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Farmers' Value Orientations, Property Rights and Responsibilities, and Willingness to Adopt Leopold's Land Ethic

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ABSTRACT

This article examined relationships among value orientations (mutualism, domination), property rights, responsibility, and farmers' willingness to adopt Leopold's land ethic. Data were obtained from a mailed survey sent to Illinois farmers ($n = 974$). Domination, mutualism, property rights, and responsibility were derived from previous research. The land ethic was measured using eight variables derived from direct quotes from Leopold. Structural equation models generally supported the hypothesized relationships. Mutualism, responsibility, and property rights predicted willingness to adopt the land ethic and accounted for 72% of the variance. Mutualism positively influenced responsibility and negatively influenced rights. Domination positively predicted rights, but did not influence responsibility. Value orientations explained 65% of the variance in responsibility and 17% in rights. Overall, findings suggested a connection between social psychologists' approach to mutualism/domination and Leopold's land ethic. Conservation efforts that tap into deeply held value orientations may result in lasting changes in farmer behavior.

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Domination; land ethic; Leopold; mutualism; responsibilities; rights

Introduction

Aldo Leopold believed that the primary path to conservation on private land was to foster a moral obligation in farmers to take care of their land. Leopold used the phrase "land health" to (1) educate farmers about the intricacies of resource renewal and soil erosion, and (2) connect the health of the land to the health of the broader web of life, including humans, animals, plants, and other matters (Carrick 2012). "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is *wrong* when it tends otherwise" (Leopold 1949, 224–225). The message was one of social responsibility and conservationists were tasked with instilling this responsibility in farmers (Meine and Knight 1999; Freyfogle 2007).

Farmers are encouraged to conserve land by participating in financial incentive programs such as the U.S. Department of Agriculture Conservation Reserve Program

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(CRP), which pays farmers to retire highly erodible cropland (Thompson, Reimer, and Prokopy 2015). The adoption of conservation practices, however, is a complex mix of social, personal, and economic factors. There is no evidence that financial factors take precedence in the minds of farmers (Prager and Posthumus 2010). Previous research suggests farmers adopt practices for multiple reasons (e.g., moral obligation) other than financial incentives (Osmond et al. 2015; Meijboom and Stafleu 2016). Nonfinancial motivations for engaging in conservation include doing the right thing for the environment (i.e., Leopold's land ethic) (Reimer and Prokopy 2014; Thompson, Reimer, and Prokopy 2015; Floress et al. 2017).

Leopold's land ethic has been discussed in the context of ecosystem management (Knight 1996) and ecosystem restoration (Leopold 2004). Leopold recognized that conservation includes the dominant paradigm of land as community production as well as an appreciation of the aesthetics of rural landscapes (Knight 1996). Similar to Leopold, Callicott (1989, 1990) noted that conservation and commodity production are not mutually exclusive. Commodity production (i.e., economic considerations), however, does not take into account off-site impacts such as soil erosion or chemical runoff (Leopold 1949). Leopold (1949) further argued that this focus on economics, or "economic determinism" (Norton 1988) was immoral when considering the land.

This article explored the relationships between Leopold's land ethic and contemporary theory in social psychology (i.e., cognitive hierarchy). More specifically, the article examined the relationships among farmers': (1) general value orientations of mutualism and domination, (2) specific beliefs about property rights and responsibilities, and (3) reported willingness to adopt Leopold's land ethic.

Cognitive Hierarchy

Cognitions are mental dispositions (e.g., attitudes) individuals use to understand situations (Vaske and Manfredi 2012). Such dispositions can be arranged in a hierarchy from general to specific. The "cognitive hierarchy" examines associations between general value orientations and specific attitudes/norms to explore how cognitions affect behavior. Empirical research has applied this framework to nature in general (Buijs 2009), environmental concerns (Van Liere and Dunlap 1980; Stern and Dietz 1994), forests (Bengston 1994; Vaske and Donnelly 1999; Vaske et al. 2001), and wildlife (Whittaker, Vaske, and Manfredi 2006; Manfredi, Teel, and Henry 2009).

