
Students' Knowledge and Attitudes about International Agricultural Issues¹

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Abstract

The purpose of this study was to determine agricultural education undergraduates' knowledge and attitudes about international agricultural issues. A proportional stratified sample of 293 students responded to the study. Only 5% achieved a passing score in the knowledge assessment about agricultural policies, products, peoples, and cultures. More than 40% of the respondents cited watching international news stories on television as the source used most often to develop their attitudes about international agricultural issues. Least identified sources included actual participation in a Work Experience Abroad program or International Foreign Youth Exchange. Respondents' believed more strongly that they could learn about international agricultural issues by taking vacations to other countries or by watching selected television programs than they could by interacting with international agricultural exchange students.

Despite a media deluge of daily global events, the results of this study showed that students do not concern themselves with learning more about international policies, products, peoples, and cultures. The results support earlier research (RoperASW, 2002) where it was found that most U.S. 18-24 year olds lacked understanding of global events. This lack of understanding may stem from a disconnection between "real world" events and the topics discussed in agricultural curricula. More effort needs to take place in teaching students how global events may impact agricultural practices worldwide. One recommendation for increasing students' knowledge about international agricultural policies, products, peoples, and cultures is through increased experiential learning via out-of-country learning situations.

Keywords: College Students, Agricultural Knowledge, Perceptions, International Issues

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Introduction

Popular media display nightly installments of the political, religious, cultural, and societal events currently shaping our world. As students are exposed to daily news coverage of these events, do they concern themselves with learning more about international policies, products, peoples, and cultures?

The need for students to have knowledge of other countries and cultures is evident. The passage of the North American Free Trade Agreement (NAFTA) in 1994 brought international agriculture close to home. U.S. businesses and agricultural producers that had previously never had any marketing experiences with foreign countries were now marketing their products in Canada and Mexico.

In a recent bulletin, NAFSA: Association of International Educators states, "...international and cross-cultural awareness and understanding on the part of U.S. citizens will be crucial to effective U.S. leadership, competitiveness, prosperity, and national security in the next century" (NAFSA, 2000). Bickson's (1996) study of corporate and college administrators confirms NAFSA's claim. In Bickson's study, corporate administrators noted that almost all future jobs will either require or benefit from global awareness and understanding (as cited in Radhakrishna & Dominguez, 1999).

Nehrt (1993) concluded that "the United States has entered a global era and it is the responsibility of education to prepare people for the world in which they will be living" (p. 81). Nehrt states that business schools have fallen short of this goal. However, in a study of more than 1100 institutions, Kwok and Arpan (2002) ascertained that significant progress has been made on the internationalization of business curricula since 1992. They speculate that the globalization of businesses worldwide has increased faster than the internationalization of business schools' curriculum and faculty, creating a gap that has been difficult for business schools to close.

For post-secondary agricultural education students, where internationalization of the curriculum has been addressed specifically for the past six years (Sammons & Martin, 1997; Duffy, Toness, & Christiansen, 1998), scant evidence exists to suggest college students are knowledgeable about international agricultural policies, products, peoples, and cultures. A study

by Lindner and Dooley (2002) found that doctoral students had low levels of international knowledge when they entered a graduate program and average levels when they graduated. In their study "international knowledge was defined as theories, principles, and practices related to agricultural development in cross-national settings" (p. 60). They further noted that such levels may result in negative consequences for students engaged in international development activities.

Does a relationship exist between international knowledge and attitude toward international agricultural issues? Previous studies showed that high school students had relatively low attitude and belief scores, indicating they did not value learning about international agricultural issues, and had limited awareness of international agricultural concepts (Elliot & Yanik, 2002; Radhakrishna & Dominguez, 1999; Harbstreet & Welton, 1992). College students demonstrated a similar lack of knowledge and understanding about international agricultural issues (Redmann, Schupp, & Richardson, 1998).

In assessing students' perceptions, it is important to communicate the role "attitude" plays in the perception formation process. Borg and Gall (1989) noted that attitudes generally consist of three components: affective (an individual's feelings about the attitude object); cognitive (an individual's beliefs or knowledge about the attitude object); and behavioral (an individual's predisposition to act toward the attitude object in a particular way). Additional research shows that perceptions can be based on affective and behavioral components when the cognitive component is lacking. Sanbonmatsu and Fazio (1990) found it was possible for people to base their perceptions on already-present global attitudes (as held by a popular majority) toward topics when knowledge or experience with the topic was low. This finding was supported in marketing research by Schoell and Guiltinan (1995) who asserted that consumers' perceptions are influenced by family, friends, class, and the culture in which they live.

