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(1) The article below is an excerpt from Alwin and McCammon's essay, "Generations, Cohorts, and Social Change." Based on the concepts articulated in this article, please differentiate the so-called "age-period-cohort effect." (50%)

How people think about the social world around them may depend as much on what was happening in the world *at the time they were growing up* as it does on what is happening in the present. The reference to this as a "generational" phenomenon is probably derived from the presumption that historically based influences shaped the development of all or most people growing up at a particular time and that there is nearly always a shared cultural identity that sets them apart from the parental generation.

One of the first difficulties we encounter in studying the phenomenon of generations is with the term "generation" itself. This is because the concept of *generation* has more than one legitimate meaning and this multiplicity of meanings can produce confusion. It is first and foremost a kinship term, referring to relationships between individuals who have a common ancestor. As a term denoting kinship relations, a generation consists of a single stage or degree in the natural line of descent. Thus, within a given family, generations are very clearly defined, and while *generational replacement* is more or less a biological inevitability *within families* (assuming continuous life cycle processes), the replacement of generations in this sense does not correspond in any neat manner to the historical process at the macrosocial level because of individual differences in fertility (i.e., parents do not all replace themselves at the same rate) and the fact that the temporal gap between generations is variable across families.

The term *generation* is also frequently used, as we ourselves have used it in the introductory paragraphs, to refer to the people born at about the same time and who therefore experience historical events at the same times in their lives. This meaning of the term was popularized by Mannheim's classic treatise on "generations" in which he used the term to refer to the unique influences of historical location on the development of the shared meaning of events and experiences of youth.

The fact that there are at least two accepted meanings of the concept of generation has been a source of confusion, and various authors have tried to resolve the seeming incompatibility of these meanings. Indeed, some have argued that Mannheim, Ortega y Gasset and their followers have usurped what may be thought of as principally a kinship term to inappropriately refer to groups of people who share a distinctive culture and/or a self-conscious identity by virtue of their having experienced the same historical events at the same time in their lives, setting them apart from their parents and grandparents.

Because of this potential confusion of meanings, and in an apparent effort to be more precise, some sociologists prefer the term *birth cohort* for what many others refer to as generations in the historical sense of the term. In general a *cohort* is a group of people who have shared some critical experience during the same interval of time. For example, people who enter college in a given year are referred to as an "entering cohort" and those who graduate in the same year would be called a "graduating cohort". Or, those persons marrying in a given year are called a "marriage cohort". In each case, there is an event or experience in common that defines the cohort. When sociologists talk about *generations* in the sense of a group of people who share the same historical time frame during their youth, they are often implicitly using "year of birth" as the event that defines the cohort. Thus, the term "cohort" is often used as shorthand for "birth cohort", which refers to all persons born in the same year. This is the way in which we use the term in this chapter. Defined in this way, knowing a person's *cohort* membership may be thought to index the unique historical period in which a group's common

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experiences are embedded, but as we shall argue, this does not necessarily make a "cohort" (or a set of cohorts) a "generation".

Members of a birth cohort share a social history, that is, historical events and the opportunities and constraints posed by society at a given time. Further, members of a birth cohort share the experience of the life cycle at the same time, that is, they experience childhood, reach adolescence, grow into early adulthood, and mature into midlife and old age at the same time. And finally, members of a birth cohort share the experience of the cohort itself, that is, the distinctive aspects of the cohort, for example, its size or its level of education, are something unique to the cohort. The sharing of experiences by members of the same cohort, as we shall see, does not necessarily define a "generation" in the sense of Mannheim and Ortega y Gasset.

Given the above definitions, a *cohort effect* refers to a distinctive formative experience which members of a birth cohort (or set of birth cohorts) share that lasts—and marks them—throughout their lives. For example, people who grew up during the Great Depression of the 1930s have different ideas about money than those who grew up in more prosperous times. Or, the women who were the first to have exercised their political enfranchisement after the 19th Amendment was passed in the early part of this century may have taken voting more seriously throughout their lives and reported higher rates of voter turnout.