The cognitive hierarchy distinguishes values from value orientations. *Values* are modes of conduct or desirable end states (e.g., freedom, equality) (Rokeach 1973). Values are general mental concepts that are not linked to specific contexts and reflect basic desires (e.g., honor, fairness). Because values are formed early in life and are tied to an individual's identity, they are resistant to change (Vaske and Donnelly 1999). Given that values are shared within a culture, they typically do not account for much of the variance in individual behaviors. *Basic beliefs*, on the other hand, represent views about general classes of issues (e.g., climate change) and provide meaning to the more global values. *Value orientations* are systems of basic beliefs that give meaning to values in a specific domain (e.g., the environment) (Manfredi, Teel, and Henry 2009; Vaske and Manfredi 2012). A value orientation's strength varies between people, and differences in attitudes and actions arise from this variation.

Different terms have been used to represent these constructs (e.g., environmental values, worldviews), but all denote patterns of basic beliefs that provide direction to values. Early value orientation research (Fulton, Manfredi, and Lipscomb 1996) asked individuals about: (1) *protectionist oriented* statements (e.g., “the environment has same rights as humans”) and (2) *use oriented* statements (e.g., “we should use the environment to add to the quality of human life”). Basic belief patterns about rights and use have consistently factored into a protection–use value orientation continuum (Vaske and Manfredi 2012).

Recent research has broadened this continuum to a *mutualism–domination* value orientation (Teel, Manfredi, and Stinchfield 2007; Manfredi, Teel, and Henry 2009). Domination oriented individuals believe the environment should be managed for human benefit. Actions that negatively affect the environment are often seen as acceptable. Mutualism oriented individuals are more egalitarian and supportive of social inclusion that extends to human–land relationships (Wildavsky 1991). A mutualism orientation person believes that the environment is deserving of rights and care. These individuals do not support actions that are harmful to the environment and tend to promote behaviors that protect the land (i.e., Leopold’s land ethic).

Leopold alluded to domination and mutualism relative to land stewardship in his discussion of an ecological conscience and the “A-B cleavage” between farmers (Leopold 1949). The land ethic reflects an ecological conscience with a conviction of individual responsibility for land health. Land health is the capacity of the land for self-renewal. Conservation attempts to preserve this capacity. The A-B cleavage referred to two distinct groups. Group A “regards the land as soil, and its function as commodity production” (similar to domination), whereas Group B “regards the land as biotic, and its function as something broader” (similar to mutualism, Leopold 1949, 221). Leopold contended that Group B would be more likely to develop the “love, respect, and admiration for land” necessary to establish an ecological conscience (Leopold 1949, 223).

Rights and Responsibility

Mutualism and domination are general value orientations about land. Property rights and responsibility are more specific beliefs about land ownership. Property rights is a social construct and a legal mechanism. Property rights in the United States represent a balance between the rights of individuals to use their land as they wish versus the rights of society to benefit from responsible land stewardship (Singer 2000). Many private land use rights are not laws (Karf 1989, Bromley and Hodge 1990). For example, there are no laws against plowing to the edge of a stream and a farmer has the right to do so even if it harms water quality for downstream users. Property rights are key to understanding policy debates involving farmers (e.g., water quality, growth management, wild-life management, endangered species) (Freyfogle 2007).

Despite public debates over property rights, little empirical research has explored the property rights of farmers. Conservationists sometimes assume that farmers emphasize their right to choose over their responsibility to society (Jackson-Smith, Kreuter, and Krannich 2005). Paying farmers for engaging in conservation practices through incentive programs compensates farmers for forgoing their presumed rights. Previous research, however, has found that the rights to use their land correspond with responsibilities to

use land in a way that does not harm the environment or other people (Jackson-Smith, Krueter, and Krannich 2005; Stroman, Krueter, and Gan 2017). For example, farmers who were sympathetic with downstream water users were more likely to practice conservation tillage (Sheeder and Lynne 2011).