An argument can be made that each of these earlier studies (Radhakrishna & Dominguez, 1999; Redmann, Schupp, & Richardson, 1998; Harbstreet & Welton, 1992) was completed when relative peaceful times in the U.S. insulated most students from thinking

about international issues. Have global events and media coverage of those events over the past two years affected college students' knowledge and attitudes about international agricultural issues?

Purpose and Objectives

The purpose of this study was to determine agricultural education undergraduates' knowledge and attitudes about international agricultural policies, products, peoples, and cultures. The objectives were:

1. Assess undergraduates' knowledge of international agricultural issues.
2. Determine undergraduates' attitudes about international agricultural issues.
3. Describe undergraduates' attitudes about educational methods used to teach international agricultural issues.
4. Decide if relationships existed between undergraduates' knowledge of international agricultural issues and attitude scores, or knowledge scores and selected demographics.

Methods

The accessible population ($N \approx 700$) for this descriptive, correlational study was junior and senior undergraduate students in the Department of Agricultural Education at Texas A&M University. A proportional stratified sample ($n = 293$) included all students enrolled in one of four departmental courses during fall semester 2002: Topics in Agricultural Leadership and Education, Cultural Pluralism in Agriculture, Instructional Design in AgScience, and Agricultural Publications Production. These four courses provided the greatest representation of juniors and seniors for each of three degree programs (agricultural development, agricultural science teaching, and agricultural journalism) in the department. Researchers treated the students in the study as a sample of all possible students who had the opportunity to enroll in one the courses (Allen, Abaye, McKenna, & Camp, 1995; Day, Raven, & Newman, 1998; Wingenbach, 2000), thereby enabling a generalization of the results to the accessible population.

The research instrument was developed using modified versions of instruments from previous studies (Elliot & Yanik, 2002; Radhakrishna & Dominguez, 1999). The instrument contained four sections measuring

students' knowledge and attitudes about international agricultural issues, and demographics. The first section had 20 multiple-choice, knowledge questions about international agricultural policies, products, peoples, and cultures. Sample questions included: *which set of countries make up the European Union; what is the primary household fuel in Africa and Asia; what country produces the largest volume of swine; and which cereal grain is the basic food for more than half of the world's population?*

Section two (26 items; Cronbach's alpha coefficient of .95) measured students' attitudes toward international agricultural issues. Students rated their agreement levels using a Likert-type scale (1=Strongly Disagree...6=Strongly Agree). Sample questions included: *I should know more about the cultures of other countries; marketing agricultural products to other countries will help my state's economy; and global food production affects food prices in my local grocery store.*

Another section (30 items; Cronbach's alpha coefficient of .97) measured students' attitudes about educational methods used to teach international agricultural issues; students rated items using the same Likert-type scale used in section two. Sample questions included: *If properly instructed, I can understand basic international agricultural concepts; lessons on international agricultural issues should not be too complex for me; and I learn about international agricultural issues from international agricultural exchange students at Texas A&M University.* Students recorded their demographic data in the fourth section.

Content and face validity were established by a panel of experts from Texas A&M and Pennsylvania State Universities. The expert panel consisted of faculty members who have taught international agricultural development courses and/or who possessed international development project experiences. Minor editing (wording) changes were made to the final version of the research instrument. Data were collected in the last week of course work (December, 2002). Demographic data were analyzed using descriptive statistics. Significant relationships were explored using bivariate analyses.

Results

Respondents were mostly female (57%), seniors (54%), Caucasian (83%), and considered themselves “C” average students (56%) according to their self-reported overall grade point averages (Table 1). Respondents identified international experiences (short- and long-term work situations, vacation, or short-term visits) that may have influenced their perceptions about

international agricultural issues. The primary experiences included watching stories about international news on television (44%) and having known an international exchange student in school (34.1%). The least identified experiences were participation in a Work Experience Abroad program (9.6%) or International Foreign Youth Exchange (6.8%) (Table 1).

