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Shadow Infrastructures: How International Students Build Informal Systems of Support in U.S. Higher Education

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Alexandria Rose Wiesel-Brown is a doctoral candidate in Educational Leadership at the University of Southern California. Her research focuses on international students, higher education policy, institutional governance, and student belonging in U.S. higher education. Her work examines how institutions shape international students' experiences through immigration policy, tuition dependence, and systems of support.

Abstract: International students are often expected to navigate complex tuition systems, immigration regulations, institutional bureaucracy, and academic expectations with limited formal support. Although colleges and universities frequently promote internationalization and student success, many international students report that institutional guidance is inconsistent, fragmented, or hard to access. In response, students often build informal support networks to interpret rules, share information, avoid mistakes, and persist through uncertainty.

This conceptual and practice-oriented paper examines how international students develop what may be understood as “shadow infrastructures”: unofficial systems of peer advising, emotional support, information-sharing, and institutional navigation that arise when formal structures are insufficient. Drawing on prior qualitative research with former F-1 visa international students at a private performing arts institution in the United States, the paper explores how these infrastructures function, why they emerge, and what their existence reveals about institutional gaps.

The paper argues that these informal systems should not be romanticized as mere evidence of student resilience. Instead, they should be understood as signals of uneven institutional support and the transfer of administrative labor to students. The article concludes with implications for higher education leaders, including the need for clearer advising systems, better coordination across offices, and more intentional support structures for international students.

Keywords: International students; higher education; informal support networks; peer advising; institutional support; immigration compliance; belonging



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1. Introduction

International students occupy a complex position in U.S. higher education. They are celebrated as symbols of diversity, global engagement, and institutional prestige, while also serving as a key source of tuition revenue. At the same time, they are expected to navigate unfamiliar educational systems, immigration requirements, financial pressures, and social adjustment, with relatively little room for error.

Many colleges and universities offer offices dedicated to international student support, yet students often describe institutional guidance as inconsistent, fragmented, or difficult to understand. Immigration advising may be separate from academic advising, financial aid, and career planning. Policies may vary across departments, and students may receive conflicting answers depending on which staff member they encounter.

When institutional systems fail to provide consistent support, international students often create informal networks to fill the gaps. They rely on friends, classmates, roommates, alumni, online groups, social media, and peers who have already navigated the same challenges. These networks become unofficial support systems that help students understand immigration paperwork, housing, finances, class registration, and life after graduation.

This paper refers to these informal networks as “shadow infrastructures.” Shadow infrastructures are unofficial, student-created systems that fill gaps in formal institutional support. Although they often help students survive and persist, their existence raises important questions about institutional responsibility.

This paper asks:

1. Why do shadow infrastructures arise among international students?
2. What functions do these informal systems perform?
3. What do shadow infrastructures reveal about institutional gaps and about accountability?

2. Conceptual Background

International student research has long documented the challenges students face related to finances, belonging, discrimination, culture shock, and immigration policy. Studies have shown that students often struggle with feelings of isolation, uncertainty, and confusion as they

navigate both academic and nonacademic systems.

However, less attention has been paid to the informal strategies students use to manage these pressures. In practice, many international students do not rely primarily on formal institutional systems but instead turn to one another.

Peer networks often become essential because they are:

- Faster than formal offices
- More trusted than institutional staff
- Based on shared lived experience
- Available outside normal office hours
- Better able to explain rules in culturally familiar

terms

Students frequently use peer networks to:

- Understand CPT, OPT, visa renewals, and travel rules
- Find housing and roommates
- Learn how to pay tuition and manage finances
- Identify jobs or internships that comply with visa restrictions
- Interpret confusing emails from offices
- Share advice about faculty, classes, and campus culture
- Receive emotional support during crises

These shadow infrastructures can function almost as parallel advising systems.

2.1. International Students and the Administrative Burden of Higher Education

International students often encounter a level of administrative complexity that exceeds that experienced by many domestic students. In addition to selecting courses, meeting degree requirements, and managing tuition payments, international students must also comply with immigration regulations, visa reporting requirements, work restrictions, travel permissions, and documentation deadlines. These responsibilities create an additional layer of administrative burden.

