Sustainability Principles and the Future of Phoenix, Arizona:

Framing the Salt River's Urban Waterway Redevelopment

By

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ABSTRACT

As urban populations rapidly increase in an era of climate change and multiple social and environmental uncertainties, scientists and governments are cultivating knowledge and solutions for the sustainable growth and maintenance of cities. Although substantial literature focuses on urban water resource management related to both human and ecological sustainability, few studies assess the unique role of waterway restorations to bridge anthropocentric and ecological concerns in urban environments. To address this gap, my study addressed if well-established sustainability principles are evoked during the nascent discourse of recently proposed urban waterway developments along over fifty miles of Arizona's Salt River. In this study, a deductive content analysis is used to illuminate the emergence of sustainability principles, the framing of the redevelopment, and to illuminate macro-environmental discourses. Three sustainability principles dominated the discourse: civility and democratic governance; livelihood sufficiency and opportunity; and social-ecological system integrity. These three principles connected to three macro-discourses: economic rationalism; democratic pragmatism; and ecological modernity. These results hold implications for policy and theory and inform urban development processes for improvements to sustainability. As continued densification, in-fill and rapid urbanization continues in the 21st century, more cities are looking to reconstruct urban riverways. Therefore, the emergent sustainability discourse regarding potential revitalizations along Arizona's Salt River is a manifestation of how waterways are perceived, valued, and essential to urban environments for anthropocentric and ecological needs.

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CHAPTER 1

INTRODUCTION

As urban populations rapidly increase in an era of climate change and multiple social and environmental uncertainties, scientists and governments are developing knowledge and solutions for the sustainable growth and maintenance of cities (Gleick 2003; Grimm et al. 2008; Grabowski et al. 2017). One key component for sustainable urban futures is the proper management of water resources because water is critical for biological functionality of living beings, production of food and energy, and transportation of human goods and geophysical nutrient loads (Rockström 2009; Solomon 2010; Butler 2017). Acknowledging water's importance, human societies consistently establish themselves alongside waterways (McNeill 2001; Khagram 2004; Solomon 2010) and Phoenix is no exception. As a desert city, Phoenix, Arizona exhibits a dynamic, multi-scalar, multi-sector relationship with all forms of water resources (Jacobs and Holway 2004; Gober and Trapido-Lurie 2006).

The Phoenix metropolitan area is a rapidly growing conglomerate of over twenty municipalities in southern Arizona and a population of over four million residents. The region is situated within the Sonoran Desert, which is a highly unique ecosystem and attracts many new residents. One of Arizona's key water resources is the Salt River (figure 1, red line). Also known as the Rio Salado, the Salt River cuts through the heart of the Phoenix metro area and is an integral part of central Arizona's physical and social geography (Roberge 2002; Hirt et al. 2008; Wessells and Lejano 2017). In particular, severe environmental degradation has occurred in and along the river due to industrialization and dumping. The environmental conditions in many areas in the central

river corridor, primarily in South Phoenix, are poor due to these industrial uses, which impacts the quality of life of residents in surrounding neighborhoods.

The region holds a unique history of Hohokam settlements and the canals they built played a pivotal role in the re-settlement of the region during the nineteenth century (Gober and Trapido-Lurie 2006). The river has been heavily modified and dammed, with seven dams completed by the early 1900's for human use and flood prevention. The river corridor has not had a natural flow since that time. Although much of the Salt River is now dry, there have been multiple attempts over the last fifty years to encourage large restoration projects. Some of the most notable revitalization and restoration efforts include Tempe Town Lake, Tres Rios Wetlands, and the Rio Salado Habitat Restoration Area.

Salt River, Arizona

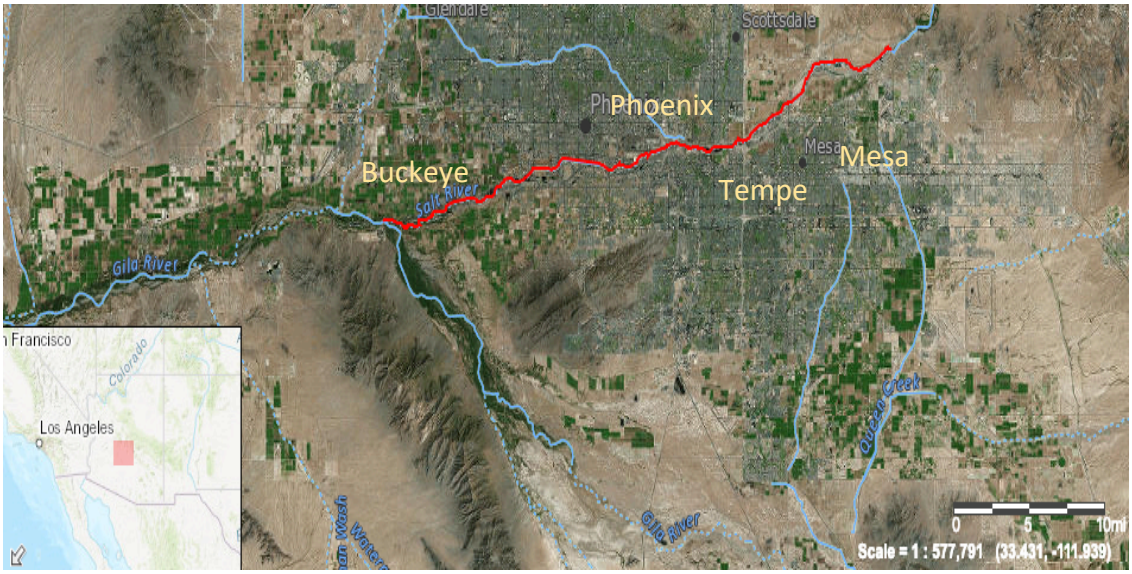


Figure 1. The Salt River, Arizona. Map generated by USGS, modified by author for municipalities in yellow. Salt river delineated in red. https://txpub.usgs.gov/DSS/Streamer/web/

Recent momentum around regional redevelopment of the Salt River was sparked in 2017 by the late Arizona Senator John McCain with the support of Arizona State University (ASU). This initiative has been called "Rio Reimagined" in homage to the successful,

multi-decade involvement of the ASU Design School in the development of Tempe Town Lake. The City of Tempe's development and restoration on the Salt River, a 225-acre artificially filled lake, is one of the most ambitious developments on the river. Additionally, there are multiple areas that have been restored, each playing different roles regionally. Following these examples, there is currently a regional desire to direct attention toward revitalizing the river for the common goal of long-term ecological viability, urban well-being, and economic vitality of the area across the fifty-eight-mile corridor.

My study analyzed the discourse of the current regional collaboration focused on Phoenix's iconic river and the process' emergent framing to assess if well-established sustainability principles were evoked and ultimately adopted via the question: *What sustainability principles do or do not emerge from the media and stakeholder discourse surrounding Rio Reimagined?*

The data sources for analysis were online news media and interviews of stakeholders related to Rio Reimagined (Riffe et al. 2005; Bernard et al. 2017). Stakeholders are defined as "those who are affected by or can affect a decision" (Reed 2008, p 2418). Content analysis was conducted to quantitatively reveal the emergence of (or lack of) sustainability principles in the nascent discussion of Rio Reimagined. Analytical codes were built from Gibson's (2006) sustainability assessment framework and Wiek and Larson's (2013) urban water sustainability principles. Framing codes were built from Benford and Snow's (2000) collective action framing.