Table 1

Demographic Frequencies of Respondents (N = 293)

Variables		f	Percent ^a
Gender:	Female	163	57.4
	Male	121	42.6
Class:	Senior	155	54.4
	Junior	94	33.0
	Sophomore	26	9.1
	Other	8	2.8
	Freshman	2	0.7
GPA:	2.00-2.99	159	56.2
	3.00-3.99	114	40.3
	1.00-1.99	6	2.1
	4.00	2	0.7
	< 1.00	2	0.7
Ancestry:	European/Caucasian	233	82.9
	Mexican/Latin American	20	7.1
	Native American	10	3.6
	African American	8	2.8
	Mixed ancestry	5	1.9
	Asian	3	1.1
	Arab	1	0.4
Int'l Exp.:	Caribbean	1	0.4
	Watching international news on television	129	44.0
	Having known an international exchange student in school	100	34.1
	Reading National Geographic magazine regularly	55	18.8
	Other experiences	49	16.7
	Participating in a Work Experience Abroad (FFA)	28	9.6
	Participating in an International Foreign Youth Exchange (4-H)	20	6.8

Note. ^aFrequencies may not equal 100% because of missing data.

Undergraduates' knowledge of international agricultural issues was assessed using a 20-question multiple-choice exam. Only 5.1% ($n = 15$) answered 12 or more questions correctly. Data analyses by selected demographics revealed that no sub-group did particularly well in the international knowledge

exam (Table 2). Students in the *Agricultural Publications Production* course, or those who were males, had an overall grade point average of 4.00, or who were of Asian ancestry scored more correct responses in the international knowledge exam than did students in other sub-groups (Table 2).

Table 2

Descriptive Statistics for Students' Knowledge of International Agricultural Issues (n = 285)

Variables	<i>M</i>	<i>SD</i>	
Courses:	Agricultural Publications Production	8.00	2.86
	Topics in Agricultural Leadership and Education	7.77	2.28
	Instructional Design in AgScience	7.44	2.75
	Cultural Pluralism in Agriculture	7.26	2.47
	Total	7.69	2.39
Gender:	Male	7.97	2.48
	Female	7.49	2.29
	Total	7.72	2.39
Class:	Freshman	9.00	2.83
	Other	7.80	.84
	Senior	7.73	2.48
	Junior	7.72	2.29
	Sophomore	7.62	2.45
	Total	7.72	2.39
Overall GPA:	4.00	8.00	—
	2.00-2.99	7.74	2.47
	3.00-3.99	7.72	2.30
	1.00-1.99	6.67	2.52
	< 1.00	—	—
	Total	7.72	2.39
Ancestry:	Asian	8.50	2.12
	Mexican/Latin American	8.18	2.24
	European/Caucasian	7.82	2.36
	Mixed ancestry	7.71	2.56
	Native American	6.89	2.80
	African American	6.71	2.81
	Caribbean	6.20	1.79
	Arab	4.00	—
	Total	7.72	2.39

Respondents recorded their attitudes about international agricultural issues (Table 3). Students agreed most with the statements that international agriculture involves more than farming ($M = 5.22$); global agriculture is different from one country to another ($M = 5.12$); and that they should know more about agriculture and its importance to the world

economy ($M = 5.07$). Respondents tended to agree less with the statements that U.S. agricultural products are superior in quality to products from other countries ($M = 4.84$); or that they should know more about the cultures of other countries ($M = 4.86$) or about the differences between developed and developing countries ($M = 4.87$) (Table 3).

Table 3

Grand Means for Students' Attitudes about International Agricultural Issues (n = 240)

