring overall wellbeing. As Table 1 suggests, once the percentage

[5] We want to point out that the wording of this statement may needlessly confuse voter attitudes towards women with their attitudes towards the media as well as their attitudes towards Hillary Clinton, a female candidate. However, we found no more reliable indicator of attitudes towards women in the 2016 and 2012

[6] One variable (available in 2016), based on a question about what should happen to United States immigration levels (from "increase them a lot" to "decrease them a lot") does not confuse, as the variable IMMIGRANTS might be seen to do, attitudes towards immigration with attitudes towards *illegal* immigration.

[7] Political party affiliation is coded as Republican = 1 and not Republican = 0. Self-identified race is coded as 1 = white and 0 = not white. Gender (GENDER) is coded as 1 = female and 0 = male. Age (AGE) is coded as age in years; and the importance of religion to the respondent (RELIGION) is coded as 1 = religion important and 0 = religion not important.

[8] We had a choice between two variables: one measured the degree to which voters considered themselves Republican (with strong Republicans being on one end of a 7-category scale and strong Democrats being on the other); one measured whether they identified as Republican or not. As it turns out, findings do not substantially differ when either indicator is used, but we use the latter in the analyses presented here.

[9] Quite a few of the variables we analyze are *not* measured at the interval level and those that are, even our dependent variable, the candidate for whom people voted, are typically two-category dummy variables.

of Republicans is controlled, the association between Trump's margin and index of overall wellbeing was strong, significant and negative (beta = -.19). (See Table1.)

Table 1. Regression of Trump Margin by State on the Percentage of the State Population Reporting That It Is Republican (REPUBLICAN) and Overall Wellbeing Index (WELLBEING)

	Standardized Regression Coefficients (Betas)
REPUBLICAN	.91***
WELLBEING	-.19***
N of States	50
Adjusted R-square	.92

However, if "ill being," the opposite of "well being," was a significant predictor of Trump's margin of victory at the state level, the question arises as to what was the nature of this "ill being" at the individual level. The cultural lag and the cultural backlash perspectives on support for populism provide three testable hypotheses. Table 2 shows fundamental support, even while it also reveals some surprises. We begin with our control variables in the regression analyses presented here. Comparison between the 2016 and 2012 elections suggests that, at the zero-order level, REPUBLICAN (r in 2016 = .61; r in 2012 = .64) was slightly less salient in the 2016 than in the 2012 election. Race, gender and age had about the same salience in the 2016 election as they did in the 2012 election. But the importance of religion to a voter was actually considerably more salient in the 2016 election (r = .26) than it was in 2012 (r = .11). People who defined themselves as religious were much more likely to vote for Trump than Clinton. They were even more likely to do that than religious voters were to vote for Romney than Obama.

Table 2 also offers support for hypotheses derived from the cultural lag perspective. However, this support is sometimes only evident when one contrasts the 2016 results with the 2012 results. Thus, the negligible correlation between INCOME and a vote for Trump in 2016 (r =.01) would not immediately support the hypothesis that income affected the 2016 result, if it were not for the fact that, by contrast, Romney voters tended to have considerably more income than Obama voters (r =.14). As a general rule, Republicans tend to be higher earners than Democrats. The 2016 election proved to be the rule's exception, suggesting that many income-strapped voters did in fact vote for Trump. Similarly, voters without a stock portfolio were only a little more likely to vote for Trump than Clinton in the 2016 election (r for STOCKS = -.07), but, compared to the non-existent relationship in the 2012 election (r = .00), this difference suggests that Trump's candidacy was relatively effective at drawing voters with little wealth.

The other two hypotheses derived from the cultural lag perspective are also supported, but, in this case, the support is somewhat undermined by the comparison with 2012 results. It is widely believed, for instance, that less educated voters were more likely to vote for Trump than Clinton, and the correlation between EDUCATION and a Trump vote (r = -.12) supports this belief. But the fact that the correlation between EDUCATION and a Romney vote was stronger (r = -.16) suggests that education may not have been quite as telling in the 2016 election as it was in the 2012 election. It is also a common belief that those who felt the economy was doing badly were more likely to vote for Trump than Clinton, and the correlation between ECONOMY and a Trump vote (r = .48) would appear to be strong support for this view. But, when one sees that the correlation between a Romney vote and ECONOMY in 2012 was even stronger (r = .58), one is led to entertain the possibility that disappointment with the economy's performance does not completely explain Trump's success, or at least was not as salient a factor in the 2016 election as it was in the 2012 election.

In contrast, the correlation coefficients reported in Table 2 show both absolute and relative support for all of the hypotheses derived from the cultural backlash perspective. BLACKS, measuring the extent to which voters *disagreed* with the statement that "Blacks have gotten less than they deserve," was strongly correlated with voting for Trump (r = .54), even more strongly than it was with votes for Romney when he was running against a black incumbent whom some Americans resented (r = .47). Voting for Trump was more highly correlated with disagreement with the feeling that gays and lesbians should not be discriminated against (r = .30) than voting for Romney was (.25), even though, in

both cases, the correlation is relatively high. Negative feelings about undocumented immigrants was much more strongly correlated with a vote for Trump (r=.44) than it was with a vote for Romney (.28), though in neither case was the correlation weak. And negative feelings about media attention to discrimination against women was much more strongly associated with a vote for Trump (.49) than it was with a vote for Romney (.35), although, again, in both cases the correlation is strikingly high. (See Table 2.)

It is, of course, possible that some of the insights available from Table 2 would require modification when we examine the associations of independent variables with voting behavior, controlling for other variables. Table 3 presents the results of regression analyses and, in fact, it suggests that some of the insights provided by the correlation analyses do need to be reconsidered. Thus, for instance, when all other variables are controlled, voters were more likely to vote for the Democratic candidate in both the 2016 and the 2012 elections if religion was important to them (beta for 2016 = -.09, for 2012 = -.12).

Crucially, though, the regression analyses continue to provide solid support for the cultural backlash hypotheses, while they provide more ambiguous support for the cultural lag hypotheses. Thus, the 2016 betas for BLACKS, IMMIGRANTS, GAYS, and WOMEN (.17, .12, .06 and .16, respectively) are all stronger than their counterparts in 2012 (.15, .08, .00, and .08, respectively) and statistically significant. Trump voters seem to have been unusually unsympathetic to the condition of blacks, undocumented immigrants, gays and lesbians, and women.

On the other hand, support for the cultural lag hypotheses is less strong in the regression analyses than it appeared to be in the correlation analyses. None of the betas for INCOME, STOCKS, and EDUCATION (.00, -.01, and -.02, respectively) is statistically significant, and only the one for INCOME suggests much more relative economic deprivation among Trump voters than its counterpart (beta = .05) for the 2012 election. The beta for ECONOMY (.20) in the 2016 election strongly suggests that Trump voters felt more disappointment over the economy's performance than Clinton voters did, but it also suggests less relative disappointment than its counterpart (beta = .30) does for Romney voters, compared to Obama voters, in the 2012 election. (See Table 3.)

DISCUSSION

We find evidence that voting for Trump in the 2016 election may have been substantially motivated by sentiments resulting from economic and technological changes that have gotten ahead of American society's ability to adapt—i.e., from cultural lag. We argue that the long-term disruption of the job market for the working class, especially the white working class, has left a considerable portion of the American electorate with a sense of malaise. Moreover, our state-level analysis suggests that this malaise, this feeling of ill being, was a strong correlate of Trump's margins.

Our individual-level analyses suggest support for the notion that Trump's success had more to do with resentments that may have been fostered by economic disruption than by lingering economic disadvantages themselves. In terms of income and stockholdings, for instance, Trump voters were *not* different from Clinton voters, although their relative economic disadvantage, compared to Romney voters in 2012, is notable. Relatively speaking, they were slightly less educated than Romney voters, but not significantly less educated than Clinton voters, when other variables in our analysis were controlled. They were much more likely than Clinton voters to see the economy as worse off than it was the previous year, but, compared to Romney voters in 2012, they were not quite as adamant on this point.

We want to point to limitations of our study, however, that make suspect its apparent negligible to weak support for the view that Trump supporters have been more disadvantaged by economic upheaval than Clinton supporters. First, and perhaps most important, we have no data about the *past* workplace experiences of voters in the 2016. We cannot say, as a result, what kind of dislocations voters may have experienced during the Great Recession of 2008/2009, or over the past forty or fifty years—and, hence, how these dislocations may have been related to their vote in the 2016 Presidential election. Second, we do not have access to data about whether voters were unemployed or non-participants in the labor force—both better indicators of *current* economic insecurity than any measures we were able to employ. Third, our finding of little difference between Trump and Clinton voters in terms of income, wealth and education is actually fairly striking, given the

Table 2. Correlates of Trump and Romney Votes

	Trump/Clinton 2016	Romney/Obama 2012
REPUBLICAN	.61***	.64***
WHITE	.33***	.34***
GENDER	-.06**	-.07***
AGE	.13***	.11***
RELIGION	.26***	.11***
INCOME	.01	.14***
STOCKS	-.07***	.00
EDUCATION	-.12***	-.16***
ECONOMY	.48***	.58***
BLACKS	.54***	.47***
IMMIGRANTS	.44***	.28***
GAYS	.30***	.25***
WOMEN	.49***	.35***

Notes: Number of valid cases for 2016 = 2,224, for 2012 = 1,860. An * indicates significance at the .05 level; A ** indicates significance at the .01 level; A *** indicates significance at the .001 level. Coding: REPUBLICAN: 1=Republican; 0 = not Republican; WHITE: 1 = white; 0 = non-white; GENDER: 1= female ; 0=male; RELIGION: 1= religion important; 0 = religion unimportant; STOCKS: 1= owns stocks; 0 = owns no stocks; ECONOMY: higher value indicates greater feeling that economy is very bad; BLACKS: higher value indicates greater disagreement with statement "Blacks have gotten less than they deserve"; IMMIGRANTS: higher value indicates more agreement with feelings that unauthorized immigrants are felons and should be deported; GAYS: higher values indicates more disagreement with feeling that gays and lesbians should not be discriminated against on the job; WOMEN: higher values indicate greater agreement with feeling that media should pay less attention to discrimination against women.

Table 3. Regression of Trump and Romney Votes on Other Variables

	Standardized Regression Coefficients (Betas)	
	Trump/Clinton 2016	Romney/Obama 2012
REPUBLICAN	.33***	.35***
WHITE	.14***	.16***
GENDER	-.02	-.03
AGE	.03*	.02
RELIGION	-.09***	-.12***
INCOME	.00	.05**
STOCKS	-.01	-.04*
EDUCATION	-.02	.01
ECONOMY	.20***	.30***
BLACKS	.17***	.15***
IMMIGRANTS	.12***	.08***
GAYS	.06***	.00
WOMEN	.16***	.08***
N	2211	1844
Adjusted R-square	.61	.61

Notes: Number of valid cases for 2016 = 2,224, for 2012 = 1,860. An * indicates significance at the .05 level; A ** indicates significance at the .01 level; A *** indicates significance at the .001 level. Coding: REPUBLICAN: 1= Republican; 0 = not Republican; WHITE: 1 = white; 0 = non-white; GENDER: 1= female ; 0 = male; RELIGION: 1 = religion important; 0 = religion unimportant; STOCKS: 1= owns stocks; 0 = owns no stocks; ECONOMY: higher value indicates greater feeling that economy is very bad; BLACKS: higher value indicates greater disagreement with statement "Blacks have gotten less than they deserve"; IMMIGRANTS: higher value indicates more agreement with feelings that unauthorized immigrants are felons and should be deported; GAYS: higher values indicates more disagreement with feeling that gays and lesbians should not be discriminated against on the job; WOMEN: higher values indicate greater agreement with feeling that media should pay less attention to discrimination against women.

historic tendency of Republicans to be richer and better educated than Democrats. It may actually mean that more of the poorer and less-educated voters voted for Trump than typically vote for Republican candidates. Nonetheless, to the extent that our indicators do tap the current economic conditions of voters, we can say that we were unable to turn up much evidence that those conditions did much to distinguish Trump from Clinton voters.

