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The Impact of Earthquake Suppression

A Parody by Jim Hart

Earthquakes have always been an important part of the California lifestyle and the region's geological history. Although earthquakes were reported by early settlers and are a part of California Indian legends, they were never really a significant safety concern in the past. However, after the Gold Rush in 1849, large numbers of people came to California and began changing the structural dynamics of fault movement through resource extraction and the construction of cities and roads.

In an effort to control the impacts of potential earth movement, massive expenditures have been allocated over the past century to suppress above ground shifting and fracturing that would lead to major damage. Buildings and freeways have been retrofitted, building codes have been changed, and "shock absorbing" structures have been incorporated into sky scraper designs.

THIS ISSUE

Earthquake Suppression Parody

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Membership

Is there a connection between our efforts to suppress earthquake damage and the increasing risk of large, catastrophic fault movements?

In analyzing possible answers to this question, I reviewed earthquake size, distribution, and style (strike-slip, normal, thrust) for California and Nevada between 1976 and 2003. This interval also represents a period of intense effort to suppress earthquake damage through retrofits. The Alfred E. Alquist Hospital Seismic Safety Act was enacted in 1973 after four hospitals were damaged in the 1971 Sylmar Earthquake. In response to the 1989 Loma

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Soccer and Chaparral

Part II

You'll be glad to know that the final conclusion of Jake's final All-Star soccer tournament had a very different ending than the last experience described on these pages. If you remember, we tied, but lost in the final tie-breaking penalty kick between the two goalies. An after game hike into the chaparral provided us some needed solace. Taking the time off to reflect also appears to have reenergized us in exactly the right way.

As the kids assembled on the field for the next and

final tournament, there was something different about them, something wild. They were jumping around like a bunch of caged thrashers ready to rip into the nearest pile of leaf litter. The first game began and was over before we knew it. We won 3:0. The second game went the same way, 2:0. But the third game was just a little different because we were up against those same guys who beat us before with that penalty kick. They didn't have a chance this time around. We got 'em 5:0. THAT was sweet. The last game of the day went our way as well. We were on the road to the championship!

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Prieta Earthquake, seismic retrofits were required for highways to prevent overpass collapse during earthquake movement. The 1994 Northridge Earthquake stimulated further efforts so that nearly all of the 2,100 vulnerable overpasses in the state have been strengthened. In addition, 8,700 unreinforced masonry structures in Los Angeles have either been modified or demolished. The impact of this activity has been dramatic, although not what was expected.

As can be seen in Figure 1, the distribution of quakes for California and Nevada between the period of study show a obvious pattern of concentration of large quakes in California, with very few in Nevada where there is little or no quake suppression.

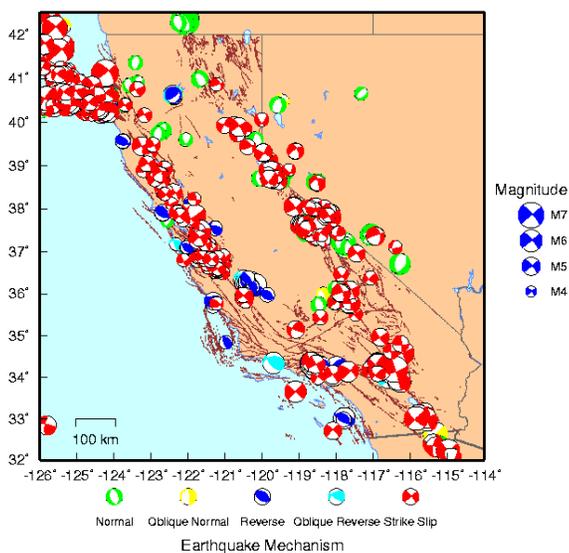


Figure 1. Earthquakes in California and Nevada between 1976 and 2003. Source: Northern California Earthquake Data Center <http://www.ncedc.org/oldeqs/seism.html>

The reason for this unusual pattern is the direct result of shortsighted urban planning models and an anti-scientific management philosophy in the National Urban Service and to a lesser degree in the US Concrete Service, two federal agencies charged with overseeing our nation's developed areas. This philosophy of "man can control nature" embodies the view that we are immune from physical law. It is time we understand that ultimately nature always wins.

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The tournament's final game was held the next day and the kids were wilder than before. The game started and dragged on and on and on. The opposing team was excellent. The first goal was their's, the second was ours. Yes, we finished with a 1:1 tie. You know what's coming next, penalty kicks! As each kid kicked, it was like an exact repeat of that OTHER game.