Statements	<i>M^a</i>	<i>SD</i>
International agriculture involves more than farming.	5.22	.98
Global agriculture is different from one country to another.	5.12	.97
I should know more about agriculture and its importance to the world economy.	5.07	1.03
Global food production allows me to eat a variety of products all year.	5.04	.91
Natural disasters affect the price of food in my local grocery store.	5.04	.95
Politics has a major effect on world agriculture.	5.03	.94
Learning more about agriculture in other countries helps me understand future changes in world agricultural production.	5.02	.93
Marketing U.S. agricultural products to other countries helps the U.S. economy.	5.00	.94
I should know more about how world events affect local agriculture in my community.	4.98	.92
Understanding global politics helps U.S. producers market their products abroad.	4.98	.86
Understanding other cultures helps U.S. producers market their products abroad.	4.98	.89
I should know more about how world agriculture affects food prices in the local grocery store.	4.95	.95
I should know more about my state's agricultural industry and its connections to world trade.	4.95	.97
World events impact the agricultural industry in my community.	4.95	.97
The U.S. culture has a major effect on agriculture in other countries.	4.93	.96
The U.S. should actively help other countries develop their agricultural industries.	4.93	1.01
Competition between producers worldwide keeps food prices low in my grocery store.	4.92	.93
Global food production affects food prices in my local grocery store.	4.91	1.01
I should know more about agricultural products that my home state sells to other countries.	4.90	.99
I should know more about other countries' markets for U.S. agricultural products.	4.90	.92
Marketing agricultural products to other countries will help my state's economy.	4.90	.89
In times of famine, the U.S. should help other countries with food aid.	4.89	1.03
I should know more about agricultural products from other countries that are consumed in my state.	4.88	1.03
I should know more about the differences between developed and developing countries.	4.87	.91
I should know more about the cultures of other countries.	4.86	1.09
U.S. agricultural products are superior in quality to products from other countries.	4.84	1.04

Note. Six-point, Likert-type scales. ^a1=Strongly Disagree, 2= Disagree, 3= Slightly Disagree, 4=Slightly Agree, 5=Agree, 6=Strongly Agree.

In another section, respondents rated their levels of agreement for statements measuring students' attitudes about educational methods used to teach international agricultural issues (Table 4). Respondents agreed most with the statements that a variety of audio-visual materials helps them learn more about global agriculture ($M = 5.04$) and if properly instructed,

they can understand international agriculture career opportunities ($M = 5.03$). They agreed least with the statements that they could learn about international agricultural issues from listening to selected radio programs ($M = 3.96$) or from international agricultural exchange students at Texas A&M University ($M = 4.00$) (Table 4).

Table 4

Grand Means for Students' Attitudes about Educational Methods Used to Teach International Agricultural Issues (n = 241)

Statements	<i>M^a</i>	<i>SD</i>
A variety of audio-visual materials (Web sites, slides, videos, films, etc.) helps me learn more about global agriculture.	5.04	1.01
If properly instructed, I can understand international agriculture career opportunities.	5.03	.92
Considering U.S. agricultural exports, I should be instructed on other countries agricultural production practices.	5.02	1.03
Guest speakers who are knowledgeable about international events help me learn about global agriculture.	5.02	1.03
If properly instructed, I can understand basic international agricultural concepts.	5.02	.93
Considering U.S. agricultural exports, I should be instructed on other countries natural resources.	4.97	.99
Lessons on international agricultural issues should help me function better as a citizen in a global society.	4.95	.99
I am more likely to understand global agriculture if instructed about the economic issues between the U.S. and other countries.	4.94	.89
Considering U.S. agricultural exports, I should be instructed on other countries infrastructure (educational and transportation system, major industries, etc.).	4.92	1.02
I am more likely to understand global agriculture if instructed about countries that need U.S. agricultural products.	4.92	.92
I am more likely to understand global agriculture if instructed about the political issues between the U.S. and other countries.	4.92	.96
Lessons on international agricultural issues should help me understand global agricultural marketing systems.	4.92	.94
Lessons on international agricultural issues should prepare me for future changes in global agriculture.	4.92	.94
I am more likely to understand global agriculture if instructed about major export markets for U.S. agricultural products.	4.91	.93
I am more likely to understand global agriculture if instructed about major agricultural products produced in my country.	4.90	.92
I am more likely to understand global agriculture if instructed about the humanitarian issues between the U.S. and other countries.	4.89	.98
Lessons on international agricultural issues should provide an opportunity to interact with people in other parts of the world.	4.89	.99
Considering U.S. agricultural exports, I should be instructed on other countries standard of living.	4.88	1.02
I am more likely to understand global agriculture if instructed about major agricultural products produced in my home state.	4.87	.93
Considering U.S. agricultural exports, I should be instructed on other countries cultures.	4.86	1.13
My college courses should include global agricultural topics for discussion.	4.86	1.03
Lessons on international agricultural issues should help me appreciate the interdependency of nations around the world.	4.85	1.02
I learn about international agricultural issues from taking vacations in other countries.	4.63	1.42
Lessons on international agricultural issues should not be too complex for me.	4.59	1.10