What we did find considerable evidence for is the view that Trump voters were more likely to express resentments, conceivably resulting from past economic challenges, about various minority and/or marginalized groups than Clinton voters. This has been true of supporters of previous Republican candidates, compared to those of their Democratic opponents, as our data on the 2012 election affirm. But the differences between the 2016 and 2012 elections suggest that Trump voters were unusually likely to have negative attitudes towards blacks, immigrants, gays and lesbians, and women, even compared to Republican-candidate supporters in previous elections. While we cannot say for sure that it was only white voters for Trump who had these attitudes, the results do constitute support for Arlie Hochschild's (2016) general contention that Trump voters felt resentment towards groups that made them feel like "strangers in their own land."

CONCLUSION

In general, using the cultural lag perspective, we find relatively little support for the contention that Trump voters were distinguished from Clinton voters in terms of their economic or educational levels. We find more support for the conclusion, also derived from the cultural lag perspective, that they were distinguished by a relatively bleak view of the economy. However, we were surprised to see that their bleak view of the economy did less to distinguish them from Clinton voters than it did to distinguish Romney from Obama voters in the 2012 election. Future research, however, might examine the question of whether Trump voters have experienced more economic and/or educational deprivation sometime in their past than Clinton voters. Such research might provide a truer test of the cultural lag perspective than we were able to achieve in our analysis, limited as we were to measures of voters' current economic and educational situations.

We find more evidence for hypotheses based upon the cultural backlash perspective. Trump voters expressed greater resentments about blacks, immigrants, women and gays and lesbians than did Clinton voters and these differences were considerably greater than similar ones that distinguished voters in the 2012 presidential election. Unfortunately, the data we analyzed cannot help us discern whether these resentments would have been detectable before the Trump candidacy or whether the Trump candidacy was a necessary condition for such resentments becoming notable and noted.

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About the Authors: Katherine Rocha is a junior at Rhode Island College double majoring in Criminal Justice and Sociology. She plans to pursue a career in law enforcement. **Chris Sabetta** is a fifth-year Justice Studies major at Rhode Island College (RIC), planning to enroll in RIC's Masters in Justice Studies program next year. He plans to go into law enforcement, specializing in forensics. **Roger Clark** is Professor of Sociology at Rhode Island College, where he teaches research methods and the sociology of gender.

The Advent of Autonomous Vehicles: A Transportation Revolution

By

Helmut E. Reinhardt

Abstract

This article focuses on the advent of both semi- and truly-autonomous vehicles, their effect on culture(s) globally, and the perceptions of different generations of people. Automobile manufacturers in Europe, the U.S., and China are in a race to change cars, trucks, buses and, by extension, new and different modes of transportation. Unfortunately, to varying degrees, people and societies are lagging behind in accepting these innovations. In part, resisting change can be a rational response. For example, semi- and truly-autonomous vehicles can have both positive and negatives consequences. On the positive side are simplicity and, ultimately, less stress for passengers. On the darker side are issues in hacking of the computer systems in vehicles and the potential for such vehicles to be weaponized. Stressing the positive, by re-learning, adapting and accepting autonomous vehicles, societies will make these vehicles a part of their cultures and their life styles.

Keywords: semi-autonomous vehicles; truly-autonomous vehicles; positive and negative consequences; generational differences in people's responses to innovations; cultural lag

INTRODUCTION

Along with trucks and buses, the automobile has been one of the most useful inventions of the twentieth century. These vehicles have contributed to the economic growth of the U.S. (and every other country in the world) and have affected the lifestyles of people globally, including our geographic mobility and independence. Without them, our lives would be only local or regional. This article focuses on the revolution in vehicles that has been going with increasing frequency in the second decade of the 21st century. This article also focuses on people's responses to the dramatic changes in today's vehicles and in the projected changes in vehicles in the coming years. Finally, it explores the gap between the speed at which the transportation revolution is taking place and the ability of drivers of various ages to adapt to these changes.

To place this article in context: I have been a volunteer driver safety instructor for AARP for the past thirteen years. I have seen many changes in the curriculum of the course along with the advent of semi-autonomous vehicles and the start of autonomous vehicles. When I first started leading the course (one talks about the students as participants; instructors do not teach, we lead the discussions with senior drivers over 55 years of age), our course consisted of one small VCR tape of 20 minutes in length and a small manual. The course was two days; four hours each day. The instructors were not assisted by computers back then (circa 2004). Each instructor had to upgrade to new computer skills and read articles on the newest innovations in vehicles.

Over the years, the course morphed into one four and one half hour program, which includes an hour-long DVD presentation on selected topics. The content of the course now includes many topics not presented 13 years previously-- for example, technological advances, such as park and first lane assist; backup cameras for rear vision; blind spot detection; advanced cruise control; sensors for crash avoidance and automatic high/low beams and smart headlights (lights that turn with the direction of the vehicle). Vehicles now offer mood lighting, heated and vibrating seats, an entire dashboard information panel for temperature control, satellite radio, weather reports to assist drivers in any weather condition, GPS systems (including maps), and

sensors for drowsy drivers, which warn the driver that he/she is falling asleep, and lane changing sensors along with warnings for drifting from lanes (*AARP Smart Driver Course Guidebook* 2014: 27-29).

Every year cars and trucks change. The latest changes include different types of engines and fuel requirements for operation (e.g., biodiesel, natural gas, electric, ethanol, waste oil, and even fuel cell). In 2018, United Parcel Service is planning to put Class 6 delivery trucks with fuel cells on the road. (Jost 2017). According to Bloomberg Press, electric cars (EV) may make up more than a third of new-car sales by the end of this decade (Randall 2017). In a recent *Forbes Magazine* article, Newcomb (2017) describes a Mercedes Benz model with onboard controls; when one takes her/his hands off the steering wheel for five seconds, the car beeps to warn the driver and the automobile shuts off after five more seconds. Teal (2017) also describes innovations in auto emergency braking systems (AEB) already available in many European models along with adaptive cruise control, parking assist systems, steering assist, and camera-based road sign recognition.

The United States government's National Highway and Transportation Safety Board (NHTSB) has defined Autonomous Driving (AD) as having four levels of autonomy:

Level One: You drive the vehicle. Various onboard systems back you up.

Level Two: The vehicle can drive some of the time. Driver must be ready to take over when necessary.

Level Three: The vehicle can drive autonomously much of the time. Driver must be ready to take over with advance warning from the vehicle.

Level Four: The vehicle drives itself all the time. Passengers can read a newspaper or nap. This level describes the ultimate autonomous vehicle (Roy 2016).

In 2016, Uber, the ride-hailing service, began using semi-autonomous vehicles within a grid of downtown Pittsburgh, PA. That grid is expected to expand in the next couple of years (Cava 2017). Imagine an Uber vehicle, without a driver, coming to your workplace or residence to pick you up and delivering you to a particular destination. No cash: just **Mastercard** @, **Visa** @, **Paypal** @, or **ApplePay** @.

Waymo, previously called Google Cars, is Google's autonomous vehicle project. By 2016, Waymo already had a fleet of semi-autonomous vehicles that have driven over 3 million miles with only two accidents, neither of which was the fault of the semi-autonomous car (Waymo 2016).

Other prototypes have also been tested. For example, in cooperation with a Chinese company, Volkswagen has developed an experimental air car in China.[1] This car drives itself at level 3. At this writing, BMW is testing a driverless car that parks itself in a parking garage.[2]

China has introduced an innovative bus-train hybrid, which is electric-powered and has no rails (operates on sensors picking up white lines on the road surface). These vehicles will operate in the Chinese city of Zhuzhou by 2018 (Thompson 2017).

Along with the autonomous vehicle revolution comes the prospect of underground shuttles to relieve the congestion of major cities. Innovator and entrepreneur, Elon Musk, aims to wipe out traffic by designing 120 mile per hour underground shuttles in Los Angeles (Sadler 2017). Uber will also be test flying cars in Dallas and Dubai by 2020 (Huet 2017). The latest news is Toyota is planning on using a flying car to light the torch for the 2020 Summer Olympics in Tokyo. The initiative, code named, SkyDrive, has a long way to go. (AP & Kageyama 2017). Eventually, the trucking industry will also get involved. Autonomous trucks and hybrids, without drivers, can transport containers of goods cross-country on-time and with no overtime. With new innovations coming out each month, other forms of transportation may surface in the future. Hypo-speed planes, trains, and automobiles may also be there, too.

To date, some problems still linger with Mercedes-Benz (MB) Drive Pilot E-class program cars. According to Adams (2016), these cars still have problems with merging and arching of the road (taking corners). On the plus-side, the MB S-class vehicles for 2017, according to Edelstein (2017), have even more autonomous capabilities including vehicle-to-vehicle

[1] See the video at http://www.flixxy.com/volkswagen-levitating-car.html

[2] See the video at http: //www.youtube.com/watch?feature=playerembedded&v=rgM8MOrss40

communication, remote parking (similar to the BMW parking itself), autonomous braking, following other cars in stop-and-go traffic, lane-keep assist, steering assist during evasive maneuvers. Moreover, Edelstein (2017) also reports that the MB S5500 plug hybrid for 2018 will have wireless charging capability.

DRIVERS' PERCEPTIONS and CONCERNS

The question in most drivers' minds is: Can we "trust" these semi-autonomous and autonomous vehicles? Their concerns: Semi-autonomous vehicles are controlled by sensors, cameras and computers. So, safety and performance are only as good as the controlling programs involved.

When I ask participants in my driver safety courses about these vehicles, more than two-thirds of the participants say they are leery, do not trust the technology, or are just plain baffled by the idea of a vehicle driving itself. Since they started driving, these seniors have experienced cars with a manual transmission (now: dual transmission), no seat belts (now: lap and seat belts), no air bags, no cruise control, and even no radios.

To change drivers' perceptions, Durbin (2017) reports that Fiat-Chrysler and Waymo will be offering free rides to the public in these semi-autonomous vehicles in the Phoenix area. Their objectives are to gain feedback from the public and to gain the public's confidence in these vehicles. All of these vehicles will have backup drivers in case of emergencies.