With each kick, they're ahead, we're ahead, they're ahead, it was finally up to guess who? The two goalies again! My mouth dropped. My heart raced. I began to pace around like a crazed roadrunner. Neurons were popping in my head like snapping *Ceanothus* pods in the summer heat.

It was up to our goalie, Kade Earls. He stepped back. Charged the ball and...I turned and closed my eyes. I couldn't look. The crowd exploded, our crowd. Kade made the goal. I teetered over and collapsed to the ground.

The connection of this particular story to the chaparral? Not much, however, Jake's team did dominate the field with an impenetrable winning strategy and a uniform sense of team spirit.



The Chaparral Kid preparing to make a goal. Photo: Cara Hartinger.

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It is now clear that efforts to reduce earthquake damage have in fact only postponed the inevitable. Stronger buildings, retrofitted highways, and other methods employed to suppress the natural consequence of fault movement have caused the built up of tremendous pressure within the faults themselves. This has led to an increase in magnitude 4 or greater shakes in California over the past quarter century as shown in Figure 1.

The absence of such earthquake activity in the neighboring state of Nevada is directly related to the lack of a coordinated quake suppression program in the region. Instead, most of the region is populated by ranchers who just let quakes happen. According to Nevada tectonic expert Dr. Bonnie Thompson, “We Nevadans just allow nature to take its course. We just let all ‘em lil’ quakes rock and roll and don’t try to stop ‘em. That’s why don’t ‘git ‘em big ones. There just ain’t no energy left to power ‘em.”

In stark contrast to the anthropocentric attitude of federal quake agencies, the typical Nevadan philosophy accepts the limits to what we mortals can do and leaves everything else to luck. This may also explain the phenomenal success of gambling institutions in the state.

Interestingly, mineral extraction activities in Nevada may also play a role in reducing quake size. Outrage over hydraulic mining and other environmentally damaging practices in California led to strict regulations that have dramatically restricted extraction related activity in the state. Hydraulic mining was outlawed in 1884. The devastating San Francisco Earthquake occurred in 1906 (see photo). The mining activities may have been helpful in relieving fault stress. Could there be a connection between current environmental regulations and the next big one?

Recommendations

The legacy of quake suppression has left us with unnatural levels of fault pressure that need to be relieved to prevent another San Francisco-like earthquake in the future. Such an effort will not be easy and will require both institutional changes in government bureaucracies and environmental laws that prevent stress relief. Public subsidies should be offered to businesses to conduct small nuclear explosions underground which will slowly release tectonic pressure. This will support local economic growth as well as ultimately provide long term community protection.

The earthquake problem has nothing to do with how buildings are built, but rather how the earth shakes. If a fraction of the money spent on quake suppression had been spent on stress relief we wouldn’t be in this mess.

Editor’s note: This article is a parody of the misconception that past fire suppression practices are to blame for large southern California wildfires, the existence of old-growth chaparral, and stock market fluctuations.



The legacy of earthquake suppression. San Francisco taken from a tethered balloon five weeks after the earthquake and fire. Source: USGS.

Ione Chaparral

Final Installment

The natural resource value of the unique Ione chaparral plant community south of Placerville, California is lost on some of the region's local politicians. According to a botanist familiar with the area, a former Amador County planning commissioner once advised landowners in a public meeting to "join arms and walk in lock-step," ripping out rare plants as they found them. "Tell them you're hunting rattlesnakes," if anyone asks what you're doing, he advised.

This is not an uncommon attitude and can be directly traced back to fundamental attitudes about the role the natural environment can play in supporting the quality of life in California. Unfortunately, the importance of nature as a fundamental American value is not properly recognized. Even environmentalists who seek its protection fail to understand its power to unify unlikely allies. Rather than being seen as a shared value that can bring people together in a positive manner, nature is sliced up into a litany of never ending, single issue battles that focus on mitigating loss rather than creating a long term vision of hope for protecting our nation's natural heritage.

Wildness defines our character as a people. Most everyone can agree that nature is a beautiful thing and there is value in protecting it. It would be wise to focus on that agreement, stop the bickering, and develop a consensus on how much native, wild space we want. With the rapid pace of growth, leaving the decision up to future generations is no longer an option. The challenge is to preserve enough native, wild space so children 100 years from now can still enjoy feeling a true "sense of place" that only comes from understanding and appreciating their local, natural environment.



Chaparral remnant. Patches of chamise like these are all that remain of thousands of acres of chaparral that once dominated the foothills in Amador County.

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