Administrative burden refers to the learning, compliance, and psychological costs individuals incur when interacting with institutions and public systems (Herd & Moynihan, 2019). For international students, these burdens are especially high because misunderstandings or missed requirements can have severe consequences. A missed deadline, an incomplete form, or a misunderstanding about employment eligibility may affect a student’s legal immigration

status, future work authorization, or ability to remain in the United States.

International students are expected to understand highly specialized policies governing Curricular Practical Training (CPT), Optional Practical Training (OPT), visa renewal, travel signatures, on-campus work limitations, full-time enrollment requirements, and changes in address or academic standing. Yet institutions often assume students will independently navigate these systems after a brief orientation or a series of generic emails.

Research suggests that the administrative burden is not distributed equally. Students with strong English proficiency, prior familiarity with U.S. institutions, higher socioeconomic status, or access to knowledgeable peers may be better equipped to navigate institutional bureaucracy. Other students may face significant barriers to understanding how systems work, especially when policies are written in technical language or when offices provide conflicting guidance (Herd & Moynihan, 2019).

For many international students, shadow infrastructures emerge because they reduce administrative burdens. Students rely on peers to explain rules in simpler language, translate bureaucratic terminology, and provide reassurance about processes that feel confusing or intimidating. In this way, peer networks serve not only as emotional support systems but also as mechanisms for reducing the administrative demands imposed by institutions.

However, this reliance on informal systems raises important questions about fairness and institutional accountability. Students should not be required to build their own bureaucratic support structures merely to access the information needed for academic success and legal compliance. If shadow infrastructures become the primary means by which students obtain accurate information, institutions risk normalizing inequitable access to support.

2.2. Tuition Dependence and Institutional Priorities

International students are often discussed in higher education using the language of enrollment, recruitment, and revenue generation. Over the past two decades, many colleges and universities have increasingly relied on international students for tuition revenue, particularly as public funding for higher education has declined and institutions have sought new revenue streams (Cantwell,

2015; Glass, Kociolek, Wongtrirat, Lynch, & Cong, 2015).

Unlike many domestic students, international students are often ineligible for federal financial aid, state grants, or subsidized tuition. As a result, they frequently pay full tuition and fees. At some institutions, international students are charged additional fees for health insurance, orientation programs, housing, or administrative services. These financial contributions make international students valuable to institutions, but they can also create tensions between recruitment goals and support obligations.

Many colleges and universities invest heavily in international student recruitment, global branding campaigns, and partnerships with overseas agencies. However, the resources devoted to recruitment do not always match those devoted to retention and student support. Institutions may celebrate international enrollment growth while failing to provide adequate staffing, advising, mental health services, or culturally responsive programming.

This imbalance can contribute to the emergence of shadow infrastructures. When students feel that institutions prioritize recruiting them over supporting them, they may become skeptical of formal systems and turn to peers for guidance. Students may perceive institutional offices as understaffed, difficult to access, or more concerned with compliance than with student well-being.

Scholars have argued that international students often occupy a contradictory position within higher education. They are welcomed for their tuition dollars and global prestige while remaining vulnerable to exclusion, marginalization, and legal precarity (Marginson, 2012). This contradiction becomes especially visible when students face crises related to housing, employment, mental health, or immigration status.

The COVID-19 pandemic further highlighted this tension. During the pandemic, many international students faced travel restrictions, visa uncertainty, housing instability, financial hardship, and limited access to campus resources. Some institutions responded with flexibility and support, while others left students to navigate rapidly changing policies on their own (Zhou & Cole, 2017). In many cases, peer networks became essential for survival during this

period.

Understanding shadow infrastructures therefore requires attention to the broader political economy of higher education. These informal systems do not arise simply because students enjoy helping one another. They arise because institutional structures often leave students with no other reliable option.

3. Shadow Infrastructures in Practice

Prior qualitative findings among international students suggest that these systems are most pronounced when students experience institutional inconsistency.

For example, students often report:

- Receiving different answers from different offices
- Feeling that the staff do not fully understand visa restrictions.
- Struggling to coordinate information across departments
- Feeling afraid to make mistakes because of the high consequences for immigration status
- Depending on peers for practical information that institutions do not clearly explain

In many cases, students rely on friends or older students who have already gone through the process. These peers serve as informal advisors, explaining deadlines, sharing templates, recommending trustworthy staff members, and warning others about common mistakes.