A 2017 J.D. Power Report entitled, US Tech Choice Study, revealed that all generational groups, with the exception of Gen Y (those born 1977-1994), are become skeptical of self-driving technology. Specifically, 40% of Boomers (those born 1946-1964) do not see any benefit to self-driving vehicles. Only 7 % of Baby Boomers say they would purchase a full self-driving vehicle. However, younger consumers, such as Gen Z (those born 1995-2004), are far more comfortable with autonomous technologies than are older generations. Moreover, Gen Z consumers also say they have a higher interest in a digital key (versus a physical key or a fob) and 50% of age cohort indicated that they are definitely/probably interested in mobility sharing or co-ownership of a future vehicle. Unmanned mobility (level 4) is favored by 56% of this age grouping.

Kristin Kolodge, Executive Director of Driver Interaction and HMI research, concludes "in most cases, as technology concepts get closer to becoming reality, consumer curiosity and acceptance increases. With autonomous vehicles, we see a pattern which trust drives interest in the technology and right now, the level of trust is declining." Kolodge also indicates while automated driving is a new and complex concept, many consumers must experience it firsthand to fully understand it (Dobrian 2017).

DISCUSSION

When fully-autonomous vehicles come on the road in the future, questions may arise about the liability of an accident. First, who will be at fault-- the manufacturer of the vehicle or the owner of the vehicle? Second, what is known about the condition of the passenger? Is she or he legally "under the influence?" Can the occupant instruct the vehicle to deliver him/her to a particular place? Third, can disabled persons take these vehicles without problems? Can children, without adult guidance, operate these vehicles? Fourth, will passengers even need a driver's license anymore? Fifth, because these vehicles will have multi-lingual capabilities, can a foreign traveler with little driving experience operate these vehicles?

On the darker side, just like drones, can these vehicles be equipped with weapons by dangerous individuals? Also, with more people riding in these vehicles, there is a question of whether governmental controls (i.e., controlling the numbers) should be put on the vehicles. Another big problem is the issue of hacking the computer of these vehicles by unlawful individuals. Regarding the potential for hacking, car manufacturers and developers need to design a series of firewalls and gateways/passwords to prevent unlawful access to the vehicle's computer systems.

Along with changes in driving environments, traffic laws must change. Enforcement also may have to change. According to National Conference of State Legislatures (NCSL), as of early 2017, 13 states --Alabama, Arkansas, California, Florida, Louisiana, Michigan, New York, Nevada, North Dakota, Pennsylvania, Tennessee, Utah, Virginia-- and District of Columbia have passed legislation to allow autonomous vehicles to operate on those states' roads (www.ncsl.com).

Possible positive consequences may come about: There would be little road rage or any emotional dispute over some slight that may happen on the road. Drowsy and drunk people can be easily transported to their destination without incident. Persons with handicaps will be able to use these vehicles with some modifications in seating to travel anywhere. Also, passengers do not need to spend long hours navigating traffic on long trips.

CONCLUSION

On a more sociological note, because of the increasing cost of such vehicles, more people may opt to car-share, or co-own, or to choose other forms of transportation. We may have a return to mass transportation--- high speed trains or inter-city trolley systems. Or take either Lyft or Uber, both ride-hailing entities somewhere. Autonomous vehicles may provide a moving office or just be people movers. Moreover, with the increasing cost of buying and even leasing these new vehicles, car-sharing, such as Zipcar, may be more economically feasible for the general public.

All these vehicle innovations will require re-learning, adjustment, and adaptation. Just as we have learned to adjust to other technologies in our daily lives, we need to adapt to changes in the area of transportation technology. One final question: How easy is it for "old dogs" to learn new tricks? The author's answer: That depends on certain variables and how they operate. Which variables are most influential in getting older drivers to accept new technological changes? An extensive cross-disciplinary literature exists on what is involved in the adoption of innovations and, more recently, in resistance to innovations (Ram 1987).

Decades ago, Rogers (1962) identified five important characteristics of an innovation: Relative Advantage, Compatibility, Perceived Risk, Opportunity to Try the innovation before committing to it (Trialability), and Communicability. Relative advantages of self-driving vehicles, for example, are cost and conveniences for passengers (no one has to drive). Opportunity to try the innovation, too, is an on-going process, from semi-autonomous to fully unmanned, autonomous vehicles.

Which variables are important for the implementation and acceptance of these vehicles? Sociologist Stephen Vago (1999) organizes potentially influential variables into four categories. As Vago (1999) points out, some of the variables in these categories tend to stimulate change whereas others tend to generate resistance to change. The first category focuses on *social variables*. The stimulants for change in this category include the desire for prestige, contact with people in other societies who are accepting of an innovation, and participating in the decision making. In the second category, *psychological variables*, the motivation to change and perceived needs can operate as stimulants to change. Seniors are, generally, more reluctant to try something new. Younger people tend to be less reluctant. That suggest that most people would eventually accept the stress-less aspect of self-driving vehicles. In the category of *economic variables*, cost and economic advantage are major factors affecting change. Is the innovation affordable? Will the innovation be a major improvement over previously-existing options with which a consumer are familiar? Like variables in the social and psychological categories, economic factors can either aid or hinder the acceptance of autonomous vehicles. The cost of these vehicles relative to the benefits they offer will figure into the decision to purchase one in the future. Vago's (1999) fourth category, *cultural variables*, includes the type of culture and the degree of cultural integration. For example, a low cultural context and/or low cultural integration would be the biggest hindrance to accepting autonomous vehicles. Since autonomous vehicles are still completely untested, they are not yet part of the fabric of national or global culture(s). Therefore, the potential impact of cultural variables is presently unknown.

Baby boomers (born between 1946 and 1964), especially, love their cars and trucks as they presently are. Using Rogers (1962) innovation adoption lifecycle terminology, this age cohort would fall into the *Laggards* category: the 16% of the bell-shaped curve who resist the adoption of an innovation. Interestingly, Generation X, generally those born between 1965 and 1976, would be considered part of the *Late Majority*, the 34% of the curve who adopt just *after* the "average" consumer; Generation Y, generally those born between 1977 and 1994, and would likely fall into the *Early Majority*, the 34% who adopt the innovation just *before* the average consumer; and Generation Z, generally, those born between 1995 and 2012, would fall into the small category (2.5%) of *Early Adopters*, consumers who would adopt an innovation relatively quickly. A lot of research conducted in the 1960's and 1970s attempted

to identify the characteristics of the individuals that fell into these categories. The evidence reporting the characteristics of the individuals falling into each category was inconsistent (Harper and Leicht 2011:244-245).

In sum, to maintain their mobility, older drivers must adapt to changing transportation conditions and do so soon. Automobiles, trucks and other hybrid vehicles, will become more complex, more efficient, and more innovative than any vehicle previously built. The rate of innovation in these vehicles has also increased dramatically. All car manufacturers have a target date range of between 2020 to 2030 for autonomous vehicles to be available for purchase (Kagayama 2017; Randall 2017). Whether that target date range is achievable remains to be seen. However, European automakers, including Mercedes, Volkswagen, and Volvo, are already at the forefront of the race to produce the first truly-autonomous vehicle. Therefore, this author speculates that the Europeans will likely win this race. However, the Chinese may surprise everyone by being the first nation to produce a fully-autonomous vehicle.

The *actions of powerful individuals* and *communication sources* also matter. For safety reasons, governments may either phase out or pull older vehicles off the highways to accommodate newer vehicles. One important concern is that newer, autonomous vehicles cannot communicate with older, semi-autonomous vehicles. Various popular media, especially social media and movies, will also influence people's views on autonomous vehicles. It is likely that more consumers will look at these new vehicles as convenient modes of transportation and not as troublesome, expensive vehicles which will replace their "beloved" vintage "toys." Will the new vehicles have the soul and personality attributed to much-loved, older vehicles?

From Model A to flying cars, driver-less trucks, and bus-train hybrids, our lives will be forever changed by these new vehicles. People will travel more; people will spend their time during travel quite differently--e.g., some will read a book, some will sleep, some will socialize with the other passengers, and others will work. With a huge drop in fatalities on roads, our lives will be far safer than in the past. Eventually, people's perspectives on autonomous vehicles will change and will accept them. Younger generations are already comfortable with these vehicles and, as these generations age, autonomous vehicles will be a way of life. Until manufacturers eliminate the glitches and problems in these vehicles (as of June 2017), we will have to wait until these manufacturers make the decision to release them for public and private use. In that world of the near future, once autonomous vehicles are standard on the road, Driver Safety courses will no longer be necessary.

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About the Author: **Helmut E. Reinhardt** has been a Driver Safety course instructor for AARP since 2004. He is also involved actively with other AARP programs and initiatives, including the Fraud Watch Network, the RI state Advocacy program, and the Annual Back to School Celebration/Backpack Program.

The Drug Overdose Epidemic: Deaths of Despair or Deaths of Addiction?

By

Marissa Botelho, Jennifer Lemos, Jessica Souza and Roger Clark

Rhode Island College

Abstract

Using a framework offered by the concept of cultural lag, the authors examine two perspectives on the drug overdose epidemic afflicting America. A "deaths of despair" perspective emphasizes *cumulative disadvantages* that have beset certain segments of the U.S. population, rendering them "desperate for relief." In contrast, a "heroin markets" perspective suggests that white-powder heroin from Colombia has made heroin an attractive substitute for prescription drugs, like Oxycontin, and that the recent phenomenal growth in the number of overdose deaths has more to do with its market than anything else. The authors use secondary data to test three hypotheses derived from these perspectives. Although the available data are limited, they find support for both perspectives, particularly the "heroin market," one. They discuss implications.

Keywords: cultural lag, deaths of despair, heroin markets, deaths of addiction

INTRODUCTION

The drug overdose epidemic in the United States has been, and continues to be, a scourge upon the land. In 2016, for which data were beginning to come in at this writing, approximately 62,000 Americans died from overdoses, about a 19 percent increase over 2015 (Katz 2017). This number outstrips that of American lives lost to automobile accidents, gun shots and suicides (*Economist* 2017a). The drug overdose epidemic has become increasingly visible. One Ohio coroner's office in 2016, for example, stored dead opioid victims in refrigerated trucks outside its office because the bodies were pouring in faster than they could be processed (*Economist* 2017b). Quinones (2017) reports that "drug overdosing" is currently the number one killer of people under 50 in the United States.

Drug overdose deaths, along with alcohol-related deaths and suicides, are increasingly known as "deaths of despair," and are attributed to a reversal in what some imagined to be irreversible; that is, the mortality and morbidity rates for middle-aged white men and women (Case and Deaton 2015). In recent years the life expectancy for this social category has been decreasing, not increasing, as it continues to be for all others in the U. S. and the Western world. Monnat (2016) found a strong correlation between counties that voted for Donald Trump and ones that had high drug, alcohol and suicide mortality rates and concluded that this signaled that Trump voters often suffered from hopelessness and despair. Further contributing to the notion that drug overdose deaths are rooted in despair is convincing research suggesting that such deaths may often be misclassified suicides (e.g., Rockett et al. 2014). Suicides, most assume, are a sign of hopelessness and, if overdose deaths are really hidden suicides, the thinking goes, such deaths are also a sign of hopelessness.

