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## Exploring “Deep Roots”: Politics of Place and Groundwater Management Practices in the Pajaro Valley, California

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### ABSTRACT

Groundwater is one of the most critical natural resources in an era of climate change, yet groundwater depletion is extensive in many parts of the world. The Pajaro Valley, an agricultural region in Central California, exemplifies the common challenges to sustainably manage a groundwater basin. This article draws on materialist conceptions of power and political economy, and humanist conceptions of place identity and dependence, to illuminate how both can influence groundwater management practices. Through ethnographic observation and interviews with self-identified groundwater users, we find that social character, economic interactions, and dominant understandings of culture and community all work together to define personal and collective meanings of and attachments to place. We suggest that using a “politics of place” approach can provide a deeper understanding of why particular groundwater management practices occur, and that this can aid in shaping future sustainability efforts.

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Community-based resource management; environmental attitudes and concerns; environmental sociology; natural resources; water resources policy and management

## Introduction

Groundwater is one of the most critical natural resources in an era of climate change. The resource represents approximately 30% of available fresh water on the planet, it is essential for meeting local needs, and it plays an integral role in sustaining aquatic and terrestrial ecosystems and their associated landscapes. Yet, groundwater depletion is extensive in many parts of the world (Famiglietti et al. 2011).

In California, groundwater accounts for roughly a third of statewide water use during years of average precipitation, and close to 60% during the state’s periodic droughts when pumping is increased to compensate for reduced surface supplies (Langridge and Daniels 2017). In many regions of the state, the volume of groundwater pumped generally exceeds both managed and natural recharge. This imbalance contributes to basin overdraft, categorized by ongoing declines in groundwater levels with concomitant negative impacts to both groundwater-reliant communities and the long-term ecological viability of the groundwater basin. Predictions of global climate change, including higher temperatures and an increase in extreme events such as drought, will exacerbate groundwater declines and associated negative impacts (Famiglietti et al. 2011).

The Pajaro Valley located along California’s Central Coast illustrates these problems. Similar to other areas throughout the western United States, the region is economically

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reliant on agriculture, its water supply is seasonal with no precipitation in the summer, and its primary water supply source is groundwater. In 1984, the Pajaro Valley Groundwater Management Agency (PVWMA) was formed as a Special Act District to manage the region's groundwater and address ongoing overdraft. Despite efforts by PVWMA, pumping continues to deplete the underground aquifers exacerbating already existing saltwater intrusion (the movement of saline water) into the valley's freshwater aquifers.

The dominant materialist approach to understanding why people deplete local natural resources emphasizes that people make management decisions based on potential economic and political gain (Mol and Spaargaren 2005). Though useful in its investigation of the economic and political motivations that drive natural resource practices, we suggest that these factors fail to fully capture why particular water management decisions are made. Researchers in the disciplines of geography, sociology, psychology, and political science have augmented this literature, positing that the meanings people make of place are equally important in influencing resource management practices (Stedman 2003; Yung, Freimund and Belsky 2003; Sampson and Goodrich 2009; De Wit 2013).

To better understand environmental behaviors, our paper utilizes humanist concepts of place identity and dependence and materialist concepts focused on political and practice-based attachments. We are interested in how individual management decisions with respect to groundwater are related to perceptions of the Pajaro Valley and its watershed as well as to economic and cultural attachments to that landscape. We find that social character, economic interactions, and dominant understandings of culture and community all work together to define personal and collective meanings of and attachments to place.

## Literature Review

Low and Altman (1992) define place as created by conceptual, sensational, and physical encounters between people and their locales. In this regard, place is considered a physical space that has been imbued with meanings, such as instrumental or utilitarian values as well as less tangible sentiments, such as belonging and attachment. This definition acknowledges the inherently subjective relationship that people have with places and indicates that perceptions of place are always multiple and open to contestation (Cheng, Kruger, and Daniels 2003).

In this paper, we enlist humanistic accounts that emphasize place as created and maintained through emotional attachments (Tuan 1974), and Marxist/materialist accounts that explore how domination and resistance play out across different spaces (Peet and Watts 2004) to expand our understanding of groundwater user's management motivations.