Birth cohorts are also affected by their own characteristics, and another example of a cohort effect involves the phenomenon of cohort size. For example, in a path-breaking series of studies, Easterlin (1987) argues that the numerically large set of birth cohorts making up the Baby Boom are at a significant socioeconomic disadvantage relative to that of their predecessors, simply because of its size. The number of persons born in a particular year, thus, has far-reaching consequences, given its effects on competition for jobs and the strain it produces on the opportunity structure. Easterlin argues that relative cohort size affects, not only the economic well-being of cohort members, but many features of the family and individual functioning, including fertility rates. Individuals in large cohorts will be less likely to marry, more likely to put off having children, mothers will be more likely to work outside the home, and as young adults they will be more likely to experience psychological stress and feelings of alienation.

Popular theories of social change rest on the idea that culture, social norms, and social behavior change through two main mechanisms: (1) through changes undergone by individuals (due to aging or period effects), and (2) through the succession of cohorts. Several things connected to the lives of individuals have a bearing on how society changes, and thus, there is a linkage between individuals and social change—society changes (paradoxically) both because individuals change and because they remain stable or unchanged after an early period of socialization. Demographers refer to this set of mechanisms as the *Age–Period–Cohort model* of social change because these mechanisms summarize the influences of aging, time period, and cohort membership on social change.

Changes to individuals, occurring in biographical time, that influence social change are normally thought to happen because of factors associated with two different phenomena. The first of these is *aging*. Simply put, people change as they get older due to some combination of biological, psychological and social mechanisms. Aging is usually identified with differences among individuals that are linked to their getting older, becoming more mature as a function of having lived more of life, or because of physical or cognitive decline and impairment. For example, the population may be becoming more conservative as a function of the dual facts that people become more conservative as they age and that the population on average is getting older. The second source of individual change comes about through people's responses to historical events and processes—called *period effects*—occurring in historical time). When the entire society gets caught up in and is

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affected by a set of historical events, such as a war, an economic depression, or a social movement, the widespread changes that occur are called period effects. The Civil Rights movement, for example, may have changed ideas about race for all Americans, not just those birth cohorts growing up in the 1960s (if it affected primarily the young it would be called a cohort effect—see below). Similarly, not only were the youngest cohorts of women and men affected by the Feminist movement of the 1960s and 1970s, the movement may have influenced the views of almost everyone living in the society during that time to some extent. There is a fine line between what should be considered a "cohort" versus a "period" effect, but it usually comes down to *who* is affected by the events in question. In some cases it is impossible for most members of society to remain unaffected by some changes—such as changes in the economy or the influence of computers on society. Or, to take an example of more recent history, the September 11, 2001 terrorist attacks on the World Trade Center in New York and the Pentagon in Washington, DC have had profound effects on *all* members of American society, regardless of year of birth.

The third source of change in society is *cohort succession*, which is the gradual replacement of earlier born cohorts by later ones. This results not from individual change, as is the case with aging and period effects, but from individual stability. When the effects of historical events tied to particular eras mainly affect the young, the result is potentially a cohort effect. Recall, we earlier defined a *cohort effect* as a distinctive formative experience that members of a birth cohort (or set of birth cohorts) share that *persists throughout their lives*. For example, as noted earlier, it is sometimes suggested that civic engagement has declined in America overall, even though individual Americans have not necessarily become less civicminded. This may be because older, more publicly engaged citizens are dying off and being replaced by younger, more alienated Americans who are less tied to institutions such as a church, lodge, political party, or bowling league. Or, if those cohorts who reached economic independence during the Great Depression are seen to be particularly thrifty, this implies that the experience of growing up under privation permanently changed this set of cohorts' economic style of life due to their formative years. As these members of society die off, they may leave behind a somewhat less frugal set of cohorts.