Environmental value orientations appear to be changing (Teel, Manfredo, and Stinchfield 2007; Manfredo, Teel, and Henry 2009). Colorado residents, for example, are moving away from traditional utilitarian orientations to a more protection oriented worldview (Manfredo and Zinn 1996). This shift has been attributed to population growth (Cromartie and Wardwell 1999) and changing demographics (Steel, List, and Shindler 1994). A study in 19 western U.S. states found a higher proportion of mutualists in more urban states with higher income levels and a more educated population (Teel et al. 2005). Younger educated urbanites tend to deemphasize traditional uses of nature (e.g., logging, mining) and place value on wildland preservation (Rudzitis 1999). People in rural areas (e.g., farmers) are more likely to agree with basic beliefs of environmental use compared to those from more urban areas (Vaske 2008a; Gamborg and Jensen 2016a). Similarly, males have more utilitarian value orientations than females (Miller and McGee 2000; Vaske, Jacobs, and Sijtsma 2011; Gamborg and Jensen 2016b).

This article examined Illinois farmers' beliefs about land use. In Illinois, over 97% of the land is privately owned and 70% is cropland (Laingen 2014). Farming practices can have serious impacts on nutrient and sediment inputs into streams (Santelmann and Freemark 2001; Lincoln and Ardoin 2016). Fertilizers used in agricultural operations account for approximately 80% of the nitrate nitrogen in the Mississippi River (Illinois Department of Agriculture and Illinois Environmental Protection Agency 2013).

Hypotheses

Based on previous research, we hypothesized (see also Figure 1) that farmers reported:

- H₁ responsibility toward their land will be positively related to mutualism.
- H₂ responsibility toward their land will be negatively related to domination.
- H₃ rights regarding land use will be negatively related to mutualism.
- H₄ rights regarding land will be positively related to domination.
- H₅ willingness to adopt the land ethic will be positively related to mutualism.
- H₆ willingness to adopt the land ethic will be negatively related to domination.
- H₇ willingness to adopt the land ethic will be negatively related to rights.
- H₈ willingness to adopt the land ethic will be positively related to responsibility.

Methods

Data were obtained from a random sample of 3000 Illinois farmers stratified by enrollment in the U.S.D.A. Conservation Reserve Program. One-third of this sample was enrolled in conservation programs, mirroring the population enrolled at the time of data collection. Names and addresses of participants were selected by Survey Sampling International.

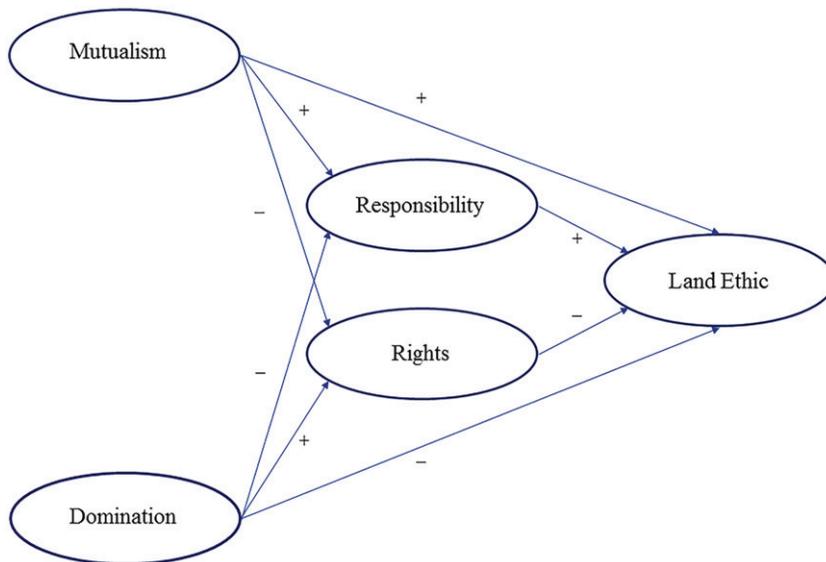


Figure 1. Predicted empirical relationships among belief constructs.

Each selected participant was mailed the questionnaire along with a cover letter explaining the study and a stamped return envelope (hereafter termed “questionnaire packet”). Nonrespondents were mailed a reminder/thank you postcard approximately 14 days after mailing the initial questionnaire packet, followed by a second packet 14 days later. A second postcard reminder/thank you was mailed 14 days later, followed by a third questionnaire packet. Of the initial 3000 farmers on the mailing list, 2808 surveys were deliverable. Of these, 910 usable surveys were returned (response rate = 32%). Funding constraints did not allow for any additional nonresponse follow-ups.