## Humanistic Social Theory

Humanistic scholars utilize "sense of place" to point to the cognitive, affective, and nonconscious dimensions that influence an understanding of place, such as the memories evoked by walking down particular streets in a neighborhood, or the scent of a blooming local plant (Brehm, Eisenhauer, and Stedman 2012). This construct includes the concepts of place attachment, place identity, and place dependence (Trentelman 2009).

Cheng, Kruger, and Daniels (2003, 87) examine “the complex connections people have with the environments they encounter” that can be positive or oppressive (Manzo 2005). Budruk et al. (2011) describe two core dimensions of this relationship: an emotional connection (place identity) and a functional association (place dependence). “Place identity,” in this case, refers to the connection between a place and a person’s individual identity (for example, a person who fishes might identify with a particular river). “Place dependence” occurs when a functional need for a place cannot be transferred somewhere else. For example, in our case of the Pajaro watershed, there may be no other region that can substitute as an ideal climate and region for strawberry production and farmers may demonstrate a strong reliance on this particular place for their business operations.

Humanistic scholars are apt to investigate the relationship between sense of place and environmental values (Davenport and Anderson 2005; Sampson and Goodrich 2009), and between notions of place and self-identity (Low and Altman 1992). Their studies demonstrate that various meanings associated with places are fundamental to how we make sense of the world and to how we behave. Additional research areas include the differences between and among community groups and members in terms of residential proximity and whether members are native versus non-native visitors (Mansfield 1992; Budruk et al. 2011).

In theory, physical engagement with local places can deepen place-based knowledge as well as emotional attachments, and several scholars correlate physical engagement or practice with higher levels of care and with local stewardship practices (Norton and Hannon 2003; Nabhan 2004). Beatley (2004), for example, demonstrates that residents with greater levels of physical engagement are more likely to conserve, care for, and improve their locales. Likewise, Norton and Hannon (2003) suggest that strengthening a sense of place can in fact strengthen a sense of local responsibility.

### ***Materialist Politics of Place***

While the aforementioned scholars posit that familiarity and intimacy with place may lead to deeper understanding of and care for local places, others find this relationship to be much more complex (Peet and Watts 2004; Robbins et al. 2009; Bakker 2010). Political ecology, based on a Marxist/materialist approach, draws connections between environmental pressures and global regimes of accumulation that create complex behaviors (Peet and Watts 2004). This approach places less focus on individual emotional relationships with place and instead on the ways that place is created through practices and representations. Domination, resistance, and inequality can also emerge from the ways that space is occupied and used by members of different groups, countering tendencies of humanistic accounts to romanticize or essentialize local knowledge. For example, McCarthy (2002) describes the Wise Use movement in the American West as a self-identified grassroots social movement that appealed to local knowledge and local rights in opposing environmental regulations and interference from federal agencies. Ranchers claimed that their direct experience gave them a privileged understanding of what was best for both the social and ecological community, though their proscriptions were often at odds with policies intended to safeguard native plants and animals. This example illuminates how the concept of place can be regarded as inherently political and seen as “contested terrain” (Yung, Freimund, and Belsky 2003).

A “politics of place” approach (Yung, Freimund, and Belsky 2003) situates personal understandings of and attachments to a landscape as central to resource management politics while acknowledging that these understandings are shaped by economic and political inequalities. This approach differs from much of the humanist literature that primarily focuses on shared sense of place and areas of common ground, rather than on the ways that place is contested among different people or groups with different access to power and representation.