Secondly, my study addresses the questions: (*i) In what ways do the emergent micro discourses reflect social and environmental macro discourses? and (ii) Does Rio Reimagined's discursive landscape evoke particular social-ecological needs or desires?*

To address these questions, interview data were analyzed through the lens of discourse literature (Hajer 1995; Harré 1999; Dryzek 2013) and perspectives on restoration (Gobster and Hull 2000; Wooley and McGinnis 2000). Interplay among discourses reflect how institutional rationalities, individual worldviews, and power dynamics resonate and dissipate through political and social networks (Van Kerkhoff and Lebel 2006; Ingram et al. 2015; Wessels and Lejano 2017). As the Rio Reimagined project shifts from rallying and visioning (2017-2019) into a more cohesive set of objectives (2019-), the discursive tools surrounding the project will reflect the apparent power paradigms and relative hierarchies. The types of prominent discourses at the current phase of education, exposure, and civic support will determine how specific frames, organizational hierarchy, and attitudes subsequently emerge (Hajer 1995; Alvesson and Karreman 2000; Benford and Snow 2000; Benford and Snow 2013). Lastly, the analysis of emergent needs and desires in the social-ecological landscape that are present at this stage of discussion surrounding the restoration may be elevated or suppressed as the project progresses. As such, key highlights have been illuminated based on the urgency and frequency of concerns most present in the interview data.

Overall, this study is important because it addresses key issues in the United States and internationally. As urban densities around the globe increase alongside strained water resources, a tension emerges because one way that urban residents relate to the natural environment is through access to their local river. However, many urban areas have over-modified (O'Neill 2006) or degraded their urban rivers. To respond to urban development, cities are now looking to restore rivers in a way that increases local well-being. As such, rivers are being re-framed as amenities (Breen and Rigby 1996). My study is therefore situated between urban sustainability and water resource management. Through my

research questions and methods, I seek to improve the understanding of how the social-ecological system of the Salt River urban waterway is perceived. The social-ecological perception is key to understanding which aspects of sustainability are prioritized alongside economic and social concerns in a densely populated and rapidly growing water-scarce region.

The key contributions of this study are for both literature and policy. First, the integration well-established social science theory and methodology with sustainability literature advances sustainability scholarship to include a rigorous interdisciplinary approach. Secondly, by operationalizing sustainability principles through discourse, refinements for the principles are exposed. Lastly, by observing the sustainability discourse based on theory, exact recommendations for policy and the future of Rio Reimagined are possible. With these contributions for literature and policy, the study can also be extended to other urban restoration and waterway cases.

CHAPTER 2

THE SALT RIVER AND THE DEVELOPMENT OF PHOENIX

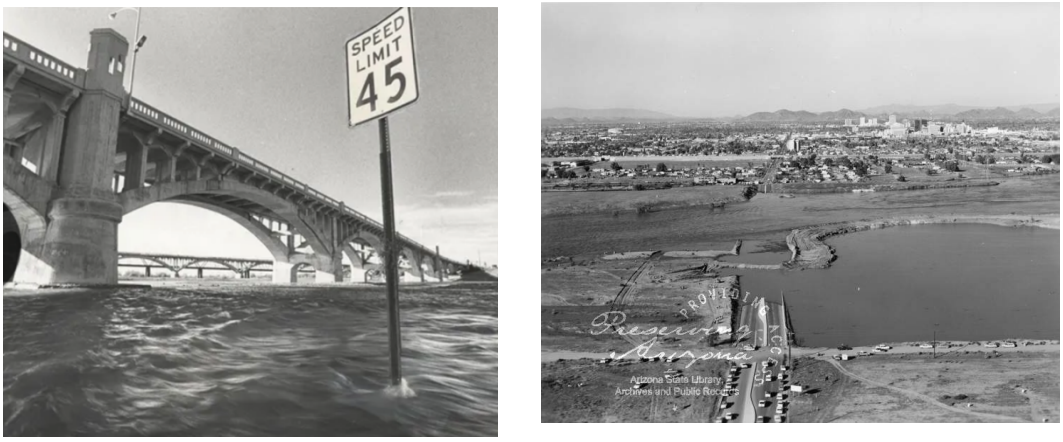


Figure 2. Flooding on the Salt River in 1965 in Tempe. From Arizona State Historical archives:http://azmemory.azlibrary.gov/digital/collection/histphotos/id/11338/rec/2

Noted for its sunshine, temperate weather, and open spaces, growth and development in Phoenix skyrocketed after World War II (Gober and Trapido-Lurie 2006). The Phoenix metropolitan area has grown to become the fifth most populous region in the United States and is part of the fastest growing county in the United States. As Phoenix continues to grow, sustainable urban development and resource management are imperative as the region plans to hold well over four million people.

Drought concerns have always been at the forefront of development and policy decisions influencing Phoenix's growth, so taming the river for storage and consumption happened primarily with the Roosevelt and Granite Reef dams in the east and five more dams along the corridor. Even with the dams in place, protecting the young city from flooding was crucial to Phoenix's development (Roberge 2002; figures 2 and 3). After implementing other flood control and water management tools common throughout the 1900's (O'Neill 2006), such as infrastructure and policy mechanisms, development along the river increased steadily. Businesses and industry positioned themselves along the river

and used the dry river bottom for resource extraction or dumping. A strong presence from the mining and gravel industries still remains to this day and the outfall of industrial impacts, including landfills, is still visibly present, particularly in South Phoenix near the river. For the last fifty years, suburban growth patterns extended outward from the city core, north and south of the river. Additional municipalities grew over time as well in the west and east valleys, each with their own relationship to the river. A distinct social geography emerged in the Phoenix metro area, with pockets around the river blighted with poverty and institutionalized racism (Shrestha et al. 2012; York et al. 2011).

Following this era of industrial development and dumping, the urban corridor created by the river was considered a scar cutting through the city. A push for restoration on the river emerged. One of the most prominent redevelopments emerged through the 1980s and 1990's at Tempe Town Lake (Figure 3). Although the region had voted down propositions for a united project on the river, the City of Tempe voted for the recreational waterfront amenity. The lake is now the second most visited tourist destination in the state of Arizona next to the Grand Canyon and is noted for bringing over 1.5 billion dollars of investment.