Variables/Latent Concepts

Domination and mutualism indices were derived from previous research (Teel and Manfreda 2010). Domination was constructed from four variables. Respondents provided their level of agreement with the following statements: (1) “Lands should be managed to benefit people,” (2) “Needs of people should take priority over land protection,” (3) “Land is primarily for people to use,” and (4) “Primary value of land is to provide products useful to people.” Mutualism was also constructed from four variables: (1) “Land has value whether people use it or not,” (2) “Land should be managed so that the environment benefits,” (3) “I feel an emotional bond with the land,” and (4) “Conserving land is important for future generations.” All variables were coded on seven-point scales ranging from “strongly disagree” (-3) to “strongly agree” (+3) with 0 as a middle point.

A scale was developed to reflect property right beliefs and a second was developed for responsibility beliefs. The four property rights variables were as follows: (1) “Landowners have a right to use their land as they see fit,” (2) “Other people have no right to tell private landowners how to manage their land,” (3) “Private landowner rights outweigh any responsibilities the landowner has to manage land for public benefit,” and

(4) “Conservation is a voluntary choice of the landowner.” The three responsibility variables were as follows: (1) “Landowners have an obligation to consider how their management affects other people,” (2) “Landowners have an obligation to maintain the land for future generations,” and (3) “Conservation is one of the responsibilities of private landownership.” These variables were coded on the same seven-point scales as domination and mutualism.

The land ethic was measured using variables derived from direct quotes from Leopold’s writings (Leopold 1949). Quotes were selected based on their relation to responsibility for land stewardship of private lands (Meine and Knight 1999). The eight variables were as follows: (1) “Conservation is a state of harmony between people and land,” (2) “When people see land as a community to which they belong, they may begin to use it with love and respect,” (3) “Land management is right when it tends to preserve the integrity of the land,” (4) “People abuse land because they regard it as a commodity belonging to them,” (5) “Landowners have an obligation to manage the land in the interest of the community,” (6) “A landowner is a custodian of the land,” (7) “Landowners have a responsibility to manage land for private and public benefit,” and (8) “The private landowner is the custodian of wildlife.” Land ethic variables were coded on the same seven-point scales as all other variables.

Analyses

Of the observed variables included in this article, 2% or less had missing data. For this analysis, missing values were replaced with the mean for that variable. The internal consistency of all constructs was examined using Cronbach’s alpha (Vaske 2008b). A confirmatory factor analysis examined whether the constructs provided a good fit to the data. EQS 6.1 software was used for the analysis (Byrne 1994). The Satorra–Bentler robust estimation was used to correct for multivariate non-normality because data skewness and kurtosis indicated violations of the normality assumption (Chou and Bentler 1995). Robust corrected Comparative Fit Index (CFI*), Non-Normed Fit Index (NNFI*), and Root Mean Square Error of Approximation (RMSEA*) assessed model fit (Browne and Cudeck 1993). Robust standard errors were used for test statistics. A structural equation model was used to test the predictive validity of the model in Figure 1 (Hypotheses 1 through 8). A relationship was judged statistically significant at $p < .05$.

Results

The sample was 90% male and 10% female; the average age of respondents was 62.05. Confirmatory factor analysis (CFA) demonstrated that the data provided an acceptable fit to the domination and mutualism orientation constructs (Table 1). Standardized factor loadings ranged from 0.47 to 0.82 for domination and mutualism. Additional support for combining the belief statements into their associated constructs was evident from the reliability analysis (Table 1). Reliability coefficients for domination and mutualism were 0.70 and 0.74, respectively. All item total correlations were >0.40 (not shown). Deleting any item from these basic belief dimensions did not improve reliability.

The data also provided an acceptable fit to the property rights and responsibility belief constructs (Table 2). The CFA standardized factor loadings were 0.49 to 0.71 for rights,

Table 1. Confirmatory factor analyses and Cronbach's alpha for domination and mutualism.