Now that we have defined the nature of age, period, and cohort effects, how do these factors combine to shape social change, and how can their influences be studied using empirical data? The age-period-cohort model recognizes that these are all important causal factors. Unfortunately the individual parts of this model—namely the effects of aging, cohorts, and time periods—are not easy to understand in isolation from one another, and there are serious problems with uniquely identifying their separate effects. It is thus sometimes difficult to place any one interpretation on observed data. Generally speaking, it is often necessary to concede that social change could be due to the operation of all three of these factors at oncewithout knowing which is more powerful.

(2) Based on the introductory text listed below, please discuss the history of sociological quantification in plain Chinese. (50%)

Quantitative reasoning is widely applied in the discipline of sociology and quantification aids sociologists in at least seven main research areas: quantitative modeling, measurement, sampling, computerization, data analysis, hypothesis testing, and data storage and retrieval. But sociologists differ widely in their views of the

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role of quantification in sociology. This has apparently always been true to some degree. While Durkheim was a proponent of quantification, Weber was less enthusiastic. However, while Weber advocated the nonquantitative method *Verstehen*, both Weber and Durkheim saw the importance of method as well as theory, as both authored books on method (Weber 1949; Durkheim [1938] 1964). Today, the situation is much different, as a wide gulf exits between theory and method in twenty-first-century sociology, with only a few authors such as Abell (1971, 2004) and Fararo (1989) simultaneously developing theory and quantitative methodology designed to test theoretical propositions.

The most vocal proponent of quantification in sociology may have been Lundberg (1939), who was known as the unabashed champion of strict operationalism. Operationalism, as originally defined in physics by Bridgman (1948), is the belief that "in general any concept is nothing more than a set of operations, *the concept is synonymous with the corresponding set of operations*" (Bridgman 1948:5–6). George Lundberg (1939, 1947) took the application of operationalism in sociology to an extreme. In Lundberg's view, one did not approach an already existing concept and then attempt to measure it. The correct procedure in Lundberg's view is to use measurement as a way of defining concepts. Thus, if one is asked what is meant by the concept of authoritarianism, the correct answer would be that authoritarianism is what an authoritarianism scale measures.

When he encountered objections to his advocacy of the use of quantification in sociology, Lundberg (1939, 1947) replied that quantitative concepts are ubiquitous in sociology, and need not even be symbolized by numerals, but can be conveyed verbally as well. For example, words such as "many," "few," or "several" connote quantitative concepts. In Lundberg's view, quantification is embedded in verbal social research as well as in everyday thought and is not just an artificial construct that must be added to the research process by quantitative researchers.

After Lundberg (1939, 1947) and others such as Goode and Hatt (1952) and Lazarsfeld (1954) laid the foundation for quantitative sociology in the 1930s, 1940s, and 1950s, the field surged in the 1960s and 1970s. The 1960s saw increased visibility for quantitative sociology with the publication of books and articles such as Blalock's (1960) *Social Statistics*, Kemeny and Snell's (1962) *Mathematical Models in the Social Sciences;* White's (1963) *An Anatomy of Kinship;* Coleman's (1964) *Introduction to Mathematical Sociology, Foundations of Social Theory;* Duncan's (1966) "Path Analysis: Sociological Examples"; Land's (1968) "Principles of Path Analysis"; Blalock's (1969) *Theory Construction: From Verbal to Mathematical Formulations;* and White's (1970) *Chains of Opportunity.* Quantitative methods became even more visible in the 1970s and 1980s with the publication of a host of mathematical and statistical works, including Abell's (1971) *Model Building in Sociology;* Blalock's (1971) *Causal Models in the Social Sciences;* Fararo's (1973) *Mathematical Sociology;* Fararo's (1989) *Meaning of General Theoretical Sociology;* Bailey's (1974b) "Cluster Analysis"; and Blalock's (1982) *Conceptualization and Measurement in the Social Sciences.*

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