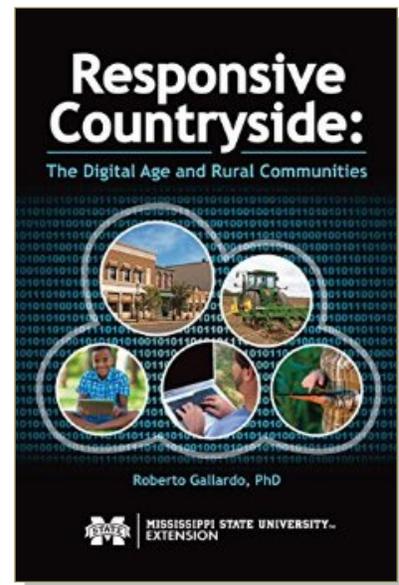


Digitally engaged rural community development

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As a scholar working with the Regional and Rural Broadband research team in Canada (see <http://www.r2b2project.ca>), I was motivated

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to review *Responsive Countryside: The Digital Age and Rural Communities*, by Roberto Gallardo, to learn more about digitally engaged rural community development in the U.S. I begin this review with Gallardo's contextual discussion of the U.S. countryside. I then consider Gallardo's examples of digital revolutions in rural community development and finally reflect on this book's scholarly contributions.

In defining the term "rural" in Chapter 1, Gallardo clearly appreciates that, unlike in the past, businesses and livelihoods in the countryside are not only about agriculture. Rural is a geographic concept that connotes location and lifestyle. In the U.S., there have been profound changes in rural areas (those without an urban core of at least 10,000 residents) and small cities (those with an

urban core of 10,000 to 49,999 residents). Gallardo produces an evidence base that, contrary to general perceptions, the population in the U.S. countryside is growing. This also applies to rural parts of other countries, such as Canada. However, population growth rates in the countryside are slower than in metro areas. The U.S. population is also aging, and rural communities and small cities are aging faster than metro areas. Further, the U.S. population is becoming more diverse, with a decrease in white non-Hispanics and an increase in Hispanics, even in rural areas. Gallardo argues that these changes are due to new technologies, not the least of which are digital revolutions.

Digital Revolutions and Their Implications in the U.S. Countryside

Digital revolutions mainly include broadband and its applications. What experts define as “broadband” is a moving target, because the first-generation broadband in some jurisdictions used to be 1.5 Mbps download speed, only a marginal improvement over dial-up Internet services. As Gallardo points out, the Federal Communications Commission’s latest definition is 25 Mbps download and 3 Mbps upload speeds. Further, he suggests that discussions on what the Digital Age is actually about can be more important than when exactly it began. One could argue that this epoch started with the invention of the transistor in 1947, personal computers in the late 1970s, or the iPhone in 2007. The Digital Age (also known as the Computer Age or Information Age or New Media Age) is about digital technologies that will continue to be invented and adopted, with profound changes in the way humans interact with each other and, perhaps more importantly, with machines in real time. With the advent of quantum computing, the Digital Age no longer will be only about the binary system of alternating ones and zeroes, also known as bits (eight bits make up a byte, the major unit of digital data). The quantum bit (*or qubit*) is about a one and zero at the same time, which could revolutionize the speed of digital data processing. Even before the arrival of quantum computers for everyday use, the processors in our gadgets are getting faster. We have also witnessed increased storage capacity in our devices

and in the cloud, and ever higher, more synchronous (up/down) Internet speeds.

Gallardo elaborates on the benefits of digital revolutions in the U.S. countryside using six examples, while also discussing increasing risks in the digital world, such as cyber insecurity, cyber bullying, surveillance, killer robots and drones, and limits to online presence as a result of filter bubbles (e.g., browsing history narrows our search). First, he discusses broadband applications, such as websites, cloud services, and social media, identifying how they can increase the online presence of rural residents, primary producers, consumers, businesses, and community organizations. Second, he highlights telecommuting as an increasing phenomenon of working from home that helps overcome some of the challenges in the countryside, such as a lack of local jobs, low population density, and a smaller workforce. Third, online courses, such as freely available practice materials through Khan Academy and Massive Open Online Courses (also known as MOOCs), are providing training and education that may be physically unavailable in the countryside. Fourth, *telehealth* is already improving access to quality health services in rural areas, which would otherwise remain underserved. Fifth, access to the Internet has made it possible to farm digitally. Precision agriculture, or the use of digital technologies for farm operations and management decisions, has created new opportunities for farmers, such as targeting and minimizing the use of agrochemicals. Two important applications are digital imaging through satellite or drones, and use of sensors to monitor crop situations (e.g., disease, drought, floods, wildlife damage, etc.). Massive online data, also known as *big data*, such as those created by sensor connections, are analyzed using algorithms to make important decisions. Finally, early applications of artificial intelligence, such as automation and machine learning, are beginning to create efficient barn systems. Autosteering for such tasks as tillage, seeding, and irrigation already have enormous uses in farming.

Contributions to Digitally Engaged Rural Community Development

Gallardo notes that whether rural communities can overcome the rural/urban digital divide of socio-

economic exclusion and physical isolation is still an important question. He could build this discussion more explicitly on the legacy of the Cooperative Extension Service within U.S. land-grant universities in general and the Mississippi State University in particular: first, the Morrill Land-Grant Act of 1862 led to the establishment of land-grant universities to fill rural/urban divides in technology adoption; second, the Smith-Lever Act of 1914 provided a basis for the development of the Cooperative Extension Service. According to Gallardo, the Digital Age has already ushered in fundamental transformations in community engagement, including user-based content development and multiple-way communications made possible by online presence and social media. These are extraordinary departures from the traditional methods of one-way mass communication and face-to-face public engagement. Gallardo presents asset-based community development (ABCD, see <http://www.abcdinstitute.org>) as a new extension model that involves appreciative inquiry about the strengths of rural communities, such as what social, political, physical, human, cultural, natural, or financial assets they already have, challenging the conventional practice of asking about problems and needs.

Gallardo's book is one of the few recent texts available on the topic of digital rural economy. In this regard, the book has made an important contribution to digitally engaged rural community development. However, as noted earlier, despite being a product of the Mississippi State University Extension Service Intelligent Community Institute, this book falls short of my expectations, at least in terms of its grounding in extension theory and

practice, such as informing cooperative extension reform in response to privatization of rural advisory services (Rivera & Sulaiman, 2009), innovation brokering to accommodate competing interests (Klerkx & Leeuwis, 2009), and addressing the paradox of mainstreaming local and alternative agriculture (Pant, in press). It would have been nice if *Responsive Countryside* had included a chapter reviewing the state of the art in U.S. conventional and digital extension literature. This additional chapter might have further acknowledged the continuing influence of the diffusion of innovation theory of the mid-twentieth century, mentioned in Chapter 3, and why it is not necessarily consistent with ABCD theory. All in all, this book highlights important issues to address in the Digital Age, does so in an informal style of writing, which should appeal a broad range of readers. 

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