	Mean	Standardized factor loading ^a	Cronbach's alpha
Domination	0.60		0.70
Lands should be managed to benefit people.	0.99	0.59	
Needs of people should take priority over land protection.	-0.43	0.65	
Land is primarily for people to use.	0.34	0.74	
Primary value of land is to provide products useful to people.	1.51	0.47	
Mutualism	2.01		0.74
Land has value whether people use it or not.	1.93	0.49	
Land should be managed so that the environment benefits.	1.65	0.82	
I feel an emotional bond with the land.	2.05	0.57	
Conserving land is important for future generations.	2.41	0.69	

^aAll standardized factor loadings are statistically significant at $p < .001$.

Table 2. Confirmatory factor analyses and Cronbach's alpha for property rights and responsibility.

	Mean	Standardized factor loading ^a	Cronbach's alpha
Property rights	1.13		0.69
Landowners have the right to use their land as they see fit.	1.42	0.71	
Other people have no right to tell private landowners how to manage their land.	0.91	0.49	
Private landowner rights outweigh any responsibilities the landowner has to manage land for public benefit.	0.75	0.67	
Conservation is a voluntary choice of the landowner.	1.45	0.52	
Property responsibility	1.90		0.62
Landowners have an obligation to consider how their management affects other people.	1.78	0.63	
Landowners have an obligation to maintain the land for future generations.	2.03	0.55	
Conservation is one of the responsibilities of private landownership.	1.89	0.60	

^aAll standardized factor loadings are statistically significant at $p < .001$.

and 0.55 to 0.63 for responsibility. Reliability coefficients for rights and responsibility were 0.69 and 0.62, respectively. Finally, the data supported the land ethic construct (Table 3). Standardized factor loadings were 0.53 to 0.77, and the reliability coefficient was 0.85.

A series of fit indices were estimated for the structural equation model in Figure 1. Based on the Satorra–Bentler robust estimation for multivariate non-normality, the model produced a significant chi-square ($\chi^2 = 1016.18$); however, large sample sizes tend to inflate this statistic. Marsh and Hocevar (1985) suggest that the chi-square should be evaluated in relation to the model's degrees of freedom; a χ^2/df ratio of 2:1 to 5:1 indicates an acceptable fit. The ratio was within this range ($\chi^2/df = 1016.18/218 = 4.66$). Other fit indices that were examined included the robust corrected CFI* (an acceptable CFI* value > 0.90), NNFI* (an acceptable NNFI* value > 0.90) and the RMSEA* (an acceptable RMSEA* value $0.05 > 0.08$) (Hu and Bentler 1999). The CFI*, NNFI*, and RMSEA* were in acceptable ranges (0.91, 0.91, 0.06, respectively).

Hypotheses 1 through 8 are examined in Figure 2. Hypotheses 1 and 2 predicted that responsibility would be positively related to mutualism and negatively related to domination. The standardized regression coefficient for mutualism ($\beta = .80$, $p < .001$) was significant and in the predicted direction (Hypothesis 1). The relationship between

Table 3. Confirmatory factor analyses and Cronbach’s alpha for Leopold’s land ethic statements.

Leopold’s land ethic	Mean	Standardized factor loading ^a	Cronbach’s alpha
	1.21		0.85
Conservation is a state of harmony between people and land.	1.78	0.72	
When people see land as a community to which they belong, they may begin to use it with love and respect.	2.31	0.73	
Land management is right when it tends to preserve the integrity of the land.	1.39	0.77	
People abuse land because they regard it as a commodity belonging to them.	0.65	0.53	
Landowners have an obligation to manage the land in the interest of the community.	0.71	0.64	
A landowner is a custodian of the land.	2.18	0.57	
Landowners have a responsibility to manage land for private and public benefit.	0.56	0.55	
The private landowner is a custodian of wildlife.	1.36	0.57	

^aAll standardized factor loadings are statistically significant at $p < .001$.