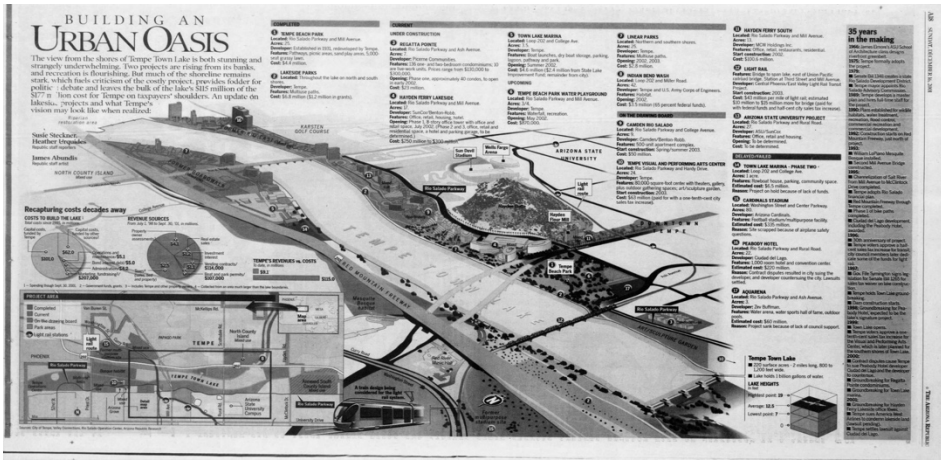


Figure 3. Historic news article highlighting the plans for Tempe Town Lake from the ASU Salt River Stories.
https://saltriverstories.org/files/original/17eb723e3d17e8e70bcde4d90878dab4.jpg

Other notable developments are highlighted in Figure 4, namely Tres Rios Wetlands and the Rio Salado Audubon Center and the City of Phoenix's Rio Salado Habitat Restoration Area. These areas are more ecologically oriented than Tempe Town Lake. The Audubon Center, based on its association with a national wildlife and birding non-profit, holds a fundamental ecological and education focus. Tres Rios Wetlands is a constructed treatment wetland that treats a substantial portion of Phoenix's wastewater. This type of treatment facility was chosen because the construction cost approximately four billion dollars less than other treatment facilities, so it was economically motivated with ecological benefit. The Tres Rios wetlands also serves as an extremely innovative and efficient water reclamation facility due to evaporation and aridity in the desert environment (Bois et al. 2017). These restored areas have shown increased and varied biodiversity compared to unrestored areas, so they hold an ecological impact (Bateman et al. 2015).

Figure 4. Examples of existing and planned developments around the Salt River corridor prior to Rio Reimagined. Images from google images of public locations, City of Phoenix, and City of Tempe.

From Rio Salado 2.0 to Rio Reimagined

For the scope of this study, I focused on the emergent recent and nascent discourse surrounding Rio Reimagined (Figure 5). The project was originally called Rio Salado 2.0, when the late senator McCain approached ASU in August 2017 and asked ASU president Michael Crow to serve as a convener leader for the initial stages of the project. Therefore, the role of the university is important to the outcomes and framing for Rio Reimagined.

My data collection follows the multiple key milestones in the last two years such as the March 2018 public launch, an architectural competition for project ideas, and the support announcements by key organizations such as Arizona Forward. Recent media includes the support of Senator McSally through her letter to the Environmental Protection Agency as well as a media piece Phoenix's new mayor, Kate Gallego citing Rio Reimagined as one of her key economic development priorities for the valley.

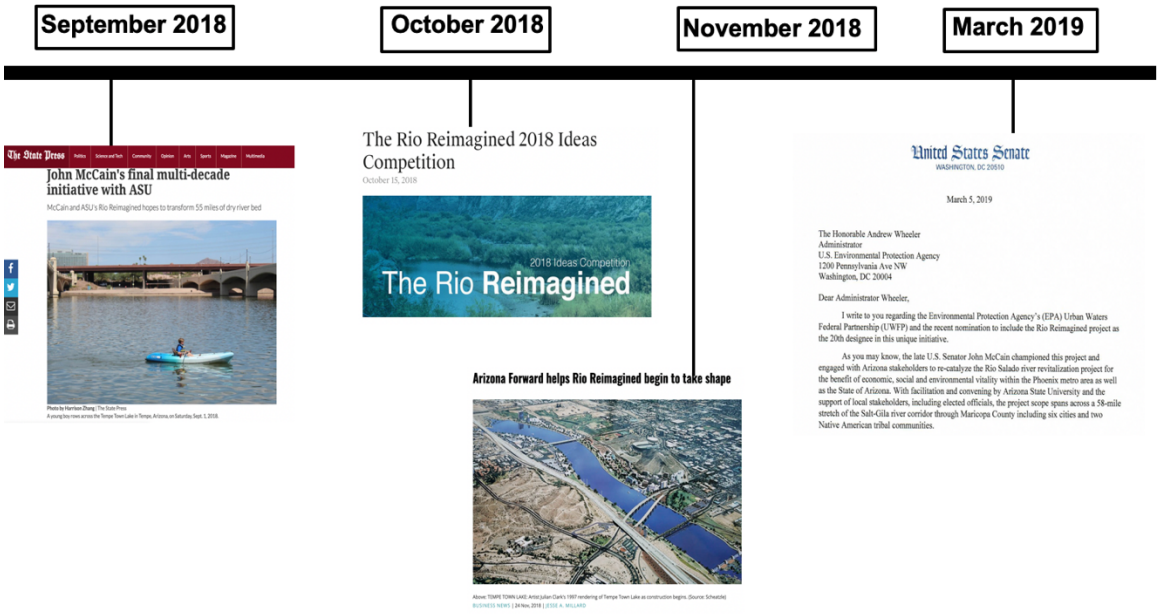


Figure 5. Highlighted emergent discourse and background on Rio Salado 2.0 to Rio Reimagined. Images from ASU Now, The State Press, AIA, Arizona Republic, AZ Big Media, and McSally.senate.gov.

CHAPTER 3

KEY THEORIES AND LITERATURE REVIEW

Urban sustainability and social-ecological systems

In respect to long-term urban planning, multiple definitions of sustainability across various literatures can be evoked. Social-ecological systems (SES) theory recommends including a balance of social, economic, and ecological concerns (Gunderson and Holling 2002; Andereis et al. 2004; Ostrom 2009; Rockstrom et al. 2009; Wu 2014). Additionally, multiple frameworks for urban sustainability analysis emerge from resilience and socio-technical literatures (including SES theory). These frameworks emphasize varying approaches to sustainability, but each contain at a minimum an acknowledgment that successful urban systems rely on balancing social and ecological components (Andereis et al. 2004; Brown et al. 2008; Ahern 2011; Wiek et al. 2012; Larson et al. 2013; Gober et al 2013; Grabowski et al. 2017). Therefore, for the scope of this study, an SES approach was adopted.

Urban social-ecological infrastructure

In recent years, the perception of infrastructure as SETS (social-ecological-technical systems) has emerged (Ahern 2011; Grabowski et al. 2017) and therefore can inform future development of Rio Reimagined, namely because the exact plans and visions of what the waterway redevelopments are yet to be determined. As the project progresses, multiple points of research as related to modular, resilient, and adaptable infrastructures may prove relevant. However, particular infrastructures related to Rio Reimagined are not addressed in this study.

Ecological concerns are captured within the chosen principles, but specific techniques for restoring environmental health or cultivating biological conservation are not addressed. The existing Rio Reimagined working group will conduct critical analysis of what types of environmental restoration is needed, desired, and possible. Phoenix, as a younger and growing city is poised with a great opportunity to merge ecological infrastructure with traditional grey infrastructure. Advancing integrated urban ecological infrastructure such as increased riparian areas, Phoenix can advance sustainability for both social and ecological needs.