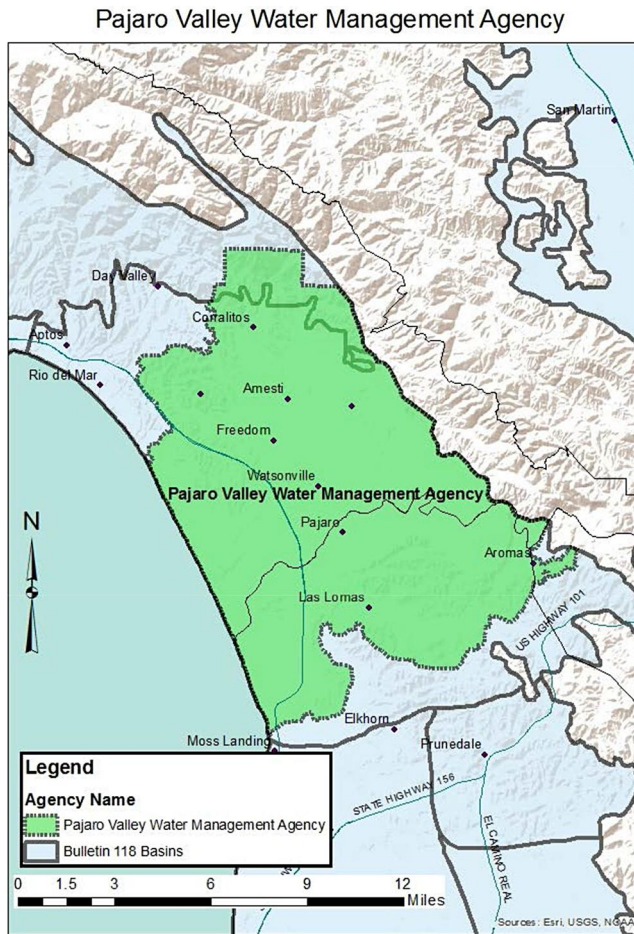
Our integrative approach can reveal the ways that landowners and individuals behave within dominant paradigms and structures that establish particular power dynamics with respect to groundwater access and management. It can also contextualize individual perceptions of, and relations with, a local landscape. In sum, it serves to illuminate how natural resource politics rest upon notions of place that are multifaceted and that help maintain or secure particular power relations or livelihoods as well as contribute to a sense of meaning around what it is to feel at home in a place.

### **Case Study of the Pajaro Watershed**

The Pajaro River watershed is located south of Santa Cruz in California, USA. The local economy is based on a multimillion-dollar agricultural industry that employs thousands of agricultural workers. The PVWMA manages approximately 120 square miles of the watershed (Figure 1). About 30% is dedicated to agricultural production, 14% is urban space, and half is undeveloped native grassland. Agricultural land is dominated by high-value crops, and the area is well known for its berries (PVWMA 2016). Raspberries, strawberries, and vegetables use more than 85% of the water in the basin, and these water-hungry industries are maintained by 30 of the approximately 750 growers in the basin (Lin et al. 2013).

The agricultural industry relies on seasonal (and often undocumented) field-workers, with many accustomed to working long days with little pay. Almost 20% of families and individuals in the Pajaro live below the federal poverty levels, and over 80% of the population is Hispanic and/or Latino. Watsonville is the major city, with over 50,000 inhabitants (US Census Bureau 2014). Expensive real estate raises the cost of living in this region and forces many local workers into long commutes (Glickman and Kelly 2008).

Domestic and irrigation needs in the Pajaro Valley are primarily met through groundwater. Surface water sources provide about 2% and groundwater sources provide about 98% of supplies (PVWMA 2016). Because of its close proximity to the Pacific Ocean, groundwater aquifers are prone to seawater intrusion into the freshwater aquifers (Hanson et al. 2014). In 1980, the California department of water resources (DWR) categorized the Pajaro as one of eleven out of over 400 basins in the state with critical conditions of groundwater overdraft, defined as existing “when it is evident that continuation of present water management practices will result in significant negative impacts upon environmental, social, or economic conditions at a local, regional, or state level” (DWR 2015). Pajaro users pump almost twice the designated “sustainable yield” of the groundwater basin on an annual basis (Rudestam and Langridge 2014) and seawater intrusion reaches up to 3 miles inland in some locations in the Pajaro today (Hanson et al. 2014). Overdraft and seawater intrusion threaten the local agricultural economy as well as the social and ecological resilience of the region (PVWMA 2016).



**Figure 1.** Map of Pajaro Valley Water Management Agency boundaries.

The PVWMA's legislative mandate is to “efficiently and economically manage existing and supplemental water supplies to prevent further increase in, and to accomplish continuing reduction of, long-term overdraft” (PVWMA 2016). In 2014, PVWMA adopted a new basin management plan that incorporated new recycled water deliveries, the addition of recharge facilities, increased recycled water storage, and an inland pipeline that connects inland lake water to the coastal distribution pipeline to offset groundwater pumping along the coast (PVWMA 2014). While these initiatives all address problems of groundwater overdraft, the Pajaro continues to face difficulties with respect to overdraft and saltwater intrusion. This is due in part to a lack of available surface water, an increasing population in urban areas, shifts to more water-intensive crops in agricultural areas, and 3 years of extreme drought conditions from 2012 to 2015. In 2014, water production in the valley was 58,640 AF, exceeding the 10-year average of 55,843 AF by 5%. The amount of fresh groundwater in storage has declined over the long term, and between 2011 and 2014 average groundwater levels declined by approximately five feet (PVWMA 2014).