Our investigation, largely driven by our belief that drug overdose deaths can be reasonably investigated as a manifestation of a particular kind of cultural lag, began with the expectation that we would uncover evidence that drug overdose deaths are in fact deaths of despair. We found such evidence, but also found evidence, perhaps even stronger, for another perspective: that

these deaths have become more about markets for heroin and, perhaps, fentanyl-- a narcotic, analgesic, and sedative. We will first consider the case that the overdose epidemic is an instance of cultural lag.

The Overdose Epidemic as an Instance of Cultural Lag

William Ogburn's (1922) concept of cultural lag refers to the social problems that can occur as the nonmaterial culture of a society (e.g., beliefs, values, perspectives) adapts to economic or technological changes. The implicit period of delayed adjustment can generate serious hardships for a population.

In the case of the drug overdose epidemic, there have been at least two changes in the material culture (e.g., everything tangible that society produces, such as tools, inventions, artifacts) that have been viewed as appropriate suspects. One change, the massive upheaval in U.S. manufacturing and job loss, brought about by automation and relocation over the past five decades, has been associated with the *demand* for opiates. Parts of the U.S. have suffered selective economic declines that have led to downward mobility for many people. This increased economic vulnerability, augmented by the Great Recession of the last decade, has raised fears and anxieties that have, in turn, led many to drown and/or drug their sorrows, and sometimes to take their lives. Monnat (2016) demonstrates that the most economically distressed counties in the U.S. are also the ones that have the highest rates of drug, alcohol and suicide mortality.

In the middle 1990s, a second kind of material change took place: the development of prescription drugs that promised the delivery of "safe," presumably non-addictive, opioid products for pain relief. This change increased dramatically the *supply* of opioids in the American marketplace. Until then, doctors largely prescribed opioids only for patients suffering from acute pain or terminal conditions.

Perhaps the major "breakthrough" was Purdue Pharma's discovery and marketing, in 1996, of Oxycontin. Oxycontin, a time-released formula for large, and varying, dosages of oxycodone, was designed for people suffering from chronic pain. This drug gained FDA approval for this purpose and was energetically marketed by Purdue, which employed a sales force that used practices that, some (e.g., Van Zee 2009; Quinones 2015) say, were often unethical and sometimes illegal. To suggest, as we do, that the development of a product (in this case Oxycontin) was responsible for the increased supply of legal opioids is not to ignore the importance of changing attitudes towards opioids in the medical community, attitudes that as early as the 1980s had begun to doubt the thinking that opioids were highly addictive and generally to be avoided (e.g., Quinones 2015: 15ff). The widespread sale and use of drugs like Oxycontin would have been impossible if a context of relatively relaxed attitudes towards the addictive potential of opioids had not emerged in the medical community.

Two Perspectives on the Drug Death Epidemic

We have found two major perspectives accounting for the drug death epidemic: a "deaths of despair" perspective and a "heroin market" perspective. Both perspectives are of recent origin. The first perspective, associated with Anne Case and Angus Deaton[1] (e.g., Case and Deaton 2017; Case and Deaton 2015a; Case and Deaton 2015b) argues that a loss of a sense of wellbeing within a significant swath of the American population is primarily responsible for its having turned to highly addictive drugs, alcohol and suicide. In its most recent and comprehensive formulation (Case and Deaton 2017), the "deaths of despair" lens suggests that a *cumulative disadvantage* has occurred, most remarkably for whites with lower education. Unlike hypotheses that have located the mortality problem in stagnant and declining incomes (e.g., Stiglitz 2015), hypotheses that Case and Deaton claim cannot account for why less-educated whites should have poorer mortality outcomes than, for example, less-educated members of minority groups, the "deaths of despair" perspective traces health and mortality declines to the progressively worsening labor market opportunities of less-educated whites and various correlates of this worsening.

The steady decline in job opportunities for whites with lower education levels has not only had enormous effects on their marriage and divorce prospects (Cherlin 2009; Kenschaft, Clark and Ciambrone 2016), but also on the life chances of their children (Murray 2012; Putnam 2015). Members of this social category have

[1]Case and Deaton are affiliated with Princeton University's Center for Health and Wellbeing.

become much less likely to marry, much more likely to divorce when they do marry, much more likely to have children out of wedlock, much more likely to expose their children to unstable family lives, and much less likely to enable those children to attain good educations than did less educated whites in the past. Moreover, Case and Deaton (2017:33) point out that "half of the men who are out of the labor force are taking pain medication, and two thirds of those take prescription painkiller, such as opioids." Case and Deaton concluded that reversing the trend towards deaths of despair cannot be done with purely economic solutions, at least not through *short-term* economic solutions. What is necessary is a program that addresses the family issues, the lack of spiritual fulfillment, "perceived meaning and satisfaction" (Case and Deaton 2017: 34) that lead to despair. As Case and Deaton note, this prescription is not a particularly encouraging one.

In this paper we focus exclusively on drug overdose deaths rather than combining them with alcohol-related deaths and suicides. We also use state-level data. One of the hypotheses we examine emerges directly from this "deaths of despair" perspective, namely:

Hypothesis 1: States with populations reporting high levels of overall wellbeing will have lower drug overdose death rates than states with populations reporting low levels of overall wellbeing.

We examined variables that, while not being proofs against despair, had been suggested to be inhibitors of despair. Religiosity is one factor that kept coming up in our examination of the literature on suicide and alcoholism, drug use, and even despair itself. Thus, for example, in a large number of articles published between 1980 and 2008, Gearing and Lizardi (2009) found epidemiological support for the protective effects of religious commitment, a protection that existed across Christian, Jewish, Muslim and Hindu communities. Similarly, in another review article, Haber et al. (2011) found a consistent inverse relationship between alcoholism and religion or spirituality. Kendler Gardner, and Prescott (1997) and Binswanger et al. (2012) have found evidence, in disparate populations, that religiosity can be a protective factor against drug use and overdosing. Other studies (e.g., McClain et al. 2003) have even found evidence that spiritual wellbeing can be a protection against despair in terminally ill cancer patients. The literature is *not* unequivocal, to be sure. In *Dreamland*, Quinones' (2015) marvelous study of the opiate epidemic, he found that addiction spread particularly quickly within one church community. In general, though, the literature led us to our second hypothesis we propose related to the "death of despair."

Hypothesis 2: States with high percentages of their populations saying they are not religious will have higher drug overdose death rates than other states.

If the "death of despair" perspective on drug overdose deaths has a short pedigree, the "heroin market" perspective, as far as we can tell, has an even shorter one. We first saw it articulated in a short *Economist* article on May 11th, 2017 (Economist 2017c). This perspective argues that the long-term trend in drug deaths may not only have much to do with working-class despair, but also that its recent, life-defying rise has even more to do with access to heroin markets.

Until about 2010, the increase in opioid deaths was highly related to prescription drugs, like Oxycontin. In the past few years, heroin and potent synthetic drugs, like fentanyl, have become more significant, even though most users of the latter two drugs were formerly abusers of the former.

Drug abusers often make the switch from prescription drugs to heroin and synthetic drugs because the latter are cheaper and more potent. There are actually two major kinds of heroin on the U. S. market currently and only one of these, a white-powder heroin from Colombia, looks and acts sufficiently like crushed pain pills that it has made the switch an easy one for prescription-drug addicts. Once this switch is made, fentanyl, or some other synthetic drug, often comes into the mix. According to the *Economist* (2017c), a Mexican brown-powder or black-tar heroin, which figures much more prominently in Quinones's (2015) story and is more characteristically found west of the Mississippi, has "probably deterred many painkiller addicts from trying the drug (i.e., heroin), and has kept synthetic opioids at bay" according to the *Economist* (2017c).

While neither the *Economist* nor its primary data source, the Centers for Disease Control (CDC), provide us with a way of determining precisely which states are most involved in the white-powder heroin market, the CDC has recently begun to provide data on how many

of the drug overdose deaths in a state can be attributed to heroin. These data are only available, however, for the 28 states for which the CDC finds the heroin overdose death data "good" quality or better.

As a first approximation of the market for white-powder heroin in a state, we use statewide heroin overdose death rates to test the heroin market perspective:

Hypothesis 3: States with higher heroin overdose death rates will have higher overall drug overdose rates than states with lower heroin overdose death rates.

METHODOLOGICAL APPROACH and MAJOR VARIABLES

Data Sources and Limitations

The tests of our hypotheses are based on data available to researchers for secondary analysis. Specifically, we used data from the Kaiser Family Foundation (2017a) and from Gallup's (2017) "State of the States." Data for this project were not always easy to locate. We were limited by budget to materials available online, but we have located data sources that researchers with deeper pockets or more prestigious institutional affiliations may also want to explore.

Because of budget and data limitations, we had to make some methodological compromises. For example, when we tried to measure heroin markets, we ran into our most severe data barriers. Not surprisingly, there are no good state-level data on the kinds of heroin available in illegal heroin markets. Therefore, we decided that a decent, but imperfect, substitute measure is the heroin overdose death rate by state.[2] But certain bits of critical information are, to the best of our knowledge, simply untapped as of now.

Major Variables and Statistical Analysis

Our dependent variable is the overall drug overdose death rate per 100,000 (age-adjusted) in 2013 and 2015 (Kaiser Family Foundation, 2017a). The three major independent variables in our analysis are measures of a state's population's overall wellbeing, its religiosity and its heroin markets. For the first two independent variables we use data provided by Gallup's (2017) "State of the States" for 2016. These data summarize daily polls taken throughout the year to provide overall measures on many state (and city and individual) characteristics. Our measure of states' overall wellbeing is Gallup's Overall Well-Being Index in 2016, a measure that is a composite indicator of people's sense of purpose, their social and financial wellbeing, their sense of community and physical health.[3]

Our measure of religiosity is the percentage of a state's residents who say religion is not important in their lives and that they seldom or never attend religious services. A high score on this measure is interpreted, for this study, as a low score on religiosity. We used Gallup (2017) for our 2016 measure and found an earlier Gallup measure of the same variable in 2011 from Hicken (2012).

With no more than 50, and sometimes as few as 28, states as units of analysis, there are relatively few degrees of freedom to conduct simple linear multiple regression analyses, especially given the relatively large number of independent variables we are initially interested in. Therefore, we employ forward stepwise regression analyses via the Statistical Package of the Social Sciences (SPSS). We use the variables we speculated might be related to the drug overdose death rate and select variables that create an economical model. Specifically, we instructed SPSS to add the most significant variable at each step of its processing until

[2]We used this measure, aware of the limitation that it is a constituent of our dependent variable, the overall overdose death rate by state, and therefore likely to be more highly correlated with it than other possible measures, the likeliest, perhaps, being the drug arrest rate by state. Unfortunately, alternate measures like crime rates, including the drug arrest rate, vary with many things other than heroin usage (including the usage of other drugs and the highly variable inclinations of state law enforcement authorities to criminalize drug usage). Therefore, we view crime rates as an even more imperfect measure of heroin markets than the heroin overdose death rate. Moreover, we have determined that not all constituents of the overall drug overdose death rate are strongly correlated. Thus, for instance, the methadone overdose death rate is correlated with the heroin overdose death rate at a weak .11 level. In the absence of a better measure of the extent to which heroin markets thrive in states, then, and with genuine concern about the appropriateness of our measure, we proceeded.