Sustainability principles and assessment

Defining specific sustainability criteria for urban management is a growing area of research across disciplines (Gibson 2006; Wiek and Larson 2012; Sarewitz et al. 2012) and is being widely developed as urban densities increase across the globe (Sheppard et al. 2011; Ahern 2011; Iwaniec and Wiek 2014). For this study, sustainability principles are defined via Larson et al. (2013) and Gibson (2006) as the following:

Sustainability Principle	**Short Description (Gibson 2006, Wiek and Larson 2012)**
Social-Ecological System Integrity	Need to reduce indirect and overall as well as direct and specific human threats to system integrity and life support viability; surface flows for biocentric and anthropocentric needs.
Livelihood Sufficiency and Opportunity	Human well-being; livelihood and economic uses of water; opportunities to current community members to seek improvements in livelihood
Intragenerational Equity	Reduce gaps in citizen sufficiency and opportunity; address distributive and participatory inequities
Intergenerational Equity	Representing the needs of future generations to preserve or enhance the opportunities and capabilities available to them
Civility and democratic governance	Collective responsibility through personal and institutional responsibility for sustainable social and water practices
Resource Efficiency	Focuses on co-benefits and efficient use and re-use of resources

Precaution and Adaptation	Anticipate, mitigate, and adapt (for unforeseen circumstances such as climate change or natural disasters)
Interconnectivity from Local to Global Scales	Incorporation of watershed level concerns and understanding that water resources are related to the geography of water basins and exist within and beyond multiple political and social jurisdictions

Table 1. Sustainability principles used for this study from Gibson (2006) and Wiek and Larson (2012).

These criteria are founded upon Gibson's (2006) sustainability assessment framework and Wiek and Larson's (2012) sustainability principles for water governance and can be applied to water sustainability as well as broader urban sustainability goals. Using these principles as the theoretical foundation through which Rio Reimagined is analyzed will demonstrate if these principles are operationalized (or not) beyond theory and academic literature.

The components of sustainability as listed above have specific operational definitions, but the language encompasses a broad range of issues. These principles do not claim to be a panacea, but rather a holistic and inclusive framework through which significant sustainability issues can be categorized and ultimately addressed. Gibson (2006) developed these criteria to address the dichotomy between social and environmental issues and to integrate holistic equity and ecological concerns together within a decision-making context. His work pushes back against the idea that there are required trade-offs between development and ecological health and human equity. The categories' holistic nature and moderate flexibility allow for a dynamic approach to analyze the emerging discourse addressed in this study, rather than strictly prescribing a checklist-type framework. This tangible, but holistic approach is particularly relevant due to the project's broad scope in time (historic and future); suite of cultural and political implications, and range across physical geography.

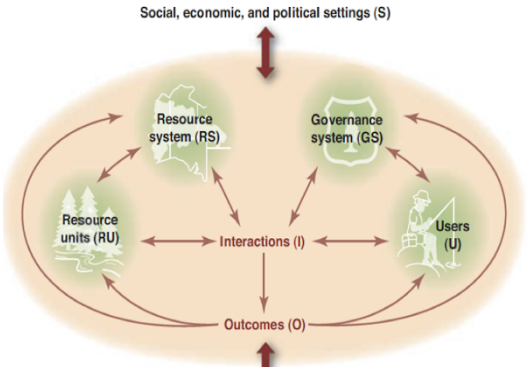
Leveraging the sustainability assessment framework addresses the literature by problematizing the utility of these principles in an operationalized context manifest in the processes around Rio Reimagined. Furthermore, it responds to Wiek and Larson's (2012) recommendation for additional research on the "conceptual robustness […] and applicability in participatory and collaborative water modeling and other governance activities" (p 3170). By testing the conceptual robustness of sustainability assessment criteria within the context of Rio Reimagined illuminates the strengths, limitations, and gaps of this framework.

Water resource governance

Integral to the conversation about Rio Reimagined, and even embedded in the name itself, is the river. The physical waterway has a long and contentious history. Situated as the historic lifeblood of the region via Hohokam canals and flood irrigation, then in the 19th century developments and then the post-World War II boom into the Phoenix metropolitan area, water has always been a salient and relevant concern. Because Phoenix is in an arid climate, water management has been a strong priority over the decades (Jacobs and Holway 2004; Sullivan et al. 2018). Over the years, the river has been diverted, terraformed, and dammed (Graf 2000). Alongside rapid urban development, parts of the river have endured multiple eras of grey infrastructure changes, flood mitigation projects, mining, and industrial pollution. Some have called these areas "scars" which Rio Reimagined will provide the opportunity to restore and heal, ideally giving "life back to" the "urban spine" that connects the Phoenix area from east to west.

Following Ostrom's (2009) SES framework, this study highlights interactions in the SES system between key governance actors and representatives for users of the possible developments of Rio Reimagined (figure 6). The key interactions are illuminated in this

study through the discourse analysis. The dynamics present through discourse influence the outcomes and relationships present in the system.



Resource System: 56-mile corridor along the Salt River, known as Rio Reimagined

Resource Units: water, land, habitat, accidental wetlands

Governance System: local, regional and federal regulatory agencies such as Arizona Game and Fish and municipalities

Users: Residents, businesses, industry, wildlife

Figure 6. Ostrom's (2009) SES framework with Rio Reimagined's context

Discourse Theory

Discourse is the way groups, individuals, and societies manifest reality through language (Van Dijk 1980; Hajer 1995, Potter 1996; Harré 1999). Once realities are manifested, various degrees of power are negotiated based on the continued stability or instability of a particular story-line or through a repeated framing. Subsequently, "levels of social reality are more or less shaped or even subordinated by the power-knowledge relations established in discourse" (Alvesson and Karreman 2000, p 1127). Furthermore, the politicization of discourses occurs through a negotiation by actors and institutions of to establish "discursive hegemony" in order to garner support and agreement on their definition of reality (Hajer 1995). After particular discourses are strongly established, they can become institutionalized (Hajer 1995) and so deeply embedded that they may not be formally acknowledged (Dryzek 2013). Additionally, actors will situate themselves within discursive categories that align with their personal or professional role.

Part of the discourse surrounding Rio Reimagined evokes past attempts at restoring the degraded portions of the dry corridor. The multiple eras of the Salt River imply that there is a story-line here, with sticking power. Part of this sticking power is illuminated in the current chapter of Rio Reimagined and the decision of Senator John McCain to commit his legacy project on restoring the river and leveraging his long-standing clout, salience, and public trust on this project.

As this current epoch is invoked and gains or loses momentum, the positioning and framing around the project is crucially important to the way the project's regional vision will emerge and which actors and institutions' voices will be elevated, and which will be suppressed. Various actors will be fundamentally excluded based on the power dynamics that arise and the earliest, most prominent dialogue. Discussion of McCain as the visionary, trusted leader in partnership with Michael Crow, the president of ASU, demonstrated the level of social trust, political clout and overall salience present in this regional endeavor. As such, by situating this study at the confluence of the emergent social-ecological sustainability discourse of the nascent process of Rio Reimagined I addressed the landscape of key actors, hierarchies of priorities, and sustainability perceptions.

Framing and Social Movement Theory

In order to distill the discursive landscape for Rio Reimagined, a particular focus on the way discourse manifests, via frames and framing tools, is a fundamental component of the content analysis for both the interviews and news media sources. Framing is the use of particular perspectives, discourses and story-lines aimed toward a specific purpose. Frames can generate meaning that last beyond their specific original use and are then retained in social and institutional memory (Steinberg 1998). Framing is an "action specific process of demonstrating the saliency of a discursive repertoire in defining a problem"

(Steinberg 1998, p 855). In the case of Rio Reimagined, a variety of discursive problems have emerged.