Under California's 2014 Sustainable Groundwater Management Act (SGMA), PVWMA elected to be designated as the sole groundwater sustainability agency in its service



area boundaries and is responsible for sustainability managing the groundwater (PVWMA 2016). Although SGMA promises to provide new resources and incentives needed to encourage more sustainable groundwater practices in the region, reducing groundwater decline remains a challenge for the agency (PVWMA 2016). This paper provides, in part, a perspective on groundwater management that may be helpful in evaluating the success of this new legislation.

## Research Design and Methods

Our research is guided by several questions: (1) What are groundwater users' perceptions of the Pajaro watershed? (2) What are groundwater users' cultural and economic attachments to place in the Pajaro watershed? and (3) How do groundwater users' perceptions of and attachments to place relate to groundwater sustainability?

Understanding people–place connections relies on qualitative research methods, and we take our cue from several scholars who have been innovative in this regard. Davenport and Anderson (2005), for example, conducted 25 in-depth interviews with local community members inhabiting the Niobrara National Scenic River landscape and asked open-ended questions around three main themes: connections to the river, perceptions of river conditions and river management, and vision for the river's future. In understanding place attachments and “sense of place” among residents and visitors of the Rocky Mountain Front, Yung, Freimund and Belsky (2003) utilized a similar approach, selecting a sample of 37 interview participants and initiating discussions around key questions and identifying main themes using grounded theory research methods.

Our study of the Pajaro is comparable in its qualitative methods and design. Our research took place between 2013 and 2015 during a statewide drought. We reviewed secondary data (e.g., media articles, litigation documents, and entity documents) and through this research created a list of individuals and organizations involved in Pajaro groundwater issues. We attended five community groundwater events (e.g., board meetings and field-trips) and engaged in participant observation to further identify potential interviewees. Our background data collection helped us to make contact with many groundwater users and managers who then referred us to other stakeholders to interview. While we attempted to access a broad sample of residents across interest groups, class, and gender lines, we found male landowners, wealthy farmers, and PVWMA representatives to be the most accessible and available for interviews.

Because of this, we modified our original research questions that were directed toward members of the Pajaro watershed at large to target primarily farmers, landowners, and water managers whose economic and political well-being rest on sustainable groundwater management. We conducted individual interviews with 22 self-identified water stakeholders (Table 1) and analyzed these data using NVivo 10.

Our interview guides were intentionally semistructured with open-ended questions to encourage interviewees to feel comfortable and to think deeply about ideas in ways meaningful to them. We focused on questions that touched upon place dependence, personal identity and attachments to place. We also focused on livelihood practices and how these created certain economic attachments to place. Some examples of questions included: “How do you perceive local water issues?” and “How do you participate in local groundwater issues and debates?” We encouraged participants to respond at length to these initial



**Table 1.** List of interviewees.

Occupation	Age	Gender	Property owner	Race/ethnicity	Stakeholder group
Farm operator	48–57	Male	Yes	White	Agriculture
Farm operator	48–57	Male	Yes	Asian	Agriculture
Farm operator	48–57	Male	Yes	White	Agriculture
Farm operator	28–37	Male	Yes	Hispanic	Agriculture
Farm operator	58–67	Male	Yes	White	Agriculture
Farm operator	NA	Male	Yes	White	Agriculture
NGO	48–57	Female	No	Hispanic	Labor
NGO	58–67	Male	Yes	White	Environment
NGO	38–47	Male	Yes	White	Environment
NGO	NA	Male	NA	Native American	Tribal
Manager/official/proprietor	38–47	Male	Yes	Hispanic	Government
Manager/official/proprietor	38–47	Male	NA	White	Government
Manager/official/proprietor	48–57	Male	NA	White	Government
Manager/official/proprietor	28–37	Female	NA	White	Labor
Federal agent	NA	Male	NA	White	Government
Manager/official/proprietor	48–57	Female	Yes	White	Government
Environmental consultant	38–47	Female	NA	White	Government
Environmental consultant	48–57	Male	Yes	White	Business
Environmental consultant	NA	Male	Yes	White	Business
Retired	58–67	Female	Yes	White	Labor
Other	NA	Female	No	White	Media
Other	NA	Male	NA	White	Media