[3]We spoke with a Gallup representative about obtaining measures of overall wellbeing for earlier years, but found the costs to do so were beyond our (and our College's) means. The closest we were able to come to an earlier measure was not the actual index in an earlier year but a ranking of states by overall wellbeing in 2012 (Gallup-Heathways 2012). We have used these data in our panel regression analysis reported later in this paper.

all variables not in the selected model have p values that are greater than .05.

The forward stepwise regression analysis enables a cross-sectional examination of the variables that have the greatest controlled association with our dependent variable, drug overdose death rates. But both the "despair" and the "markets" perspective focus on *change* in drug overdose death rates. Consequently, another statistical tool we use here is panel regression analysis. Panel regression analysis permits the evaluation of the impact of several independent variables on *change* in a dependent variable by regressing the latter on itself (in 2015) and the independent variables at an earlier time (in 2013). This statistical tool usually yields a conservative test because the lagged dependent variable is normally extremely highly correlated with itself at the earlier time (cf. Hannan 1979). This is especially likely to be the case with short time lags, such as the one used in this analysis (two years).

Based on the Economist's (2107c) analysis, we assumed that states with higher heroin death rates are ones in which a white-powder heroin market is dominant, since it is in these states that prescription drug addicts will have most likely switched over to heroin. Since the CDC (2017) has determined that heroin deaths are sufficiently accurate in 28 states, those are the states for which published data on heroin death rates were available in 2014 and 2015. We use these data in both a cross-sectional stepwise regression analysis and our panel regression analysis.

We entered nine other variables into our cross-sectional analyses, anticipating that some of these might supersede our main independent variables as predictors of drug overdose deaths rates. The conventional view that economic deprivation leads to drug misuse (e.g., Stiglitz 2015) led us to several possibilities. We expected, for example that states with higher unemployment rates would have higher drug overdose death rates than others and so entered a measure of unemployment rates in 2015 (Bureau of Labor Statistics 2017). We expected that states with higher poverty rates would experience higher overdose death rates than others and so entered poverty rates for 2015 (Bishaw and Glassman 2016). We thought that better educated populations would have lower overdose death rates than others and entered the percentage of the state population with a high school diploma or higher (Wikipedia 2017, based on U.S. Census data). We also expected states with older populations, which are more likely to receive legal opioid prescriptions for pain, to have higher drug overdose death rates than others and entered a measure of median age in 2014 (Murphy 2015). Along these same lines, we felt the drug overdose death rates might directly vary with the prescription rates of legal opioid painkillers and so entered a measure of this in 2012, the date for which we could find such an indicator (Paulozzi et al. 2014). The literature led us to expect that drug overdose deaths might be concentrated in states with predominantly white populations and, in any case, wanted to enter a variable measuring race, so use data on the percentage of a state's population that was white in 2015 (Kaiser Family Foundation 2017b). We thought it possible that two kinds of populations might be more likely to have strong norms against drug use: people identifying as Republicans and those who are very religious, and so we entered measures of each, again using Gallup data (Gallup 2017). We also speculated that marijuana might be a gateway drug to drug overdose deaths and so entered a measure of statewide marijuana use, based the National Survey on Drug Use and Health in 2014 (Hughes et al. 2016).

Results

We first performed a cross-sectional analysis involving the drug overdose death rate as the dependent variable and 11 independent or predictor variables.[4] These 11 predictors were: the unemployment rate in 2015, the percentage of the population claiming to be nonreligious in 2016, the proportion of the population with a high school certificate or more of formal education, the prescription rate of legal opioids in 2012, the percentage of the population that was white in 2015, the poverty rate in 2015, the median age of the population in 2015, the percentage of the population with a Republican party affiliation in 2016, the percentage of the population claiming to be religious in 2016, the Gallup index measuring the level of well being experienced by the population in 2016, and marijuana use in 2014.

Table 1 shows that the forward stepwise regression found that two of these variables constituted an

[4]We did not include heroin overdose death rates, which are only available for 28 states and which the CDC suggests may not be reliable enough for cross-state comparisons.

economical model: the index of overall wellbeing in 2016, with a beta of -.75 in the final model, and the percent of the population claiming to be nonreligious in 2016, with a beta of .51 in the final model. This finding would appear to support the perspective that drug overdose deaths are substantially a result of despair. States with higher well-being indices have lower drug overdose death rates than others and states with higher percentages of their populations claiming to be nonreligious (or lacking a major protection against despair) have higher death rates than others. (See Table 1.)

Table 1. Final Model Produced by Forward Stepwise Regression of the Drug Overdose Death Rate by State on Eleven Independent Variables without a Measure of Heroin-Related Death Rates

	Betas
Overall Well-Being Index, 2016	-.75***
Percentage of Population Claiming to Be Nonreligious, 2016	.51***
N	50
Adjusted R-square	.42

Note: *** indicates statistical significance at the .001 level.

However, the problem with this analysis, as proponents of the "market" perspective on drug overdose deaths suggest, is that it does *not* take into account the effect of the market for heroin in states. We have tried to take an accounting of its effect by measuring the market in terms of the heroin death rate in states, despite the reservations we have for using this measure. Among these reservations are that "good" to "excellent" data about heroin deaths rates are only available for 28 states and, even for these, the Centers for Disease Control advise that they *not* be used for comparisons among states (CDC, 2017). But, we reasoned, if the heroin death rates are so incomparable, they would provide a relatively conservative test of the "market" perspective, even if heroin death rates are not the ideal measure of the degree to which states are involved in heroin markets. Their incomparability might lead us to expect a lower correlation with overall drug overdose death rates than we would obtain with more comparable data. (See Table 2.)

Table 2. Final Model Produced by Forward Stepwise Regression of Drug Overdose Death Rate by State on Thirteen Independent Variables, including Heroin-Induced Death Rates

	Betas
Heroin-Induced Death Rates	.67***
Opioid Prescription Rates, 2012	.33**
N	28
Adjusted R-square	.52

Note: *** indicates statistical significance at the .001 level.

Still, Table 2 must be interpreted with caution. The data in Table 2 suggest that, when a measure of heroin deaths is introduced, only it (beta =.67) and the legal opioid prescription rate (beta = .33) appear in a model. Moreover, this model explains about 10 percent more variation (adjusted R-square = .52) in drug overdose death rates for the 28 states involved than did the model in Table 1 (adjusted R-square =. 42) for 50 states. We thus, cautiously, infer that, in cross-sectional models at least, there appears to be greater support for the "market" than the "despair" perspective on drug overdose deaths.

Unfortunately, cross-sectional analyses such the ones presented in Tables 1 and 2 cannot sort out time-sequencing and one is left with the questions: which comes first, the despair, the market for heroin, or the drug deaths? Also, would the relatively strong support for the heroin "market" perspective persist *if* we focused on changes in the drug overdose death rate rather than simply levels of that rate? Both questions led us to employ panel regression, a technique that requires early and late measures of the dependent variable as well as measures of the independent variables of interest at approximately the same time as the early measure of the dependent variable.

The "lag" in our panel regression analyses is limited by the data we've been able to find online. But, in general, those analyses again tend to support the "market" perspective. Thus, when we examined what may have affected the change in the drug overdose death rate in the period between 2013 and 2015 (the period for which we can find online reasonably-appropriate measures of our key independent variables), we find stronger controlled

relations between early measures of the heroin death rate and change in drug overdose death rates than we do early measures of either of our of statewide despair measures. Table 3 boils down these findings and shows, as one would expect, that the strongest predictor in our model of 2015 drug overdose deaths rate in the 28 states involved was drug overdose death rates in 2013 (beta = .50). A close second was heroin overdose death rates in 2014 (beta = .49), followed by the legal opioid prescription rates in 2012 (beta = .36). Neither of our measures of despair or a potential for despair—e.g., the ranking of states by levels of overall well being in 2012 (beta = -.18) and the percentage of the population claiming to be nonreligious in 2011 (beta = .13), was statistically significantly related to drug overdose deaths in 2015 when the other variables were controlled, even though both variables were related in the predicted direction to the dependent variable. (See Table 3.)

Table 3. Panel Regression Analysis of Drug Overdose Death Rate in 2015 on Itself in 2013 and the Heroin Overdose Death Rate in 2014, Opioid Prescription Rate in 2012, the Ranking of States by Levels of Overall Well Being in 2012, and the Percentage of Those Claiming to be Nonreligious 2011

	Betas
Drug Overdose Death Rate 2013	.50***
Heroin Overdose Death Rate 2014	.49***
Legal Opioid Prescription Rate 2012	.36*
Ranking by Overall Well Being 2012	-.18
Percent Nonreligious 2011	.13
N	28
Adjusted R-square	.81

Notes: * indicates significance at the .05 level; ***, at the .001 level.

DISCUSSION

We find support for both the "deaths of despair" and the "heroin market" perspectives, although the support for the latter appears to be stronger than that for the former. In a cross-sectional analysis involving all 50 states, without a measure of heroin markets only available for 28 states, stepwise regression picked our two "despair" indicators, overall wellbeing and the absence of religiosity, out of a lineup involving 11 variables. But when we introduced heroin death rates into an analysis involving only 28 states, it and our indicator of the legal opioid prescription rate (in 2012) pushed the despair indicators out of the picture. Moreover, in our panel analysis involving the four dependent variables of interest—the two despair variables, the heroin market variable and the opioid prescription rate variables—only the latter two had significant associations with drug overdose death rates in 2015, when drug overdose deaths rates in 2013 were controlled. Neither of our perspectives, by the way, had predicted that the legal opioid prescription rate would still have the significant impact it appears to have on drug overdose deaths in America. That it does is certainly worthy of policy consideration (see below).

We have hinted at the caution with which we report these results. Much of the caution has to do with data limitations, although some of it has to do with more theoretical concerns. We are pleased enough with our despair measures for the cross-sectional analyses, but neither is easily or cheaply available for the proper year (2013) of the panel analysis, and the wellbeing indicator, a ranking of indexes rather than the indexes themselves for that analysis, is suboptimal. Our measure of heroin markets is less than ideal for several reasons. Theoretically, we would much prefer some measure of the degree to which white-powder heroin dominates a state market for heroin. One can imagine polling being able to tap such a concept, in much the same way The Center for Behavioral Health Statistics and Quality now polls for marijuana usage. But we're not there yet. Our indicator, the heroin overdose death rate, entails many difficulties, not the least of which is its likely unreliability for years to come. But even if it were perfectly reliable, it is obviously a sub-dimension of the overall drug overdose death rate and therefore more likely to be correlated with that rate than a measure with more obvious face validity. Perhaps the most obvious problem, however, is the fact that the heroin death rate is available for only 28, just over half of the states. One has to wonder what kinds of biases are involved in such a partial representation, but they surely include, to some degree, a variable concern for the growing heroin epidemic within the larger drug epidemic. At a more theoretical level, our results may be criticized for entanglement with the ecological fallacy. Thus, for

instance, just because states with high overall wellbeing indexes have relatively low drug overdose death rates does not mean that individuals with a sense of wellbeing are protected from overdosing.