When social movement organizers aim to create resonance and alignment around particular problems and proposed solutions, they evoke particular "master frames." They evoke these master frames to elicit a reaction to, perception of, or associated meaning with the situation (Benford and Snow 2000). Sociologists, social psychologists, and political theorists have leveraged framing and discourse for decades (Goffman 1974; Van Dijk 1980; Potter 1996; Alvesson and Karreman 2000) to analyze the emergence and life cycles of social movements. Authors Benford and Snow (2000) argue that collective action master frames face certain procedural requirements: diagnostic framing, prognostic framing, and motivational framing (Snow and Benford 1988; Benford and Snow 2000; Snow 2013). Diagnostic framing implies that there must be blame or responsibility for the issue at hand, prognostic framing implies the "plan of attack," and motivational framing is the "call to arms" (Benford and Snow 2000).

Many studies have leveraged framing for environmental issues, such as Barthel et al. (2015), which focused on food and green spaces, Hall and White (2008), which focused on fisheries management; McGrail et al (2015), which focused on carbon emission reduction; Hagerman (2007), which addressed neighborhoods and waterways; and White et al. (2015) which focused on environmental decision making and water sustainability. Furthermore, key authors such as Dryzek (2013) and Hajer (1995) highlighted the relevance of discourse analysis for environmental movements. As such, the redevelopment of the Salt River and the current momentum of "Rio Reimagined" is situated as a relevant social-ecological case to apply framing and social movement theory.

For the scope of this study, Benford and Snow's (2000) framing tools were the broadest umbrella for framing analysis. These tools were adopted as deductive codes for the empirical content analysis because "consensus mobilization and collective action processes bring order and structure to the [movement] by creating specific discursive repertoires" (Steinberg 1998, p 855). Therefore, by highlighting these specific repertoires via the framing tasks, explicit problems (diagnostic), solutions (prognostic), and motivational frames related to the Rio Reimagined process are illuminated.

Environmental Discourses

An additional layer of this study focused on macro-level discourses as they are exhibited through this micro-level discourse and specific landscape via the Salt River redevelopments. By focusing on the relationship of discourses, the study extended and converged pertinent literatures and addressed the limitations of well-established environmental theory. Macro-level discourses are significant for transferrable, readily accessible, and global audiences. Therefore, understanding how Phoenix's manifestation of the discourses related to the macro-discourses illuminated which narratives are most commonly adopted and abstracted to create resonance, amplification, or dissonance based on the priorities and motivations of the discursive action.

Building off of a vast literature on discourse theory, authors Hajer (1995) and Dryzek (2013) dissect the relationship between power, politics, and perceptions of the environment. For this study, I followed Dryzek's (2013) discourses as the lens through which to compare the sustainability principles and macro-environmental discourses. Dryzek (2013) presents a variety of key discourses and their key metaphors, tools, and characteristics relevant to Rio Reimagined and used in this study of macro-environmental discourses, below are the three primary discourses.

Ecological modernity (ecomodernism in Hajer (1995)), democratic pragmatism and economic rationality are the three most salient macro-discourses related to Rio Reimagined. Democratic pragmatism requires deliberation and "takes the structural status quo of liberal capitalism as given" additionally, "government is treated as multiplicity of decision processes populated in large part by citizens" (Dryzek 2013, p 114). Economic rationality at its extreme is "emphasizing the conversion of environmental resources to private property" and focuses on the idea that "markets maximize social welfare and markets in environmental goods should be no exception" (Dryzek 2013, p 124). Lastly, for ecological modernity, humans still dominate nature, but overall "environmental criteria must be built into the redesign of the system" (Dryzek, 2013, p 170).

Ecological modernity is a social-environmental theory that has erupted in multiple interpretations and emerged out of risk theory and a push to shift the industrial capitalist system to incorporate environmental balance (Mol and Spaargaren 2000). For this study, I followed the interpretations of ecological modernity discourse from Hajer (1995) and Dryzek (2013). Namely from Dryzek (2013), the components of ecological modernity that seek to address systems-level and long-term thinking are highly relevant to Rio Reimagined.

Although ecological modernity often carries a technocratic approach to addressing environmental sustainability, the approach can be expanded:

> For ecological modernization is not something that can be accomplished by business managers and engineers operating voluntarily and independently on their own products and processes. It requires political commitment, to the enlightened long term rather than the narrow-minded short term and to a holistic analysis of

> economic and environmental processes rather than piecemeal focus on particular environmental abuses" (Dryzek 2013, p 171).

However, even with this "holistic analysis," nature is still subordinate to anthropocentric concerns. For Dryzek (2013), modernization is deeply aligned with the idea of social progress and thus ecological modernization is tied to economic progress.

For each of the discourses Dryzek (2013) presents, there can be "weak" and "strong" examples, which speaks to the challenge that that individuals can represent multiple ideologies through their discourse. However, even when bridging from micro to macro scale discourses, individuals will still evoke certain discourses more often. In the next section, I discuss further about how these discourses related to the sustainability principles in the case of Rio Reimagined.

CHAPTER 4

METHODS

Data Sources

Semi-structured interviews

From August 2017 to March 2018, thirty interviews were conducted following Bernard et al.'s (2017) best practices for purposive sampling and sampling size. For the study duration, ASU has served as the primary convener and valley-wide support system for the Rio Reimagined project, so initial interviews were conducted with relevant university practitioners and faculty in early 2018. The interview protocol and procedure were ASU Internal Review Board approved prior to conducting interviews.

The scope of Rio Reimagined stretches through multiple layers of geography, political tiers and organizations, and across significantly different community interests. Therefore, recruitment of interviewees oriented around specific sampling groups (table 2) aimed to have maximum variation around specific geographies and perspectives. Notable absences in the sample include the Native American Tribes situated along the river, the Salt River Pima Maricopa Community and the Gila River Community. Perspectives from the tribal communities are subject to additional regulation for internal review board procedures and should be addressed in further studies. Additionally, there were limited responses from the economic and development community.

Secondarily, the range of geographies represented were targeted by contacting individuals with existing knowledge or experience with Tres Rios Wetlands (West Valley), Rio Salado Audubon and Restoration (central Phoenix), and Tempe Town Lake. Participants from each municipality were contacted for interview in addition to non-profit, community development organizations, and regional entities.

Environmental (non-governmental, non-profit)	Social Justice; Cultural Preservation (non-governmental, non-profit)	Local Community Well Being (governmental, non-profit)	Local Environmental Well Being (governmental, non-profit)	>Local (combined interests, governmental, non-profit)	Economic and Development (non-governmental, for profit)

Table 2. Sampling strategy by stakeholder group. Geographic orientation across the region was also maximized in each group if possible.

For analysis, based on the individual interviewee's personal and institutional perspective as determined by their demonstrated role related to the Salt River as well as the content of the interviews, the category representing for profit economic and development interests were re-categorized into the social justice and cultural preservation column. That column was expanded to include community development interests. In the final sample, there were no interests that were explicitly for profit and development interests. Two individuals that would have represented this category organizationally primarily spoke to the cultural preservation and community development (education, access to food, and increased equity). Therefore, analytically, it was appropriate to expand the social and community nonprofit category to include non-governmental community interest based on the social role of the interviewees.

Online news media and promotional sources

News media sources were collected via google internet search for articles directly related to Rio Reimagined. Searches were conducted iteratively until March 2019 and included articles beginning in August 2017. Prior to March 30th, 2018, the project was labeled as "Rio Salado 2.0," and thus searches represented both titles for the initiative ("Rio Reimagined" and "Rio Salado 2.0"). 25 news media articles, one promotional video, and one radio interview were used for this study.