Table 4

Continued

Statements	<i>M^a</i>	<i>SD</i>
I learn about international agricultural issues from watching selected television programs.	4.44	1.20
I learn about international agricultural issues from attending events such as fairs or shows.	4.36	1.31
I learn about international agricultural issues from participating in study abroad programs.	4.36	1.53
I learn about international agricultural issues from interacting with international students in my Texas A&M University classes.	4.07	1.49
I learn about international agricultural issues from international agricultural exchange students at Texas A&M University.	4.00	1.53
I learn about international agricultural issues from listening to selected radio programs.	3.96	1.38

Note. Six-point, Likert-type scales. ^a1=Strongly Disagree, 2= Disagree, 3= Slightly Disagree, 4=Slightly Agree, 5=Agree, 6=Strongly Agree.

To complete the fourth objective, respondents' global attitudes about international agricultural issues were attained by summing their attitude scores and correlating them with knowledge scores. Also, knowledge scores were analyzed with selected demographic variables to determine if significant relationships existed. No significant relationships existed between respondents' knowledge scores and attitudes about international agricultural issues, or between knowledge and demographics.

Conclusions, Recommendations and Implications

A recent study by RoperASW (2002) found that most 18-24 year olds have a general lack of world context. RoperASW's report identified six factors associated with higher positive performance in broad and integrated geographic knowledge that is critical to gaining a greater perspective of international context; those factors were education, international travel and language skills, Internet usage, media usage, age, and gender. Students, who were older, male, received formal education, spoke more than one language, traveled internationally, used the Internet, or had access to a variety of media sources, were more likely to have a greater a perspective of international context.

Respondents in this study did not fare well in the international agricultural issues knowledge test, but it should be noted that these students are not unlike other students (Lindner & Dooley, 2002; RoperASW, 2002; Redmann, Schupp, & Richardson, 1998). While knowledge was lacking, there exists an opportunity to reverse this trend in our collective classrooms. In this study, few agricultural education students

had international experience: approximately 16% had participated in a Work Experience Abroad (WEA) or in an International Foreign Youth Exchange (IFYE). An implication exists that a lack of international experiences results in lower levels of international knowledge and contributes to a value system that does not embrace internationalization. A pre-test/post-test with control group research project is needed to determine how practical international experiences, such as those found in WEA and IFYE, contribute to student knowledge and value structures.

Texas A&M University undergraduates in agricultural education recorded their strongest agreement levels for statements about international agricultural issues in: *international agriculture involves more than farming and global agriculture is different from one country to another*. Students agreed less with the statements: *U.S. agricultural products are superior in quality to products from other countries* and *I should know more about the cultures of other countries*. The results show mixed evidence on students' attitudes toward international agricultural issues, but they were similar to what has been found in previous studies (Elliot & Yanik, 2002; Radhakrishna & Dominguez, 1999; Redmann, Schupp, & Richardson, 1998; Harbstreit & Welton, 1992). It is possible that respondents did not make critical connections between media coverage of global events and their topics of discussion in the classes assessed in this study. There could be several reasons for this possibility, but one logical conclusion can be drawn from this speculation: educators and students alike must increase their awareness levels of global events

and their potential impact on agricultural practices worldwide. An implication exists that formal education can be used in limited ways to increase students' international knowledge by making stronger connections with "real world" events and classroom discussions of international agricultural issues. Additional research is needed to identify appropriate methods for increasing a student's international knowledge throughout the duration of his/her university experience.