Students also create group chats, spreadsheets, informal guides, and social media communities that serve as collective survival tools. Through these systems, students share information on:

- Travel signatures
- Visa interviews
- CPT and OPT paperwork
- Tax forms
- Health insurance
- Housing options
- Financial emergencies
- Mental health resources

These networks are often especially important for students who are new to the United States, have limited family support, or attend highly specialized institutions with small international student populations.

3.1. Belonging, Isolation, and Emotional Survival

Beyond helping students navigate administrative systems, shadow infrastructures often foster emotional

safety and belonging. International students frequently report loneliness, homesickness, stress, and social isolation, particularly during their first months in the United States (Glass & Westmont, 2014; Lee & Rice, 2007).

Belonging is a key factor in student persistence and well-being. Students who feel connected to their campus communities are more likely to engage academically, seek help when needed, and persist through challenges. Yet many international students struggle to find spaces where they feel understood and supported.

Language barriers, cultural differences, racial discrimination, unfamiliar classroom norms, and limited family support can make it difficult for students to feel a sense of belonging. Students may also feel pressure to appear successful and self-sufficient, even when they are struggling. In some cases, students avoid seeking help because they fear judgment, stigma, or negative consequences related to their immigration status.

Peer support networks can help reduce isolation. International students often form close relationships with peers who share similar experiences, languages, or cultural backgrounds. These relationships can provide emotional validation, practical advice, and a sense of community.

Students may feel more comfortable asking peers questions they might hesitate to ask staff. For example, they may seek advice on how to talk with professors, manage homesickness, navigate dating norms, find affordable food, or respond to experiences of racism or discrimination. These conversations often take place in informal spaces such as dorm rooms, student clubs, text messages, WhatsApp groups, and social media communities.

Belonging is especially important for students at specialized institutions, small colleges, or campuses with relatively few international students. In these settings, students may have fewer opportunities to connect with peers who share similar experiences. As a result, even small informal networks can be critical sources of support.

Research has consistently shown that social support plays a major role in helping international students cope with stress and persist through adversity (Smith & Khawaja, 2011). However, institutions should not assume that students will automatically find these

support systems on their own. Students who are shy, isolated, new to campus, or less socially connected may remain excluded from informal networks.

For this reason, institutions should carefully consider how to create formal structures that foster belonging and reduce social isolation. Peer mentoring programs, affinity groups, cohort-based orientation, family-style advising models, and international student leadership opportunities may help students build relationships before they reach a point of crisis.

3.2. Immigration Policy, Fear, and Legal Vulnerability

Immigration policy shapes nearly every aspect of the international student experience. Students' ability to remain enrolled, work legally, travel internationally, and remain in the United States after graduation depends on their compliance with immigration regulations.

Unlike domestic students, international students often live with the understanding that even a small mistake can have serious consequences. Falling below full-time enrollment, accepting unauthorized employment, missing a reporting deadline, or misunderstanding travel rules may put students at risk of losing legal status.

This creates a climate of fear and caution that shapes how students interact with institutions. Some students may avoid asking questions for fear of exposing a mistake. Others may hesitate to report mental health concerns, financial hardship, or academic struggles, worried that these issues could affect their visa status.

Prior research has shown that international students often experience immigration policy not only as a set of rules but also as a form of constant surveillance (Raimondi, 2021). Students may feel pressure to closely monitor their behavior, maintain documentation, and avoid any action that could be interpreted as noncompliance.

This legal vulnerability helps explain why shadow infrastructures become so important. Students often trust peers who have already completed visa renewals, CPT applications, or OPT paperwork because those peers can offer practical advice grounded in firsthand experience. Students may view peer guidance as more trustworthy than formal communication because it is grounded in real-world outcomes.

However, relying on peer advice also carries risks. Students may receive inaccurate information,

misunderstand legal requirements, or rely on rumors rather than verified guidance. A student who follows incorrect advice on employment eligibility or travel rules could face serious consequences.

Therefore, institutions have an obligation to ensure that immigration information is clear, accessible, and timely. International students should not have to rely on group chats and informal spreadsheets to understand policies that directly affect their legal status.

4. Why Shadow Infrastructures Matter

Shadow infrastructures reveal that international students often perform administrative labor that institutions should be helping to manage.