Still, our results are suggestive, both theoretically and in terms of public policy. At the theoretical level, they suggest that the transition from addiction to legal prescription painkillers to addiction to heroin and synthetic drugs like fentanyl may now be the main driver of rapidly increasing drug overdose deaths in the United States. As a consequence, those concerned about the drug overdose epidemic may need to distinguish it, conceptually, from the somewhat clearer instance of deaths of despair, such as suicide. It may be more useful to think of drug overdose deaths as deaths of addiction, addictions that may originally have had some foundation in despair, but that may also have had some foundation in chronic pain management or simple experimentation with opioids for pleasure.

Case and Deaton (2017) point out that dealing with overdose deaths as deaths of despair actually points to policies that are anything but simple to enact. It would not only mean attempting to deal creatively with the economic changes that have led to widespread economic discomfort, but also with intervening conditions like later and more fragile marriages and an inability to provide supportive families for children. If one conceptualized the drug overdose epidemic in terms of deaths of addiction, however, the question becomes one of how to prevent addiction in the first place and how to make it more easily treated if it occurs. States have begun to deal with both of these issues. Thus, for instance, Florida (Johnson et al. 2014) and Kentucky (Chapman 2017) are among states that have begun to regulate pain clinics and doctors who have prescribed opioids. Various states and municipalities have begun to sue pharmaceutical companies to get them to change their advertising methods (e.g., *Economist* 2017b). Various jurisdictions have expanded access to Naloxone, a drug that treats overdoses, as well as to treatment and rehabilitation centers (e.g., Chapman 2017) and some public efforts have been made to reduce the stigma associated with addiction so that concerned friends and relatives are more inclined to help (Quinones 2015).

On a less positive note, Medicaid expansion under the Affordable Care Act has accounted for roughly half of Medicaid expenditures on substance abuse treatment in many of the states with the greatest drug overdose death rates (Alonso-Zaldivar 2017). At this writing, these funds, utilized by low-income adults, are likely to be cut substantially under Republican healthcare plans.

What to do about the markets for white-powder heroin and synthetic opioids is harder to prescribe, but so far nothing seems to have worked. Noting the markets for white-powder and black-tar heroin are largely separated by the Mississippi River, the *Economist* (2017c) recommends that "This is a rare case where one should pray that America stays divided." But prayer has its limits. And efforts have been made to shut down dark net sources of synthetic drugs, even as these sources continue to pop up, like targets in a deadly game of whack-a-mole (Popper 2017).

Dealing effectively with the overdose drug epidemic will undoubtedly require efforts on many fronts. But choosing the right fronts will increasingly depend on figuring out what they are. Generating relevant data and making those data more readily available to researchers, however, are certainly going to be two of them.

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About the Authors: Marissa Botelho is a student at Rhode Island College studying Criminal Justice and Sociology. **Jennifer Lemos** is a graduate of the Sociology program at Rhode Island College. **Jessica Souza** is a graduate of the Sociology and the Gerontology certificate programs at Rhode Island College. **Roger Clark** is Professor of Sociology at Rhode Island College, where he teaches research methods and the sociology of gender.

Culture, Change, and Cultural Lag: A Commentary and a Challenge

By

Josephine A. Ruggiero

William F. Ogburn (1886-1959) introduced the concept of cultural lag in his book, *Social Change with Respect to Culture and Original Nature,* published in 1922. A staunch advocate of using objective data as the basis for research conclusions, Ogburn played many important roles during his life.

Howard Odum (1951: 147-152), a contemporary of Obgurn's, composed a detailed biography of Ogburn's work and accomplishments. Ogburn earned his M. A. and Ph.D. degrees in sociology from Columbia University (in 1909 and 1912 respectively). After college, he taught high-school age students and later, students at the college level. During his career, Ogburn was also an extraordinarily prolific author of books, articles, reviews, brochures, pamphlets, and book chapters in sociology as well as across disciplinary boundaries.

Among his non-academic roles, Ogburn served as a president of the American Statistical Association and as editor of its journal. He was the first sociologist to be president of the Social Science Research Council (SSRC) and to chair the SSRC's Problems and Policy Committee. In 1918-19, during World War I, Ogburn served as examiner and head of the Cost of Living Department for the National War Labor Board and as a special agent for the United States Bureau of Labor Statistics. He was an extraordinarily prolific author of books, articles, reviews, brochures, pamphlets, and book chapters in sociology as well as across disciplinary boundaries. An important indicator of Ogburn's recognition and esteem among American sociologists was his being chosen, in 1929, as the 19th President of the American Sociological Society (now known as The American Sociological Association).

About Culture, Change, and Cultural Lag

As Ogburn recognized, culture is a central concept not only to the field of anthropology but also in sociology. Within the first several weeks of the course, students in Introductory Sociology learn about the meaning and complexities of culture. For example, they learn that culture, described in simple terms as the way of life of a society, consists of both *material* (visible) and *non-material* (invisible) aspects. They learn that the visible items that people produce such as books, tools, inventions, art forms, movies, television programs, and video games are influenced by and, in turn, influence invisible aspects like ideas, theories, values, beliefs, and knowledge.

Therefore, culture may be aptly compared to an iceberg or a large tree with deep roots. Both images convey that some aspects/components of culture such as behavior are visible and other aspects including beliefs, values, and assumptions are invisible or hidden. An iceberg is a lot larger that the part we see above the surface. Similarly, when we look at a tree, we focus on its branches and leaves, or lack thereof, not on its roots. Typically, a tree's deepest roots tend to be hidden from view.

A deeper examination of the concept of culture reveals that it has a number of other characteristics: Culture is *shared* and *passed on* through the process of socialization. In a complex, heterogeneous society like the U. S., the *dominant culture* is shared and passed on by at least the majority of a society's members through instruction and imitation. In heterogeneous societies *sub-cultures* and *counter-cultures* that shape the behavior, attitudes, values, and beliefs of some smaller segments of the population are also typically present.

The elements that comprise a culture are *interdependent*, *patterned*, and *structured*-- that is, they fit together in a meaningful way. Therefore, when one area of a culture changes, change usually occurs in another/others, although not necessarily at the same time. This time gap captures the idea of cultural lag; that is, in the process of change, material aspects

often change first and in an out-of-sync way with non-material aspects. Semi- and fully-autonomous vehicles offer a good example. Some of these vehicles are already, or will be, available starting in 2019. However, the attitudes--especially of older drivers/passengers as compared to younger ones, may not be in sync with this technological change when these vehicles become available in large numbers. Equally important is that current federal and state motor vehicle laws will become obsolete in regulating these vehicles. Thus, creating new laws will be necessary.

Culture provides a *design for living* which includes human solutions to the basic physical problems and abstract concerns that human beings across the globe encounter. Humans provide for the continuity of their society by developing the same range of *social institutions* (e.g., some form(s) of family, an educational system, a political system, an economy, religion(s), and a health care delivery system. The forms which these social institutions take, however, may vary considerably from one society to another as well as over time.

As stated earlier, an important characteristic of culture is that it *changes.* Specialists in the field of social change have developed a framework for analyzing the complexities of change. After identifying the phenomenon of interest (the *what*), they examine four other aspects of change: 1) **level** (*where* in the social system the change is taking place-- macro vs. micro level); 2) **duration** (*length of time* a particular change lasts after it has been accepted (e.g., short- vs. long-term); 3) **magnitude** (how *small* or *large* the change is-- incremental/a modest alteration vs. comprehensive/sweeping/structural alterations); and 4) **rate** (*speed* and *pattern* of the change). The nature and scope of the alteration/change depends on the type society in which the culture exists (e.g., more complex, heterogeneous vs. simpler, more homogeneous society).

Although cultural change is not the same as social change, the two bear a reciprocal-- that is, a mutual cause and effect, relationship to each other. Cultural changes can lead to social changes and vice versa. For example, the invention and availability of the automobile, a cultural product, affected social changes including residential patterns in cities, the settlement of the suburbs, recreational patterns of families, and the dating practices of young people.

Ogburn's keen observations of American society of his time led him to introduce the classic concept of cultural lag into the vocabulary of sociology and into the study of social and cultural change. He proposed that most social changes in a modern society arise from alterations in material culture. He used the term cultural lag to point out that the non-material aspects of culture like values, attitudes, beliefs, theories, and philosophies (the things we *cannot see*) tend to resist change and/or to change at a much slower pace than does material culture. Cultural lag results when people, groups, organizations and social structures experience problems in mastering the challenges created by this lag (gap, or "period of maladjustment") that occurs between material and non-material culture.

Commentary and a Challenge

At the time of Ogburn's death in 1959, the U. S. was a very different country than it is today. During the nearly six decades that have passed since then, this country has experienced significant social and cultural changes. In looking at the U. S. *then* and *now*, we see that the country has undergone an economic and social transformation from being a primarily agricultural to an industrial to a post-industrial society. In 1956, for the first time, white-collar workers outnumbered blue-collar workers, heralding the U. S.'s transition to a service economy where information has become a highly-valued commodity. The country has also grown in geographical boundaries through the addition of Alaska and Hawaii as the 49th and 50th states, in the size of the population as well as in its racial and ethnic composition. Changes in the ethnic and racial composition of a society are social changes which impact on cultural changes in values, customs, beliefs, musical preferences, and technological developments, for example. Over time, social class differences in the U. S. have gotten more extreme especially in regard to the accumulation of wealth. The Wars on Poverty and against Drugs have both failed. Like it or not, newer immigrants have become important contributors to the growth in population size and its diversity. The U. S. population has been described as changing its complexion (e.g., becoming more brown). Although there are still differences based on race, gender, and social class, on average, people in the U. S. are becoming older and living longer.

One wonders if Ogburn could have imagined the fast pace of change that would take place in the U. S. in the

decades after his death and some of the transformations that would be brought about by technological changes alone. Although coined 96 years ago, cultural lag remains a useful concept in understanding social and cultural changes and periods of maladjustments in post-modern societies including the United States. However, cultural lag and its consequences appear to be neglected areas of sociological study and publication.

When the Editorial Board of ***Sociology between the Gaps*** chose the theme of cultural lag and suggested topics of potential interest for **SBG3**, we had hoped that this theme would produce many submissions and spur lively discourse on them. We had also hoped that some of the submissions would suggest answers to the problems and conflicts that cultural lags produce in contemporary social institutions and speculate on how problems and conflicts resulting from cultural lag might be prevented or solved.

In the description for this volume, we included a list of possible topics about which potential contributors could write. These topics included ways to prepare human beings to accept transformative innovations more smoothly and, thus, reduce the disruptive experience of cultural lag; using robots not only to do factory work but also in offices and as caretakers to the elderly and infirm; exploring the advent, likely use, and consequences of autonomous (self-driving) cars; analyses of the effects of e-books and digital learning tools for reading and education; exploring how individuals who are not conversant in the digital technologies available today navigate and live in an increasingly digital world; and analyses of whether and how the spread of digital communication, including social media, enhances or diminishes the quality of people's lives. We listed only some of the possibilities.