questions and then asked for more detail based on their responses, ensuring them of their confidentiality. In general, we found interviewees to be enthusiastic and open with us in sharing their perspectives on water and place. We transcribed all interviews and identified emergent themes from our interview data with respect to place attachment and place dependence. Three researchers were involved in the data collection and analysis, and we double-coded each of our interviews and met regularly to discuss our emergent findings (Miles and Huberman 2013). We utilized a reflexive approach to avoid bias in our interviews, coding and analysis. Finally, this study engaged in nonrepresentative sampling techniques.

## Findings

The following sections lay out a series of connections that we make between the humanistic and materialist approaches to place and natural resource management. We illuminate the ways that notions of place are deeply influenced by place identity and dependence as well as practice-based economic attachments to place, and how there can be a blurring of social, cultural, economic, and physical landscapes. In addition, we look at how particular relations with place may influence subsequent management practices and the long-term sustainability of the groundwater resource base.

### *Place Identity, Dependence, and Attachments to Place*

Overall, our interviewees described their sense of the Pajaro as a physical geography characterized by agriculture. When asked to describe the Pajaro, interviewees frequently referred to the lines of row crops, the large open spaces, and the berry fields. In general, the significant agricultural presence was regarded as a positive characteristic. Several interviewees noticed with dismay that the 2012–2015 drought had caused several farmers to leave fields unattractively fallow, indicating that land used for growing was more esthetically appealing than land left alone.

Along similar lines, most interviewees referred to the rural character of the Pajaro with appreciation, indicating an affection for a romantic rural idyllic. For example, an employee of a local water district described her hometown in the Pajaro Valley: “It’s a nice place to live: quiet, rural, and centrally located.” A newspaper reporter who covers local water issues shared a similar sentiment: “I like the rural nature of our community.”

We know that place, self-identity, and livelihood can be closely related concepts (Yung, Freimund and Belsky 2003). Given that most of our interviewees were situated in the agricultural industry, it may be unsurprising that they perceived the Pajaro as a place characterized by agriculture and appreciated it for its agricultural esthetic and productivity. For example, one farmer described his love for the Pajaro in the following way:

I was born on a small ranch on Green Valley Rd. Born and raised here in the Pajaro Valley, we had our own cow that we milked and chickens and eggs. ... I acquired some history there and living on the farm I loved the environment and the crops and everything ... I got an early start ... and in high school I decided to make a go at farming.

The above quotation demonstrates the ways that the physical landscape both relates to an attachment to place (loves the environment) and a dependence on place (made a go at farming). For this man, his place identity is deeply linked with his personal livelihood (place dependence) as a farm owner. Likewise, another farmer began the interview by talking extensively about his passion for agriculture. He toured the interviewee around his farm, picking various fruits and vegetables to eat along the way, and said, “I chose the valley to farm because I could grow what I wanted here—flowers, vegetables, and strawberries.” For this man, his sense of place was both representational and was embodied in a farming region that provides everyday encounters with the land in the form of picking, growing, and eating. A third local farmer replied to the question, “What do you like about the Pajaro?” with the following: “This place grows everything. In general, the trees do really well here.”

Most of our interviewees were intimately connected to local groundwater issues, primarily through their daily work activities. Their responses demonstrate a sense of place that relates to a working landscape and farming practices within a thriving agricultural industry. While farmers and ranchers were the most vehement of our interviewees to voice the agricultural benefits of the Pajaro landscape, even those not directly involved in agriculture spoke to the benefits of the rural landscape. Only one interviewee, a member of the business community, responded to the question “what features do you care about most” without acknowledging the Pajaro’s agricultural assets. While in this paper we do not examine this outlier in depth, it would be important to pursue when and how individuals who are not directly engaged in farm-based activities relate affectively to an agricultural landscape. Nevertheless, those economically reliant on agriculture and the consequent need for groundwater exhibit a clear relationship to place dependence and practice-based attachment to place.