Due to the limited quantity of media content available as the time of study, random sampling of the available data was not conducted. The bulk of news media articles were presented around the public launch in March 2018 and following Senator McCain's passing in August 2018 because this was his legacy project. There have been only a handful of articles emerging after that time.

However, on March 5th, 2019, there was a letter sent from Arizona's senate delegation to the Environmental Protection Agency acknowledging and requesting recognition of Rio Reimagined. Only one informational media piece captured this key moment. Additionally, the City of Phoenix's new mayor-elect, Kate Gallego, has openly stated that she prioritizes the Rio Reimagined project as a business opportunity for Phoenix.

Leveraging web-published media sources removes a variety of issues such as researcher effect that can occur in interviews. An example of researcher effect would include amplified responses based on positive reactions or certain cues within an interview. Therefore, using both data sources improved the validity of the results and demonstrated the salience of certain frames vis a vis the sustainability principles across the data types.

Deductive content analysis: Codebook and IRR Coding procedures

The codebook was generated using well-established theoretical foundations from Bernard et al. (2017). Data were analyzed using MAXQDA 2018 software. The unit of analysis was no less than a sentence and no greater than a paragraph. The format of some news articles did not follow true paragraph form, but the broadest level of analysis did not exceed a traditional paragraph's three to five sentences unless a clear turn was present (e.g. interview quotes to article author or long, contiguous semi-structured interview responses).

Intercoder reliability was conducted iteratively for the sustainability principles and framing codes for both the theoretical definition as presented in the codebook and the

operational coding. Two full interviews were coded by two researchers independently and then reviewed together to capture the raw agreement for intercoder reliability (Appendix B). For examples of the short descriptions for each code definition, see Appendix B.

Macro-Environmental Discourses

Three of Dryzek's (2013) environmental discourses were the most immediately applicable to the case of Rio Reimagined: ecological modernity, economic rationalism, and democratic pragmatism. These three discourses at their most broad definition strongly relate to three of the sustainability principles: social-ecological system integrity, livelihood sufficiency and opportunity, and civility and democratic governance. Although these concepts are not perfectly aligned, the macro-discourse most strongly overlapping are contained within the coded segments of the sustainability principles mentioned. Therefore, for the scope of this analysis, the overarching principles were charted against the macro-discourses by each interview and the most prominent (highest frequency of occurrence) with the corresponding principle.

This method of analysis provides an overarching perspective that is holistic in nature and is essentially a transformation of empirical data that can be reviewed at a finer scale. In sum, there are components of the discourses related to the sustainability principles that are not perfectly aligned with the Dryzek (2013) macro-discourses, so this analysis served as a proxy to holistically address the relationship between micro and micro discourses for each interview. Mapping the Dryzek (2013) discourses against the most correlated sustainability principle provided an aggregate view of the discursive landscape present by stakeholder group and the individual prominence across discourses. However, for future analyses, these results should be studied at a finer scale and coded for more robust conclusions.

Inductive Content Analysis

To address research question three related to the social-ecological needs and wants that are evoked, a thematic content analysis was conducted based on my closeness to the data and overall aggregate common themes and narratives across the news and interviews. To corroborate my primary inclinations, MAXQDA's dictionary search was used to confirm empirically the highest thematic occurrences of themes and language surrounding them. Additionally, other themes were highlighted based on their urgency and pertinence but may have not been demonstrated verbally as explicitly that the empirical dictionary count. This component of analysis addressed more nuanced and implicit aspects of the Rio Reimagined narrative and discourse that may not have been fully illuminated in the deductive and empirical components of the analysis.

CHAPTER 5

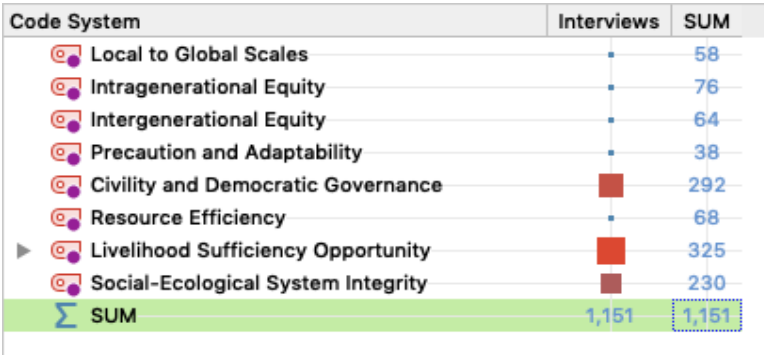
RESULTS

The primary results of this study focus on the emergence or absence of sustainability principles through empirical coding results and MAXQDA outputs (Figures 7-10). Relationships between code overlaps, called co-occurrences, are highlighted within the sustainability principles in Figure 11 and between the sustainability principles and framing tasks in Figures 12 and 13. Lastly, the relationship between the macro-environmental discourses and micro-discourses are mapped by interview in Table 3. Results from the inductive coding for research question three are highlighted in the discussion section, as most of these results are thematic and highlighted best with additional context.

Research Question 1: Occurrence of sustainability principles

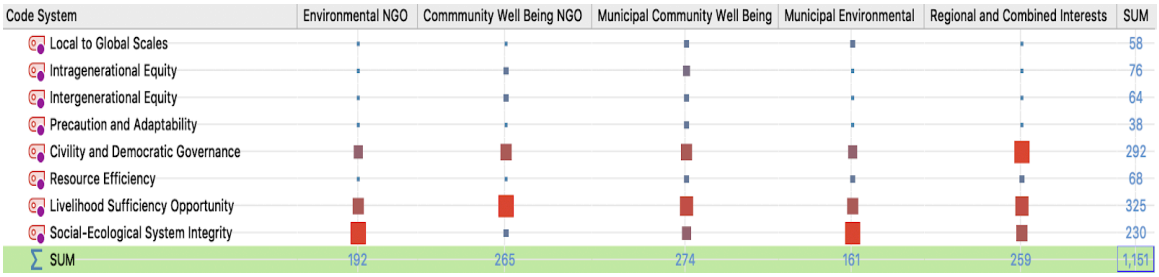
The Gibson (2006) and the Wiek and Larson (2012) principles were present a total of 1,485 times in aggregate, 1,151 times in the interviews and 334 times in the news media articles (Figure 7). There were notable distributions in the data, such as limited representation of precaution and adaptability and low frequency of local to global and resource efficiency. Social-ecological system integrity, livelihood sufficiency, and civil engagement and democratic governance were the most common in both online news media and interviews by a substantial magnitude.

Total Emergence of Sustainability Principles Within Data Type



Code System	Interviews	SUM
Local to Global Scales		58
Intragenerational Equity		76
Intergenerational Equity		64
Precaution and Adaptability		38
Civility and Democratic Governance		292
Resource Efficiency		68
Livelihood Sufficiency Opportunity		325
Social-Ecological System Integrity		230
SUM	1,151	1,151

Figure 7. Aggregate results of Sustainability Principles within data type. Increasing box size indicates greater occurrence.