Although peer support can be valuable, institutions should not rely on students to compensate for fragmented systems. When survival depends on knowing the right person, joining the right group chat, or getting advice from a more experienced student, support becomes uneven.

Students with stronger social networks may be able to avoid mistakes, while more isolated students may experience greater confusion, delayed paperwork, missed opportunities, or legal vulnerability.

This means that shadow infrastructures can reproduce inequality even within the international student population. Students with more social capital, stronger English skills, or greater familiarity with bureaucracy may be better positioned to access support.

As a result, shadow infrastructures should be viewed not only as examples of resilience but also as indicators of institutional failure.

5. Implications for Practice

Institutions can learn from the presence of shadow infrastructures by identifying where students consistently need informal support.

Several practical changes could reduce students' reliance on peer networks:

1. Better coordination across advising offices

International students should not have to piece together information from immigration, academic, career, and financial offices on their own.

2. Clearer communication

Policies and procedures should be explained in accessible language, with examples, timelines, and frequently asked questions.

3. International student case management

Institutions could create more integrated support systems in which one advisor helps students navigate multiple issues.

4. Formal peer mentoring programs

Because students already rely on peer networks, colleges can establish formal peer mentoring systems that provide structure and reduce misinformation.

5. Proactive outreach

Institutions should not wait until students are in crisis to offer support.

6. Recognition of emotional labor

Navigating immigration systems, financial uncertainty, and cultural adjustment creates significant emotional strain. Institutions should recognize this burden and expand mental health resources for international students.

5.1. Implications for Higher Education Leadership and Policy

The presence of shadow infrastructures has significant implications for higher education leaders. Institutions often view informal peer support as evidence that students are resourceful, resilient, and engaged. While this may be true, it is also important to recognize that shadow infrastructures often emerge in response to institutional gaps.

If students repeatedly rely on peers to interpret policies, clarify deadlines, explain procedures, and resolve bureaucratic problems, institutions should ask why formal systems are failing to meet these needs.

Higher education leaders should consider conducting regular assessments to identify where international students experience the greatest confusion or frustration. Surveys, focus groups, and advising data can help pinpoint recurring problems related to immigration paperwork, academic advising, housing, career services, or financial systems.

Institutions should also assess whether information is accessible in multiple formats. Students may benefit from visual guides, translated materials, short videos, FAQ pages, peer ambassadors, and step-by-step checklists.

Another important area for reform is cross-campus coordination. International students often interact with multiple offices, including admissions, the registrar, housing, counseling, financial aid, career services, and international student offices. Yet these offices may

operate independently and fail to communicate with one another.

A more integrated support model could reduce the need for students to navigate systems alone. Case management approaches centralized advising hubs, and cross-trained staff may help institutions provide more coordinated support.

Finally, higher education leaders should critically consider the ethical dimensions of international student support. If institutions benefit financially from international enrollment, they also have a responsibility to ensure that students receive adequate guidance, protection, and care.

5.2. Future Research Directions

Additional research is needed to better understand how shadow infrastructures operate across diverse institutional contexts. Students at community colleges, private universities, public research institutions, and specialized arts schools may encounter different forms of institutional support and informal networking.

Future studies could also examine how shadow infrastructures vary by national origin, race, gender, language proficiency, socioeconomic status, and field of study. For example, students from countries with larger established student communities may have greater access to informal support networks than those from countries with smaller on-campus populations.

Researchers should also examine how digital platforms shape peer support. WhatsApp groups, Discord servers, WeChat communities, Reddit threads, and Instagram accounts may all serve as important sources of information-sharing and emotional support.

Finally, more research is needed to explore how institutions can formalize the positive aspects of peer support without imposing additional labor on students. Formal peer mentoring programs, paid student ambassador roles, and collaborative advising models may offer useful alternatives.

6. Conclusion

International students often create shadow infrastructures because formal institutional systems are not always designed to meet the complexity of their needs. These informal networks help students survive, adapt, and persist, but they also reveal the limits of institutional support.

Rather than celebrating resilience alone, higher

education leaders should ask why students are forced to build parallel systems in the first place. If universities are committed to supporting international students, they must move beyond symbolic inclusion and invest in coordinated, transparent, and reliable support systems.

Shadow infrastructures may help students navigate uncertainty, but they should not be the primary system international students rely on.

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