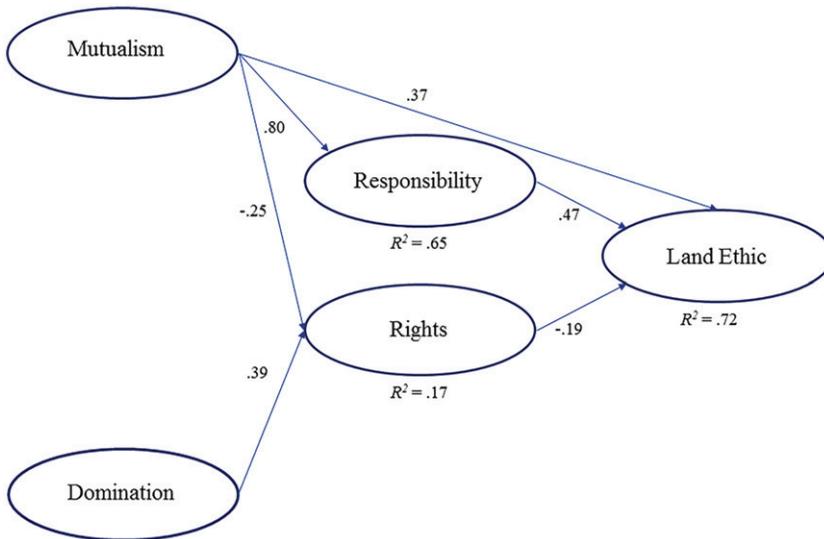


Figure 2. Empirical relationships among belief constructs. Only statistically significant ($p < .05$) are shown.

responsibility and domination was not significant; Hypothesis 2 was rejected. Mutualism and domination explained 65% of the variance in responsibility.

Hypotheses 3 and 4 predicted rights would be negatively related to mutualism and positively related to domination. Standardized coefficients for mutualism ($\beta = -0.25$, $p < .001$) and domination ($\beta = 0.39$, $p < .001$) were significant and in the predicted direction; Hypotheses 3 and 4 were accepted (Figure 2). Mutualism and domination explained 17% of the variance in rights.

Hypotheses 5 to 8 examined the relationships between the belief constructs and reported willingness to adopt the land ethic. The standardized coefficients for mutualism ($\beta = 0.37$, $p < .001$), responsibility ($\beta = 0.47$, $p < .001$), and rights ($\beta = -0.19$, $p < .05$) were all significant and in the predicted direction; Hypotheses 5, 7, and 8 were accepted

(Figure 2). There was no significant relationship between domination and the land ethic; Hypothesis 6 was rejected. Together, the three constructs explained 72% of the variance in the land ethic.

Discussion

As hypothesized by the cognitive hierarchy, the general value orientation constructs predicted the specific property rights and responsibility concepts, which in turn predicted farmers' reported willingness to adopt the land ethic. Although this theoretical approach has been applied to a range of topics, this is the first application to farmer beliefs about land and land ownership. A strong mutualism orientation toward the land was observed, but a domination orientation was more neutral. Given that prior research has found mutualism to be more common in younger, female, urban samples (Vaske et al. 2001; Martinez-Espineira 2006; Loyd and Miller 2010), the mutualism orientation was somewhat unexpected. Ninety percent of the farmers were male and the average age was 62.05.

The mutualism findings were consistent with research demonstrating that 80% of farmers self-identify as land stewards (Ahnström et al. 2009). Prokopy et al. (2008) found that positive environmental attitudes and awareness were often insignificant but when significant were positively associated with practice adoption. Some farmers' decisions were influenced by their own ethical beliefs and social pressure from important referents (Beedell and Rehman 2000). Indiana farmers held both profit- and stewardship-oriented beliefs strongly, but never held negative stewardship beliefs (Thompson, Reimer, and Prokopy 2015).

Because farming involves altering the land for human benefit, we assumed a domination orientation would be evident. The farmers, however, did not display a utilitarian viewpoint; the mean of domination scale was 0.60 (see Table 1). Other research has shown domination as the primary value orientation of most Americans (Schwartz 2006; Manfredi, Teel, and Henry 2009). Burton (2004) argues farmers maximize production to obtain financial rewards; the symbolic value of production becomes part of a farmer's self-identity that is supported through community norms and behavior. The nurturing role embodied in mutualism, however, is not necessarily contradictory to production in which farmers maintain tidy, weed-free farms or maximize economic utility.