Texas A&M University students recorded their strongest agreement levels for statements about the educational methods used to teach international agricultural issues in: *a variety of audio-visual materials helps me learn more about global agriculture and if properly instructed, I can understand international agriculture career opportunities*. Respondents agreed less with the statements: *I learn about international agricultural issues from listening to selected radio programs* and *I learn about international agricultural issues from international agricultural exchange students at Texas A&M University*. As was found in previous studies (Elliot & Yanik, 2002; Radhakrishna & Dominguez, 1999; Harbstreet & Welton, 1992), the results present similar evidence on the methods used to teach students about international agricultural issues. Students appreciate a variety of teaching methods, especially audio-visual materials, but have little or no need for educational events broadcast via radio programs. However, a striking disparity exists in the sources of information students may use to become more knowledgeable about international agricultural issues. Respondents did not highly value the sources of *international agricultural exchange students, international students in general at Texas A&M University, or study abroad programs*. Agricultural education undergraduates may need assistance in determining what sources would be most helpful in establishing a valid and reliable perception, which is built from their attitudes. Prior research on perception formation (Sanbonmatsu & Fazio, 1990; Schoell & Gultinan, 1995) has specific importance to this study, and may have similar importance in other studies assessing the attitudes of respondents. An implication exists that formal education may be limited in its ability to change students' beliefs about international agricultural issues if proper care is not taken in helping students understand the

perception formation process. Additional research is needed to identify appropriate methods for increasing students' beliefs about internationalization.

Educational Importance

Undergraduate students in the Department of Agricultural Education at Texas A&M University had a gross lack of knowledge about international agricultural policies, products, peoples, and cultures, but their international agricultural knowledge base is not unlike many students across the U.S. (Lindner & Dooley, 2002; RoperASW, 2002; Redmann, Schupp, & Richardson, 1998). Despairingly, respondents indicated that they could learn more about international agricultural issues from watching news stories on television than they could from interacting with international students at Texas A&M University. Educators may use this finding to their advantage by incorporating more up-to-date audio-visual materials in the teaching and learning processes for international agricultural issues.

Students are deluged with print and electronic forms of global conflicts daily, but the results of this study show that they do not concern themselves with learning about international policies, products, peoples, and cultures. This may be a sad commentary on our current study body, but it reaffirms the evidence that students simply do not associate what they are learning with what is happening in the "real world." RoperASW (2002) found similar results.

Young Americans [18- to 24-year old adults] show weak performance with regard to the Middle East and Asia. Despite the countries' almost daily presence in the news and the potential impact of current conflicts on everyone's lives, only one in seven can find Iraq (13%) or Iran (13%) on a map of Middle East/Asia. By contrast, more young Americans (34%) could determine that the island used for the last season of the television show "Survivor" is in the South Pacific. (p. 3)

Stronger connections between the daily global events reported in mass media and classroom discussions could increase all students' awareness of international events. These connections could lead to logical understanding of the political, social, economic, and cultural effects on the production and consumption of agricultural products worldwide.

Sanbonmatsu and Fazio (1990) found it was possible for people to base their perceptions on already-present global attitudes toward topics when knowledge or experience with the topic was low. Schoell and Gultinan (1995) found that consumers' perceptions are influenced by family, friends, class, and the culture in which they live. Clearly, students in this study lacked knowledge and experience with international agricultural issues, yet their attitudes toward learning more about international agricultural issues from experienced sources (international exchange students or study abroad programs) was not appreciably high. Greater emphasis must be placed on including guest speakers from other countries in the classroom. More effort is needed to help students understand how their perceptions are formed. Additional research is needed to determine if undergraduates are aware of the processes used to form accurate perceptions about international agricultural issues.

Regardless of a student's current knowledge or attitudes about international agricultural issues, the need for students to have broader perspectives is evident. Based on the review of the literature and study findings, it is recommended that students' increase their knowledge about international agricultural issues through increased education on targeted international issues. Additionally, students' knowledge about international agricultural policies, products, peoples, and cultures can be advanced through increased experiential learning via out-of-country learning situations. Educators can help students' increase their international agricultural knowledge by using a variety of media to teach students about internationalization; encouraging students to take foreign language courses; and supporting students' participation in study abroad classes. Additional research is needed to optimize content, experiences, and delivery strategies. The researchers remain hopeful that our contributions come to fruition when students' value systems become more reflective of a global society.

Given the rapidity of communicating global events and their possible affects to food distribution and consumption worldwide, one of the goals for an undergraduate program should be to teach students about international agricultural issues. More effort needs to take place in helping students understand the

connections between "real world" events and the topics discussed in an agricultural curriculum. The internationalization of a curriculum must be more than a document; it must take life in the form of active participation and attitude change toward international agricultural issues. A better understanding of international agricultural policies, products, people, and cultures may help students be better prepared to enter their careers with a global perspective.

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