### ***Farming Culture and Attachment to Place***

It is clear that while mainstream impressions of place are often associated primarily with geographic landscapes, place is fundamentally a social terrain. When asked their thoughts and feelings about the Pajaro, interviewees spoke equally of the nonhuman and the human communities, describing the Pajaro as a rural landscape as well as a social community heavily influenced by farming culture. Interviewees across the board referred to the highly visible farming culture in the Pajaro. For most, this was a positive attribute that

interviewees appreciated and admired. For example, one interviewee appreciated the “rural nature of our community” describing its “strong agricultural community” as an asset: “I really like it ... this is a really close-knit community, lots of ties, people who are passionate about their community.”

One long-standing forum for the farming community is a local restaurant, owned and operated by a successful farming family. According to the restaurant owner, “Ever since I started farming there was another restaurant where five or six farmers would get together ... to catch up.” He described the evolution of this forum; “It’s kind of evolved over the years. Back then it was strictly farmers, but we’ve expanded over the years because there’s not that many farmers anymore, we’ve got a roofer and a tractor driver... It keeps the conversation interesting...” Notable in the story of the restaurant meet-up is that although the participants in the local gathering now include professions other than farmers, the gathering continues to maintain its original emphasis on agriculture. For example, one local man who is not a farmer but now attends the weekly event reported that the reason he was invited is because he has a deep respect for farmers.

Attachments to place are often reinforced by social connections (Donatuto and Poe 2015), and the Pajaro agricultural community typifies the ways that its farming culture informs an individual’s sense of place. But this farming culture is not politically neutral; interviewees routinely described farmers and their allies as dominating local politics. For example, one government employee expressed that to be able to collaborate with citizens on natural resource strategies she and her colleagues needed to understand “the irrigator’s perspective” because “agriculture is the main culture of the area.” A government official from a different agency shared a similar sentiment: “Farmers hold so much power in this valley. It’s a 600 million dollar a year industry. They really have a lot of money and they have a lot of power. They really in many ways call the shots.”

Likewise, several environmental advocates we interviewed described getting inside farming mentality as a key to engaging in any kind of successful environmental work. For example, a biologist noted, “It’s interesting to talk to farmers and get a sense of how they think ... there’s really an extractive perspective.” According to this biologist, environmental initiatives to conserve groundwater in the Pajaro will be unsuccessful unless they include significant financial compensations for farmers.

A local resident who is a member of the PVWMA board shared a similar impression of farmers, suggesting that developing an appreciation for farmer mentality is central to understanding the main culture driving water policy and practices in the Pajaro: “Any investment you make in understanding farmer psychology will be of help to you, because farmers think differently from other folks.”

Farmers themselves acknowledged their political clout. One farmer said growers were “very united” when it comes to groundwater management. He elaborated, “When you farm, there is that respect. So as a farmer there is that respect. If something happens, I think we can come together.”

Farmers and agricultural representatives have in fact “come together” several times around events in the Pajaro. For example, the No Overpriced Pipeline Ever campaign (NOPE) was catalyzed in the late 1990s in response to PVWMA’s proposal to install a pipeline for importing water from the Federal Central Valley Water Project. A longtime grower initiated the NOPE campaign and recruited other agricultural representatives to fight the pipeline import, ultimately resulting in the proposal being abandoned. The weekly gatherings at the local

restaurant represent another form of farmer hegemony, where the welcoming of nongrowers is contingent upon their respect for farming (as the interviewee above makes clear).

While solidarity within the farming community has been successful in leveraging particular political agendas, it appears that other forms of coming together in the valley around issues related to water or agriculture have been less successful. For example, one woman who runs an NGO for migrant workers described the obstacles faced by the Latino community in being politically active:

The population that in general is under-represented in the Pajaro is the farmworker community. Watsonville is 80 percent Latino, and 50-60 percent monolingual Spanish. They are incredibly underrepresented politically in every aspect, not just water.... The per capita income in Watsonville is half of the state and even county average. People are just trying to survive here. They don't engage politically in a deep way.

Although the farmworker community in the Pajaro is significant in terms of numbers, this woman acknowledged that its representation in local politics is limited. Growers and landowners, however, are those with access to both political forums and more visible cultural recognition.

