Chapter 10
Chronism Theory, Culture, and System Delay: A Longitudinal Study of Post-Apartheid South Africa

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ABSTRACT
System response delay has been cited as the single most frustrating aspect of using the Internet and the most worrisome aspect of Web application design. System response time (SRT) research generally concludes that delay should be eliminated where possible to as little as a few seconds, even though delay reduction is costly. Unfortunately, it is not clear if these conclusions are appropriate outside of the developed world where nearly all of the SRT research has taken place. Cultural effects have been, hence, generally missing from SRT research. The one SRT study to date outside of the developed world did report differences using the theoretical construct of cultural chronism, and this finding could limit the generalizability of SRT research findings from developed countries to many economically developing nations. However, limitations and potential confounds in this single study render those findings tentative. The end of Apartheid in South Africa allowed an opportunity to conduct a longitudinal free simulation experiment that overcomes the critical limitations of this previous research. Subjects were members of historically polychronic and monochronic groups who had been segregated by Apartheid and now live in an integrated society with shared infrastructure and computer access. Results find that members of the historically polychronic group are more accepting of longer delays and are more willing to trade longer delays for improved functionality than are their historically monochronic counterparts. Furthermore, tests find that members of the historically monochronic population that came of age in a desegregated,

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INTRODUCTION AND BACKGROUND

A generally accepted rule in software design is that users do not want to wait for systems to respond. System response delay has been cited as the most irritating aspect of using the Internet (Ewalt, 2002) and the most worrisome aspect of Web application design (Khosrowpour, 2000). System Response Time (SRT) research has repeatedly found that users have negative attitudes and reactions toward waiting as little as 2-4 seconds for systems to respond (Galletta, Henry, McCoy, & Polak, 2004; Nah, 2004).

Delay is a byproduct of network-based, database-intensive, and/or multimedia-intensive software. Many application designs are impossible without long delays and can only be mitigated via some combination of: (a) expensive hardware; (b) expensive network connections; or (c) the elimination of preferred content and services. None of these alternatives are attractive to software owners / service providers (henceforth referred to simply as service providers) and each option is costly.

The vexing question for service providers is how much delay is tolerable in which situations, how much should be spent on reducing delay, and how much content should be eliminated in order to limit delay. Because solutions for reducing delay are costly, understanding when to do so is most important for those with the fewest resources. As a result, understanding how and when to manage delay is critical for the developing world where computing resources such as network infrastructures are less robust and capital is scarce. For example, in Brazil, the government is rolling out heavily subsidized computing and Internet connectivity for its poor (Benson, 2005). For these millions of Brazilians, low bandwidth dialup computing will be the standard means of connectivity for the foreseeable future (Benson, 2005) and long download delays will be commonplace.

What makes this question of knowing when to eliminate delay so difficult is that delay is still not a well-understood phenomenon. While it is generally accepted that delay is to be avoided, it is unclear that this is true in all cases. Research to date has concluded that while attitudes toward delay are predominantly negative, the negative consequences of delay are not well delineated (Otto, Najdawi, & Caron, 2000; Rose, Meuter, & Curran, 2005; Rose & Straub, 2001) and many scientific findings appear to be counterintuitive (Davis & Hantula, 2001; Dellaert & Kahn, 1999; Rajala & Hantula, 2000; Rose, Meuter & Curran 2005).

Among the plethora of such SRT studies, one study questioned whether SRT was as important a factor in the developing world as in developed economies where nearly all SRT research has taken place thus far. Specifically, Rose et al. (2003) identified a possible link between the theoretical construct of cultural chronism and SRT delay attitudes. Chronism is a cultural characteristic describing a group’s relationship to time (Hall, 1989, 1990). Monochronism is a cultural trait where members of a culture conceive of time as linear and tangible. Where this cultural trait prevails, time moves in a set sequence (A leads to B leads to C) and time is an asset that can be spent or wasted. Polychronism, by way of contrast, is a cultural trait where time is malleable; life is felt to be less linear than it is a movement of many things in parallel. Members of polychronic cultures, liv-