Code System	Environmental NGO	Commmunity Well Being NGO	Municipal Community Well Being	Municipal Environmental	Regional and Combined Interests	SUM
Local to Global Scales						58
Intragenerational Equity						76
Intergenerational Equity						64
Precaution and Adaptability						38
Civility and Democratic Governance						292
Resource Efficiency						68
Livelihood Sufficiency Opportunity						325
Social-Ecological System Integrity						230
SUM	192	265	274	161	259	1,151

Figure 8. Emergence of sustainability principles by stakeholder group. Chart is read by column, not by row, indicating the emergence within each data type not across the rows. Increasing box size indicates greater occurrence.

Code System	Environmental NGO	Commmunity Well Being NGO	Municipal Community Well Being	Municipal Environmental	Regional and Combined Interests	SUM
Local to Global Scales	13	4	11	14	16	58
Intragenerational Equity	6	29	25	5	11	76
Intergenerational Equity	10	24	11	11	8	64
Precaution and Adaptability	9	9	11	4	5	38
Civility and Democratic Governance	35	74	78	31	74	292
Resource Efficiency	14	9	11	14	20	68
Livelihood Sufficiency Opportunity	45	90	85	34	71	325
Social-Ecological System Integrity	60	26	42	48	54	230
SUM	192	265	274	161	259	1,151

Figure 9. Raw Results of sustainability principles per stakeholder group.

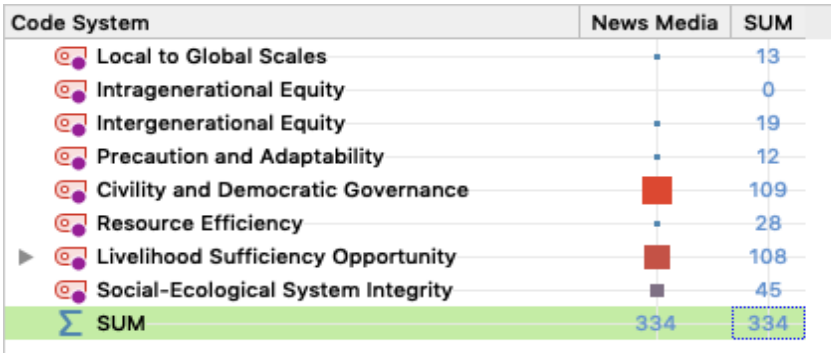


Figure 10. Number of sustainability principles in news media. Read by column to show comparative distribution across principles. Increasing box size indicates greater occurrence.

When addressing the distribution and frequency of sustainability principles within individual stakeholder groups (Figures 8 and 9), the same pattern held across the substantially greater magnitude for the three principles: livelihood sufficiency, civility and democratic governance, and social-ecological system integrity. There were a greater magnitude of livelihood sufficiency and opportunity occurrences emerging from both municipal and non-governmental organizations related to community well-being. Additionally, a greater magnitude of social-ecological system integrity codes occurred from environmental informants from both governmental and non-governmental perspectives. An example of a social-ecological system code occurrence from an environmental municipal perspective is as follows:

> Well I know that we have recently become a Biophilic city. And we are really proud of all of our desert preserves and kind of bringing in and embracing the nature of our environment in Phoenix. And I know that there is a lot of, in the past it was very much bringing in a kind of east coast, "Let's do flood irrigation and have lots of beautiful trees and lots of grass and things like that." And I think now we're very

much, "Let's embrace our desert nature and let's embrace all the beautiful and wonderful things that come with it (ME3).

Furthermore, the regional and combined interests demonstrated a more even spread across all three codes, but with a greater emphasis on civility and democratic governance. An example of civility and democratic governance from a regional and combined perspective is as follows:

> I think that there is a tremendous interest from everyone involved in the Rio Reimagined to bring an authentic revitalized corridor to the community that's respectful to the broader community. And that responds to the diversity of interests involved. I believe that that is actually an underlying goal (R5).

Lastly, an overall more comprehensive spread across all three principles emerged from the municipal community well-being perspectives (Figure 8). An example of livelihood-sufficiency and opportunity from this perspective is as follows:

> You know, moving from the concrete asphalt focus into a more natural landscape focus. I think our health and our mental health, and our physical health can come from that. There's just so many opportunities to get back to what really has been the lifeblood of our self-determination from the beginning of our ... not just even our state, but our country (MC5).

Co-occurrences of principles

The top co-occurrence or overlap of principles occurred all with livelihood sufficiency and opportunity. The greatest frequency of overlap occurred with social-ecological system integrity, intragenerational equity, civility and democratic governance and, local to global scales as seen below in Figure 11.

Figure 11. Co-occurrence of sustainability principles, each presented code was most frequently overlapping with livelihood sufficiency

An exemplar co-occurrence between livelihood sufficiency and social-ecological systems integrity is as follows:

> Well, it's going to bring use to land that's not being used at all right now, so it'll bring an economic benefit. It'll bring a quality of life benefit. It'll bring environmental benefits, whether it's a wetlands restoration or a habitat restoration or whatever it may be. We're going to engage with the land and engage with this amenity in the region that right now is entirely unproductive (R4).

Occurrence of framing

The framing layer of analysis addressed the diagnostic (What is the problem? Who is to blame?), prognostic (What tools do we need? What are the solutions to the problem?), and motivational (call to arms) frames. The total occurrence of framing tasks across all the data sources was 394, the overlap was smaller, with 167 co-occurrences between the principles in the interviews and 56 in the news media. In the following section, I discuss the co-occurrence matrix for the principles against the framing tasks to illuminate how various aspects of Rio Reimagined's urban waterway redevelopment are being elevated or suppressed in the discursive space.

In Figures 12 for the interviews and 13 for the news media, the aggregate comparison demonstrates that the overall problem, solution, and rallying frames were predominantly from the perspective of civility and democratic governance and livelihood

sufficiency and opportunity. In the interviews, there were a greater number of diagnostic framing tasks (75), indicating that the problem space surrounding the Rio Reimagined discourse was more salient than the solutions space (29). There was also a substantial amount of motivational framing, but it was spread across the principles (63).

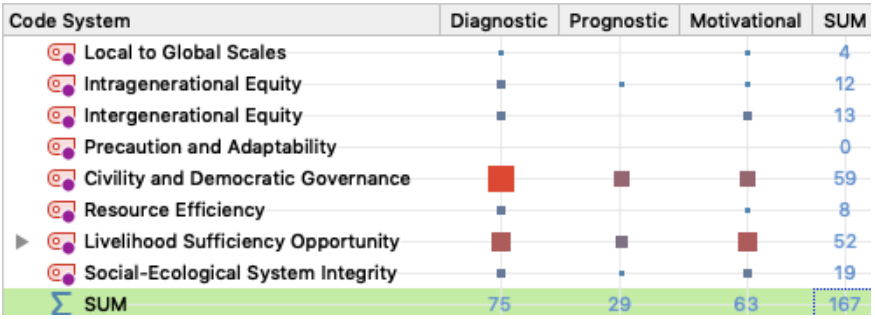


Figure 12. Co-occurrence of sustainability principles by framing tasks for interviews. Increasing box size indicates greater occurrence.