### ***Sustainable Groundwater Management***

As noted in the introduction, one of our main motivations for understanding how and why a deeper understanding of place matters was to investigate the relationship between perceptions of place, economic, and cultural practice-based attachments to place and the adoption of sustainable groundwater management practices. We found that groundwater users all expressed concern about the resilience of the Pajaro's groundwater supply but rarely took initiative in changing their practices to help safeguard further overdraft.

For example, one government agent who works with farmers and landowners to encourage them to adopt soil and water conservation practices described his challenges in this regard. He said that when he invites growers to modify their practices and offers them resources with which to do so, most refuse. He attributed this response not to an anti-ecological mindset but to a resistance to change; "A lot of [farmers] like to irrigate by the seat of their pants, how their grandfathers did it—how do you change their minds?"

When we asked farmers to describe their own conservation ethics, they expressed concern for the ecological resilience of the aquifer, but likewise rarely volunteered to alter their own practices. Only one farmer we interviewed had adopted more efficient water use practices as a way to counter groundwater depletion. The others defended their own water use practices, often accusing others (such as the growing municipal demand) for depleting the groundwater supply.

Many of the farmer managers and landowners we interviewed corroborated the government agent's statement above, indicating that their length of time or number of generations in the basin justified their water use practices. For example, when asked his thoughts about groundwater management initiatives, one landowner defended his own personal water use practices by describing his relationship to the Pajaro:

"My family's heritage goes back to the 1850s in both my mom and dad's family ... My kids are sixth generation Pajaro residents ... My great grandfather was the youngest of nine. We have deep roots. I was raised here, my family's been here forever, and I've been doing what I do here for 35 years now. I care a lot [about the place]."

The clear implication of this statement is that this man's care for place emerges from his "deep roots," and that the ways that he and his family members have worked on the land are practices that embody this care. Absent from this landowner's reflection (and from all other landowners' responses) is the recognition that those who inherit such water rights have benefitted from a history of Euro-American colonial privilege.

Other interviewees concerned about long-term groundwater sustainability described rootedness as central to water users' commitment to caring for the shared aquifer. For example, thanks to its ideal growing season, farmland in the Pajaro has been purchased by out of county residents who then rent or lease the land to farmers. While fifty years ago nearly all the farms were owned and operated by resident farmers, absentee landowners now own approximately 30% of all farms in the region (PVWMA 2016). This shift has been fairly recent; one environmental spokesperson described what he perceived as resistance from absentee landowners to sign onto groundwater conservation measures:

We don't get a lot of participation from landowners on that front. They just want to get their money. It might be different if they were here in the valley but a lot of them are out of the area, they're back east and shoveling snow and not as connected to it. Maybe there is a bit of disconnection there from the whole water standpoint.

Five of our interviewees involved in farming explicitly described absentee landowners as disinterested in water use efficiency measures and attributed this to their lack of a relationship with the land over time. For example, one farmer said, "Why should they care? They can use the water and the soil until it runs out and then move onto somewhere else, like the Central Valley."

The government employee cited above shared a similar concern with regard to new growers who have not established a relationship with the place over time:

We're losing a lot of experience and all because the family farmer concept was to steward the land for future generations, and that paradigm has totally changed. The new generation doesn't want to have to do anything with the farm anymore, and it's looking at farming as big business, it's a whole different thought process.

And a member of a community growers group expressed a similar sentiment:

[Awareness of water issues] is correlated strongly, I think, with how long someone has been a farmer in the region ... If they went to high school in the valley, they were aware of many local water issues. If they came here as an adult, they were not picking up [the same] knowledge and information.

Typically, interviewees indicated concern with local water issues disrupting the culture of the region. But growers using the lion's share of water in the basin (farmers) did not volunteer to change their own water use behaviors. They justified their personal use of the groundwater resource by explaining that their livelihoods depended on its use, and/or referred to their length of experience in the Pajaro as evidence that they knew best how to manage the resource.

One farmer who had adopted conservation measures acknowledged that he was unique in this regard. He implemented water-saving technologies such as storage tanks and nighttime watering because he recognized that his water supply was in jeopardy:

If you don't manage your water, you get further saltwater intrusion. If you want to be able to hand your kids and grandkids a farming lifestyle, you have to have enough water for the crops ... But we have a lot of farmers, especially inland, who say 'I built the well you can't stop me from doing what I want to do.' But they have to know this is a shared community asset.