The rights and responsibility constructs examined more specific farmer beliefs about land ownership. These constructs related to whether people emphasize their right to use the land as they wish even if it harms the land (e.g., reduces water quality) or other people (e.g., polluting water supplies of neighbors) versus their responsibility to make socially responsible land use decisions. For example, farmers might refrain from an agricultural practice if they believe it could harm others or the land. Leopold recognized this fundamental balance of responsibilities associated with land ownership; "the crux of the problem is that every landowner is the custodian of two interests, not always identical, the public interest and his own" (Freyfogle 1999).

In this article, farmers agreed with both rights and responsibilities (see Table 2) suggesting that they understood the balance between the rights of individuals and the rights of society to benefit from responsible ownership. Respondents more strongly agreed with responsibilities than rights items (Table 2), which is consistent with the mutualism

orientation. The emphasis on responsibilities over rights is counter to conservationists' assumptions regarding property rights (Jackson-Smith, Kreuter, and Krannich 2005). Results here, however, were consistent with respondents in Utah and Texas where 38% believed the interests of society must be considered when making land use decisions (Jackson-Smith, Kreuter, and Krannich 2005; Stroman, Krueter, and Gan 2017).

The farmers slightly agreed with all land ethic items (see Table 3). Many of these individuals would fall into Leopold's Group B, which he concluded are more likely to develop an ethical relation to land. Consistent with other research, farmers clearly believed they are obligated to conserve the land (Ahnström et al. 2009).

Findings were also consistent with "dual-interest theory," which suggests that egoistic-hedonistic based self-interest and empathy-sympathy based other interests (e.g., moral obligation) are internalized within an integrated self-interest (Czap et al. 2012). According to this theory, empathy and sympathy for others are expected to "temper self-interest on the way to one's own self-interest" (Czap et al. 2012). As noted earlier, farmers in Nebraska who empathized with downstream water users were more likely to practice conservation tillage (Sheeder and Lynne 2011). Farmers here also held seemingly contrary beliefs (domination and mutualism, and rights and responsibility), suggesting support for dual interest theory (Czap et al. 2012).

Leopold made a connection between mutualism, moral obligation (responsibility), and the land ethic. He believed that farmers were more likely to use their land responsibly if they felt that they were a part of the land community and had an emotional appreciation for it (mutualism) (Freyfogle 2012). Our results demonstrated this connection empirically by showing the close relationship between social psychological constructs of mutualism and responsibility, and willingness to adopt the land ethic. The model shows that mutualism, property rights, and responsibility influenced the land ethic. Thus, in the case of Illinois residents, our research supports Leopold's views. Respondents with a mutualistic orientation were more likely to believe they should use land in a responsible manner.

Our research also suggests a connection between social psychologists' approach to mutualism and domination and Leopold's land ethic. Comparing responses to Leopold's own statements to concepts from the cognitive hierarchy reveals the core components of the land ethic. Mutualism, property rights, and responsibility predicted the land ethic. Domination did positively influence the rights construct as predicted, but did not influence either responsibility or the land ethic as hypothesized. The potential influence of domination in the model was likely overshadowed by mutualism and responsibility, both of which are more closely aligned to the land ethic ideology.

Conclusion

This article extended the cognitive hierarchy research to understand farmers' value orientations about the land and beliefs about the property rights and responsibility that comes with land ownership. Domination, mutualism, property rights, and responsibility proved useful for predicting Leopold's land ethic. Future research should explore the degree to which these cognitions, including the land ethic, influence other elements of the cognitive hierarchy and ultimately farmer behavior. Activating farmer stewardship values is important for engaging farmers in conservation (Thompson, Reimer, and

Prokopy 2015). This article suggests that conservation program design and communications that convey mutualism and responsibility could be effective. Solving large-scale, conservation problems will require change in the behavior of thousands of farmers. Conservation solutions that tap into deeply held value orientations have the potential to result in longer-lasting changes in farmer behavior (Jones et al. 2016). Illinois farmers agreed with many of the components of Leopold's message highlighting the potential for conservation strategies that encourage socially responsible private land use.

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