SBG4 and future volumes will offer contributors the opportunity to continue to send in submissions on the theme of cultural lag as well as on one of the other themes addressed in **SBG1** (on adoption) and **SBG2** (on livable communities). Potential contributors interested in cultural lag may choose to write about one of the topical areas listed in the description for **SBG3** or another topic related to cultural lag. The Editorial Board of **SBG** remains interested in receiving submissions on other topics viewed by the author(s) as neglected and/or forgotten in mainstream sociology journals.

The success and longevity of any journal depends largely on the reach of its social network as well as on the number and quality of submissions it receives and accepts for publication. My challenge to readers is to be part of **SBG's** future success by sending in a submission to **SBG4** and to spread the word to others about authoring submissions to **SBG**.

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About the author: Josephine A. Ruggiero, Professor Emerita of Sociology at Providence College, is the founding sociologist and Editor-and-Chief of **Sociology between the Gaps**.

Film Review of "Robot & Frank"

By

Emily Stier Adler

"Robot & Frank" (2012) is a film set a small town in upstate New York in the near future. Frank, the main character, is played by Frank Langella in a sympathy generating performance. Frank is an almost retired career burglar who is experiencing memory loss. Neither of his children lives nearby. Frank's daughter, Madison, works in remote places around the world and keeps in touch digitally via a kind of FaceTime. His son, Hunter, routinely drives the five hours to his father's house to deliver food and check on him. Absent but concerned, they keep tabs on Frank as best they can but are considering other residential options for him.

The other main character in the film is the unnamed robot that Hunter brings for Frank to help him continue to live independently. Frank's robot is a personal assistant robot. Another service robot in the film is Mr. Darcy, the "worker" in the library who does most of the library work. While she seems to accept the robot, the town librarian, played by Susan Sarandon, must cope with a world in which print material is being replaced by digital data. In fact, Frank is her only remaining customer as his walk to the library is one of his few continuing activities in addition to reading printed books. The film's narrative focuses on the relationship that develops between Frank and his robot as well as on Frank's personal and family history.

Sociologist William Ogburn's (1966) concept of cultural lag hypothesized that non-material culture tends to resist change or to change at a slower pace than material culture. The culture is expected to adapt to fit new conditions and, as a result, the lag between the non-material and material produces challenges for individuals and social structures.

Modernization theory, as used by gerontologists, has been refined to focus on aspects of material culture such as technology. Modernization theory specifies that adaptive technologies are among the environmental modifications that may be used by those with declining physical or cognitive abilities. However, the theory points to concerns about the "digital divide" when changes in technology outpace changes in nonmaterial dimensions (Binstock et al. 2011, p. 259). Forced to live with the robot as an alternative to being placed in the memory care unit of a nursing home, Frank initially exhibits difficulties in adapting to the new technology because the robot interferes with his life and habits.

We see that the cantankerous Frank is grumpy when his new servant, the robot, changes his diet to a healthy one, insists on creating daily routines including walks for exercise, and encourages new hobbies such as planting a vegetable garden. Many aspects of the depiction of the elderly Frank and his family are accurate. As is typical of the children of the elderly, Frank's son is concerned about Frank's safety and concentrates on eliminating risks from his father's life. Hunter notes the messy house, Frank's inability to shop and cook for himself, and his memory declines, like forgetting that his favorite local restaurant has closed, and Frank asking Hunter "How's Princeton?" thinking that Hunter, near 40, is still an undergraduate.

After many long trips from his house to his father's, Hunter buys a robot to help Frank out. However, good breakfasts and a clean house are not what matter most to Frank. Rather, Frank's priorities are what Atul Gawande (2014) argues are most important to the elderly -- independence and the ability to live a meaningful life. Only Hunter can program, or turn off, the robot. That fact is symbolic of Frank's loss of independence. Because Frank is not the one in control of the robot, he has, therefore, lost control of his own life.

However, Frank soon realizes that the robot can be trained to help with a series of burglaries and begins to

appreciate his new companion. In doing so, he learns to adapt to this new technology. Encouraged by the robot's statement that it is *not* programmed to consider the legality of its actions, Frank decides to return to his former "profession." Planning heists and then successfully completing them with robot's help, Frank illustrates the continuity theory of successful aging. Continuity theory (Atchley 1989) holds that older adults attempt to preserve and maintain existing internal and external structures by using strategies tied to their past experiences of themselves and their social world. We see Frank adapt to the robot and its place in his life by using the robot as his burglary assistant; thereby producing continuity in his inner psychological characteristics and his social behavior. With each heist, Frank's activity level and interest in the world increase which results in dramatic improvements in his physical and cognitive abilities. Viewers of this movie also observe the growing bond between Frank and the robot.

Estimates indicate that 5% to 7% of those over 65, and nearly 30% of those over 85, suffer from dementia, a disease characterized by progressive and generally irreversible loss in mental capabilities that may include confusion, memory loss and disorientation (Singh and Upadhyay 2014). Despite his occasional confusion, Frank does remember how to pick a lock, case a building, and deactivate alarms. Such memories demonstrate his long term-memory still functions. However, while Frank clearly feels attraction to and affection for Jennifer, the librarian, he does not remember that she was his wife until they divorced 30 years before. While long term memory is affected by advanced dementia, in the beginning stages, people typically remember significant individuals and events in their earlier lives.

To understand the extent of the cultural gap concerning the use of robots, consider the data on seniors and technology. The most recent Pew Research Center report (2017) on tech adoption among older adults finds that they are moving towards more digitally-connected lives. Almost half (42%) of those over 65 now own smart phones up from just 18% in 2013. Two thirds of seniors use the internet and half have broadband in their homes (Pew 2017). However, there are important differences between the young old (under 75) and the oldest old (over 85). Eighty two percent of those 65 to 69 go online while only 44% of those over 80 do; 59% of the former own smart phones compared to 17% of the later. Among the older population as a whole, the younger, relatively affluent and/or highly education seniors are responsible for the recent growth in technology adoption with 58% of those over 65 saying technology has had a mostly positive impact on society (Pew 2017).

Seniors increased use of technology and their view that it has a positive impact on their lives may be indicators of the culture catching up to the technology. Seniors of the future may have an easier time welcoming robots into their homes than Frank did initially. The engineers tell us that robots are here to stay and that their functionality is improving all the time (Clotet et. al 2016). The demographics of the near future may tilt the ratio of caretakers from mostly human to mostly machine. By 2020, for the first time in history, the number of older people will outnumber the number of children younger than 5 years of age and In the next 25 years, the number of people older than 65 will double (Das, 2015). As the film's director, Jake Schreier notes:

> "From my perspective . . . the question is not 'human or machine?' It's 'nothing or machine.' I visited my grandmother, who has Alzheimer's, maybe twice in the past three years. I'm not there. My family does a much better job but she still lives in Florida. So if this is the way it's going to go, if we're not going to be bringing the elderly into our own homes any more, why not hire a robot?" (Shoard 2013).

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About the Reviewer: Emily Stier Adler, Ph.D. is Professor Emerita of Sociology at Rhode Island College. She continues to teach the Sociology of Aging and does research on a variety of topics including retirement and grandparenting. She and psychologist Michele Hoffnung are currently working on a book about grandparents. The working title of that book is *Grandparents, Grandchildren and the Generation In-Between*.

Film Review of "The Circle"

By

Helmut E. Reinhardt & Josephine A. Ruggiero

Based on the 2013 book of the same name by Dave Eggers, the film "The Circle"(released on 4/28/17) is similar to a sci-fi piece with a heavy dose of reality. Although the viewer's *take* on this movie will likely be affected by generational differences, there are some chilling moments for older viewers who were raised in an era where privacy was much more valued than it appears to be today. This movie explores what can go wrong and what can go right for society in light of advancing technological changes, their consequences, and implications. The central issues "The Circle" covers are complete and unfettered transparency of behavior in a "no secrets" society where people are encouraged, and are willing, to give up their privacy. The complete invasion of privacy even extends to installing cameras in bathroom stalls.

Mae Holland, played by Emma Watson, is drawn into this circle, a working-living community based loosely on the Apple campus. Through a friend who works at the Circle, Mae is hired as a customer service representative there. This is a full-time job that she really wants to keep. For some reason, perhaps because of her youthful enthusiasm, Mae attracts the attention of Eamon Bailey, one of the Circle's founders, played by Tom Hanks. As the movie progresses, Mae becomes closer to the inner circle where important decisions are made.

Movie viewers learn about a series of initiatives developed by the Circle. These initiatives include SeaChange, having cameras positioned everywhere even on the ocean, interlinking family history with medical advances and SoulSearch, a tool for finding both lost family and friends and locating criminals who have gone "off the grid."

In the first initiative, Mae agrees to wear a camera during the day (similar to the movie "Truman" starring Jim Carrey) and let the world see her interacting with her co-workers and friends. Unfortunately, with good intentions, Mae shows the circle of friends and the world, a chandelier her friend, Mercer Medeiros created, made of antlers discarded by reindeers after the mating season. Comments were made by viewers who did not know Mercer, or how he got the deer antlers, that he was an animal killer. Another downside of having cameras everywhere, including in Mae's parents' home, was her inadvertent entry into her parents' bedroom while they were being intimate.

All of these sound like initiatives which can have positive implications. However, even with a seemingly good idea like SoulSearch, things can and do go very wrong. For example, when Mae is pressed to locate Mercer, played by Ellar Coltrane (who has chosen to go off the grid to work), she agrees reluctantly to an experiment at the request of the audience to find him. Within a short period of time, Mercer, who did not want to be found, was located at a wooded cabin. He was hounded by drones, cameras, probes, and people in cars until he met his demise driving off a bridge.

But the main message of the film is for Mae to allow complete transparency of her daily routines to everyone, including the leaders of the Circle. However, the same rules about secrets do not apply to the founders. Toward the end of the movie, Mae reveals to the world that they also had dark secrets. Very telling is the statement by the other founder of the Circle, Tom Stenton, played by Patton Oswalt, to Eamon Bailey, "We're f-----". The implication is no one is immune, not even those at the top. No more secrets, no more back room deals or no more dirty deals.

Currently, societies (mostly the more developed countries with links to technology) are in the beginning stages of "The Circle," but the less developed countries lag behind those already developed. Even Europe is

only about 25% "connected." Europeans in general still value privacy, direct interpersonal relations, and a less, hectic world. For example, few of Helmut's cousins in Europe have computers, cell phones, or mobile devices, citing cost and the "trivialization of daily life" (e.g., got to know, got to ask about everything, including what I or you had for breakfast). The worst downside of "The Circle" is the overload on everyone's life, the complete encompassing of a "Knowing-Everything Society." Even without our permission, others are posting private information about us on the internet. Whether we like it or not, our personal identities no longer exist.

About the Reviewers: Helmut E. Reinhardt, M. Ed, is a frequent contributor to ***Sociology between the Gaps*** (***SBG***). In addition to founding and serving as Editor in Chief of ***SBG***, **Josephine A. Ruggiero**, Ph.D., Professor Emerita of Sociology, is a specialist in the field of social change and futurist issues. She developed and taught courses in social change during her four-decades long undergraduate teaching career.

Etcetera

This section contains items whose aim is to supplement the articles and other work published in this volume of Sociology between the Gaps. We hope you enjoy reading them.