This interviewee describes water conservation as a benefit to the larger community, today and in the future. From this outlier example, we can consider how the strong social bonds within the farming community might engender such approaches to managing shared waters.

## Discussion and Conclusion

Groundwater supports billions of people around the world who rely on it for their everyday existence. As an invisible common pool resource, governance is challenging (Araral 2014), and the Pajaro exemplifies how groundwater management is frequently conflictive political terrain. In this paper, we suggest that to address groundwater sustainability, it is important to understand how water users perceive their local places. Specifically, we examined how a subset of Pajaro groundwater users relate to place identity and dependence, and how these can produce an attachment to place, with the understanding that these humanist dimensions mediate the use of groundwater. In addition, we explored how our interviewees considered materialist dimensions of groundwater practices that affect economic well-being. We used qualitative methodological tools to empirically assess these dimensions including in-depth semistructured interviews and participant observation. We note that our sample was small and importantly it represented only a small subset of the different participants in the working landscape (particularly male farm managers, landowners, and authorities with access to political and economic power) and did not include representatives from the farm field-worker community.

Our study extends sense of place scholarship by enlisting not only materialist but also humanistic theories of place in looking specifically at how these relate to groundwater conservation ethics. Previous work on sense of place and ecological awareness is conflicted, with some studies finding that increased attachments to place are related to increased engagement in ecologically responsible behaviors (Norton and Hannon 2003; Beatley 2004; Nabhan 2004), while others draw connections between such attachments and resistance to change (Yung, Freimund and Belsky 2003; Peet and Watts 2004). Our work provides a case where a subset of community members, including farm owners and managers reliant on groundwater for farming, recognize that their groundwater supply is in distress, worry about its sustainability, and yet do little to conserve their water use.

Our study also contributes to the literature on natural resource management, illuminating the ways that a particular vision of place can dominate decisions and behaviors. We found that when stakeholders were asked about water management, they described attachments to and care for a particular vision of the Pajaro, a landscape characterized by a quiet, rural, agrarian image. This sense of place however maintains and perpetuates the political dominance of a farming culture where cutting water use to conserve a depleted aquifer is not prioritized. Moreover, farming culture in general is characterized by a particular image of the U.S. farmer (e.g., White, male, English speaking, and involved in local politics). In the Pajaro, Mexican immigrants comprise the majority of those engaged in field farm labor and it is notable that they were rarely if ever referred to by our subset of interviewees in discussions of farm-based and/or agrarian local culture. This points to an area for further research that could explore how farmworkers in the field experience “place” and relate to the groundwater resource that is critical for their jobs and sustenance.



On a broader level, we might also explore how the notion of community is constructed and maintained in an agricultural community such as the Pajaro, and how ethnicity and class play into the significance of sense of place, place dependence, and place attachment as well as access to political power.

While the politics of place literature does deeply consider social dimensions of place as a key to place-based relations of power, we know of no studies that investigate how cultural dimensions of place attachment are impacted by changing agricultural practices in the American West, where we see farming operations managed by absentee landowners as well as an increasingly international labor force. What are the consequences of this demographic shift on the place-based politics of the region? How do new priorities for natural resource management (such as concerns for restoring rivers, historic fisheries, and environmental habitat) reconcile with dominant, resource extractive visions of place? These questions will become increasingly pertinent to water politics across California and the American West.

Our findings are also important in light of California's new groundwater legislation (SGMA) that aims to "foster robust communication amongst multiple entities ... with differing and sometimes conflicting interests" (DWR 2015). SGMA's success hinges on its ability to account for the varied relationships that individuals have with their local places and livelihoods in their communication and outreach plans.

Finally, despite the depth of theoretical research on sense of place, metrics utilized by natural resource managers, and government agencies focus primarily on economic facets of place and dimensions that tend to center on aesthetic qualities rather than the social and psychological ways that residents engage with places (Donatuto and Poe 2015). Our research demonstrates that the latter are central factors in evaluating individual behaviors with respect to groundwater use and management. As such, this study serves as a potential resource for water managers in the Pajaro as well as in other groundwater-dependent regions throughout the world, to help broaden the understanding of their constituents and their criteria for stakeholder involvement. Insights from this paper and from future research in the area can help all groundwater management agencies think more critically about how people engage with this critical resource and support ways to govern it sustainably.

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