Implications of the Transportation Revolution

This commentary is an addendum to the article entitled "The Advent of Autonomous Vehicles: A Transportation Revolution" which I published in this volume. In that article I wrote about the coming autonomous vehicles. Here I want to comment further on the possible implications of these vehicles. In my previous article, I mentioned that, with the increasing cost of autonomous vehicles, fewer vehicles will be on the road. One implication is that more people will take ride-sharing vehicles (i.e., taxis, limousines, Lufft, Uber, for example) or enter into car-sharing ownership with others. With fewer vehicles, fewer parking spaces would be needed. Fewer parking spaces could translate into more useable real estate. There will be other changes in societies as result of the transportation revolution. Below I explore seven categories of possible changes related to innovations in transportation.

Changes in the housing industry: With autonomous vehicles, anyone-- even older seniors and those either handicapped or disabled, can "drive" these remarkable innovations. Seniors can live in their own homes independently much longer than at present. There would, therefore, be less demand on independent living arrangements or even assisted living, if seniors can get medical services at home. This, in turn, would contribute to the development of *livable, inter-dependent communities*, e.g., seniors living together (along with younger people or even relatives) in a housing complex which provides medical and other support services. These livable communities would help seniors with social, economic, and housing issues. The proliferation of livable communities would, in turn, minimize the number and size of the independent/assisted living facilities throughout the country and reduce the cost to Medicare and Medicaid.

Another proposal to change the housing industry is the existence of autonomous houses. According to Doug Davis, senior VP of Intel's Automated Driving Group, people could see "an evolution of RV's into autonomous houses and nomadic communities that follow work patterns."[1] This brave new world of the future would become a truly mobile one. With the need of labor being sent to do specific jobs in other parts of a country, the demographics of nations would shift dramatically. For example, if the Las Vegas area needs more laborers or employees for business, then these mobile communities would be summoned to fulfill the labor need.

Changes in city/large town planning: In a sort of return to the past in the future, large metropolises could become decentralized into smaller manageable, self-sustaining entities with all the necessary services to be self-sufficient. For example, these smaller entities would have local pharmacies, doctor and lawyer offices, butchers, shoemakers, tailors, corner grocery stores, crafts people and other specialty trades.

Small forgotten and abandoned towns throughout the country could be repurposed into self-sustaining communities. Larger cities, like New York City, for example, would be broken into five boroughs, each operating independently. Residents would use either mass transportation or autonomous vehicles for distance travel to surrounding communities. I wrote about this model in **SBG2** in the article entitled, "Reinforcing The Values of The Village In Urban Settings."

Changes in occupations: Gone will be truck drivers, since the trucking industry will be managed by driverless vehicles. These vehicles, in turn, would be dispatched by computers not humans. The trucking industry will have to re-invent itself into a kind of an Amazon

[1]What's the Autonomy Economy? 2017. *Car and Driver* (November: 088).

organization. Fleets of trucks can be used for cross-country commerce and would be segregated from non-commercial autonomous vehicles. These robo-trucks would operate day or night. Some federal regulation must be made for hours of operation and could operate on alternative fuels, such as natural gas.

Occupations yet to be determined will emerge, mostly in the IT field. Occupations displaced by autonomous vehicles or by computers may become a new class of "unemployables." This category could be short-term or long-term depending on the opportunities to learn new skills such as starting a small business or becoming part of a cooperative. In either case, people "in transition" to a new occupation or career should likely be paid more than people on welfare.

Changes in secondary and post-secondary education: Vocational high schools will become more useful for the general population in training students for computer technology and repair and for various trades. With the innovation of autonomous vehicles, auto mechanics will be a highly specialized and skilled field. Autonomous vehicles will become computers on wheels. In the future, autonomous vehicles may be able to self-diagnose glitches and problems, such as viruses. Gone will be the corner Mom and Pop garage. Thus, human technicians may even become obsolete. Because of the higher level skill sets required, children may start a form of regular public schooling sooner than they do at present-- at age three rather than at age five. Instructors at all educational levels would need to be re-trained to fit the needs of the advanced technologies. Also, studying the liberal arts in colleges would be a luxury reserved for the wealthy like the finishing schools of the past and for those older adults who have the desire to learn these enrichment subjects and have leisure time at their disposal. Colleges and universities would shift to specialized fields, such as pre-law, pre-med, and business and finance.

Changes in alternative energy sources: Vehicles of the future will be running on natural gas, non-petro oils, electric, even solar or fuel-cell. The environment would become cleaner. Dependency on fossil fuels will be a thing of the past, because fossil fuels will not be used for the operation of autonomous vehicles and more for maintenance of these vehicles. There is also the possibility of a low-grade, nuclear-fueled vehicle, such as the vehicle in the movies, "Back to the Future, Part II and III." Flying locomotives, however, such as in the movie, "Back to the Future, Part III," can be a bit of stretch of our imagination. Flying cars, fueled on fuel-cells or other alternative energies, will be here in 2020, but changes in FAA regulations will likely lag behind for many years. I also think new occupations may emerge in time from the development of these alternative energies.

Changes in vehicle size: Vehicles would become smaller and more compact. Autos without drivers could carry two to six people; buses would be smaller, similar to mini vans; and trucks can be either very large (similar to the present day "trains" of Australia, which criss-cross the continent through the Outback) or small "robotrucks." These driverless vehicle "would re-program the time/cost optimization of travel" and thus, would eliminate regional air travel. A businessman could use an autonomous vehicle instead of air shuttles to go to a distant city and spend productive time working in these vehicles while traveling or catching up on sleep or just socializing with fellow passengers.[2]

Businesses would have their own autonomous fleet vehicles to deliver their goods, thus eliminating some delivery companies, such as FedEx. Companies, like United States Postal Service, may have to change their focus to accommodate their delivery of goods and services. Competition from drone-based companies may also be a big concern.

Changes in the legal profession and in policing: Autonomous vehicles are controlled by computers, sensors, and radar. Thus, vehicles will not go over speed limits, drive recklessly, make judgment errors, text or interfere with regulations of the road. The legal field may shift in focus to liability issues. What happens if there is an accident due to glitches or problems with the computers within these vehicles? The manufacturers of these autonomous vehicles must insure themselves against claims. There would also be a shift in policing on the road. Police, both local and state, would concentrate on crimes and not to police roadway violations, such as distracted driving, regulation violations, and road rage. No more state or local police hiding behind signs or bridges.

[2]How Would Level 5 Cars Change Our Lives? 2017. *Car and Driver* (November: 085).

In conclusion, the transportation revolution will have a far-reaching effect on our world in the very near future. From the housing industry to the educational field; from the trucking industry to the business world, our way of life will be changed dramatically. We must adapt to the challenges of these changes with changes in the sphere of non-material culture. New regulations and laws will need to be created to accommodate our ever changing world.

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This piece was written by Helmut E. Reinhardt, a volunteer instructor for AARP's Safe Driver courses.

Driving into the Future

Many companies are getting on the bandwagon of mass producing autonomous vehicles. As recently as December 2017, a number of big and small manufacturing companies have started to unveil plans to produce autonomous vehicles with, and without, steering wheels and pedals.

By 2019, Ford Motor Company, one of the oldest car manufacturers in America, will unveil plans for an autonomous vehicle, which "talks" to everything--e.g., street lights, smart phones (in the pockets of pedestrians and bicyclists), other non-autonomous and semi-autonomous vehicles. When this happens, transportation will start to take a leap into the future.

Ford is actively pursuing several other initiatives partnering with Qualcomm to install a V2X cellular technology into its vehicles; with Domino's and Lyfft; and with a delivery startup company called Postmates. The objective of the Ford Motor Company is to make money off of the idea of driver-less vehicles. In addition, by 2021, Ford plans to manufacture a vehicle without either a steering wheel or gas and brake pedals (Hawkins 2018a).

General Motors, once the largest automobile company in the world, also plans to introduce an autonomous vehicle without a steering wheel or pedals. Using fourth-generation electric Chevrolet Bolts, the primary use of this vehicle will be for ride-sharing and a taxi service. Currently, third-generation Bolts are being used on a trial basis on streets of San Francisco and Phoenix. The trial basis has been deemed fairly successful, with only six crashes in September 2017 (both fault and no fault by these vehicles). GM was able to roll out this innovation because of their acquisition of Cruise Automation and LIDAR start-up Strobe. With innovations coming rapidly to various car shows (traditional roll-out of forthcoming models), the federal government finds itself in a state of cultural lag because many of these new vehicles *do not* meet federal safety standards. For example, because of the lack of steering controls, a passenger airbag must be substituted for the driver airbag on these new GM ride-sharing vehicles. GM needs to seek exemptions from the Federal Motor Vehicle Safety Standards in order to be able to even road-test these new vehicles (Hawkins 2018b).

Waymo, self-driving unit of Google Alphabet, will also launch their first commercial driver-less, ride-sharing service in Phoenix, AZ, but with a steering wheel and pedals (for emergency or backup use). According to Hawkins (2018c), Waymo is also test-driving these minivans in San Francisco and Atlanta. Waymo has announced that they have already tested these vans in 24 cities throughout the country, including Austin, TX, Detroit, MI, and Kirkland, WA.

In Las Vegas, a Mercedes Smart Vision EQ is making its appearance. This vehicle has a different approach. Achieving a top speed of 12 mph, the Mercedes Smart Vision EQ has room for just passengers. It is piloted remotely by a nearby human. Since there is no center console and steering controls, the vehicle's interior is roomy. The dashboard has navigation and a few social media posts to entertain passengers. The vehicle has a "kill-switch" in case something goes wrong (O'Kane 2018).

The Consumer Electronics Show (CES) in Las Vegas has showcased a Toyota with an E-Palette concept which makes it essentially a box on wheels. These vehicles can

be transformed to suit the needs of the company that buys them. Amazon or FedEx may turn it into a delivery vehicle. A flower shop may use the vehicle to transport flowers. This "concept vehicle" is next-generation battery-electric and is fully autonomous (Nichol 2018).

Voyage, a startup company, is introducing self-driving taxis to the Villages retirement community in Orlando, FL (Hawkins 2018d). These taxis will have traditional controls. Voyage has operated the same self-driving vehicles in the San Jose, CA Villages community and is offering senior citizens in San Jose and Orlando an equity stake in the Voyage company as a bonus for participating in the experiment. Determining the effectiveness of this incentive with senior citizens will require further research.

Lastly, self-driving taxis, operated by Lyfft and Aptiv, will extend their trial period in Las Vegas. Lyfft is working on a program for Boston. As demonstrated in the 2018 Consumer Electronic Show (CES), these taxis provided the show attendees tickets for free rides of up to 400 miles of transportation to 20 pre-programmed destinations throughout the Las Vegas area. The rating of 4.5+ (out of 5) from attendees who took the free rides is very positive feedback. In my opinion, the CES illustrated the rapid pace of innovations in the autonomous vehicle realm. Government regulations have not kept pace. If regulations do not catch up with the pace of change, there is the risk that this lag will hinder more technological changes now and in the future.

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Written by Helmut E. Reinhardt, AARP Smart Driver Program Instructor.

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