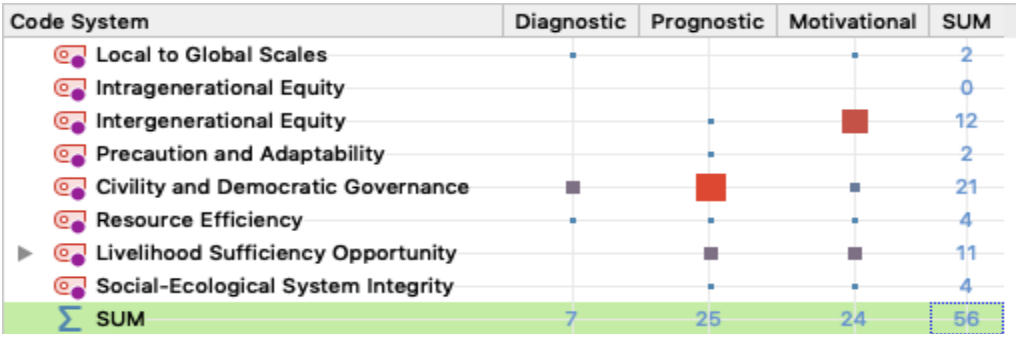


Figure 13. Co-occurrence between sustainability principles and framing tasks for news media. Increasing box size indicates greater occurrence.

Across the diagnostic or problem-oriented frames, civility and democratic governance as well as livelihood sufficiency were the most common in the interviews. The news media did not render many diagnostic frames (7), showing that the news articles focused more on the prognostic (25) and motivational (24) aspects of the principles. The majority of prognostic frames for the news media were clustered as related to civility and democratic governance.

Motivational frames exist for most principles, but with the most related to livelihood sufficiency and civility and democratic governance. The news media also had a density of intergenerational motivational frames (~12). Overall, the interviews had a handful of motivational frames across the principles except precaution and adaptability. Examples of each framing type overlapping with civility and democratic governance:

> *Diagnostic*: And I did attend a meeting at the, I think it was actually at the Liberty Wildlife Center, and I heard a number of voices from that community that spoke out and said, "We don't feel that we're being heard. We don't feel that you've been engaging us in a transparent way. Having a meeting in our community isn't the only way to engage us or isn't necessarily going to accomplish what we need to accomplish" (R5).
>
> *Prognostic*: So, what we need is the uniquely Arizonian perspective. And we need it amplified in such a way that it actually does respect and respond to our values and our interests in our community. And it needs to be done in such a way that it's not necessarily driven by a set of goals that are ... I hate to use the word inconsistent with Arizona's goal (R5).
>
> *Motivational:* So, I think the value of the Rio Reimagined was, let's get things going. Let's sort of develop kind of a vision or interest in kind of the whole. But then, as it's evolved, let's allow local communities to take control of individual projects within the context of the whole that will ultimately be maybe hundreds of individual projects? But ultimately will achieve the bigger goal (R5).

Relationship between framing tasks and sustainability principles

In the interviews (Figure 12), the emergent pattern in the overlapping framing tasks and the principles showed small frequency and narrow solutions-oriented (prognostic) discourse except for civility and democratic governance as well as livelihood sufficiency and opportunity. Across both the problem-oriented (diagnostic) and the motivational framing, a greater spread of principles emerged, with a notable absence with precaution and adaptability.

The news media results (Figure 13) presented a distinct pattern across the principles as related to the variance across principles for the motivational and prognostic frames. For example, there was a density of motivational framing related to intergenerational equity. Additionally, there is a spread of motivational frames across nearly all principles except intragenerational equity and precaution and adaptability. Furthermore, for the prognostic or solutions-oriented frames, there is also a spread across most principles with the highest densities of solutions related to civility and democratic governance as well as livelihood sufficiency and opportunity.

Results of macro-environmental discourses across stakeholder groups and interviews

To assess the holistic overall primary discourses of the interviews by stakeholder group and individuals, a proxy of the three most correlated sustainability codes were mapped against the predominantly relevant discourses from Dryzek (2013). The code social-ecological integrity mapped against the ecological modernity macro-discourse, the code livelihood sufficiency and opportunity mapped against the economic rationality macro discourse and the code civility and democratic governance mapped against democratic pragmatism. The discourse encompassed in the sustainability principles is a proxy for these macro-discourses and is therefore an estimate.

After mapping the micro-macro discourses, economic rationality was the primary discourse in 14 interviews, with four instances tied with the other two discourses. Democratic pragmatism and ecological modernity were the primary discourses for 10 interviews each. When looking at each stakeholder group, the non-governmentally oriented environmental informants strongly represented ecological modernity. Both governmental and non-governmental community well-being perspectives were predominantly related to economic rationality. Democratic pragmatism and economic rationality discourses were spread more evenly across all perspectives, with democratic pragmatism as the primary discourse in the regional and combined perspectives.

Each of Dryzek's (2013) discourses are very large and complex environmental perspectives and are from a national or governmental scale. Therefore, for the results of this study and the comparison across discourses, an understanding that the bridging across these scales required flexibility and should be further explored. Additionally, more refined analysis is necessary to break down the individuals and organizational perspectives onto "weak" and "strong," particularly for ecological modernization because many of the representatives are likely "weak" for the ecological modernization discourse and perhaps represent various aspects of green radicalism such as bioregionalism.

Stakeholders and Macro-Discourses

Institutional Type	Primary Expertise Category	Informants	Primary Discourse		
			Ecological Modernity	Economic Rationality	Democratic Pragmatism
Non-Government	Environmental	NE1			
		NE2			
		NE3			
		NE4			
		NE5			
		NE6			
	Community/Social Well Being	NC1			
		NC2			
		NC3			
		NC4			
		NC5			
		NC6			
		NC7			
Municipal Government	Environmental	GE1			
		GE2			
		GE3			
		GE4			
	Community/Social Well Being	GC1			
		GC2			
		GC3			
		GC4			
		GC5			
		GC6			
Regional Government and Non-Government	Combined	R1			
		R2			
		R3			
		R4			
		R5			
		R6			
		R7			
Total			10	14	10

Table 3. Primary Macro-Discourses by interview and stakeholder group

CHAPTER 6

DISCUSSION

The primary goal of the following section is to address the sustainability principles with a secondary emphasis on the macro discourses and the inductive results for Phoenix's needs and wants. Ultimately, although a handful of sustainability principles dominate the conversation, there are strong implications for improvements to sustainability literature and policy based on the limited presence of some key principles such as intragenerational equity, local to global scales, and precaution and adaptability. Furthermore, the ways in which sustainability rhetoric permeates the planning and influential spaces around Rio Reimagined carry implications on frame resonance and which perspectives are given priority. The perspectives given power in this space will likely strongly influence the future outcome of the project as it continues to mature over the next few years. Careful attention to framing influences the general understanding of all aspects of sustainability, and the potentially abstracted views of these principles.

Secondarily, the predominance of economic rationality and democratic pragmatism are discussed, further demonstrating the need to improve collaborative governance at the regional scale, understand urban ecology, and value decision-making for unpredicted events. As multidisciplinary research increasingly contributes to a deeper understanding of social and ecological urban challenges, studies such as this contribute to existing knowledge and provide direct, replicable opportunities for policy.

Sustainability principles

The seminal sustainability principles used in this study provide an operationalizable conceptual framework to address the perspectives present throughout the social-ecological

system of metropolitan Phoenix. By analyzing the nascent news media and stakeholder perspectives through the lens of Rio Reimagined, specific planning priorities for Phoenix are exposed. The results from the content analysis provide robust empirical evidence demonstrating which perspectives are elevated because they are discussed more frequently and thoroughly such as concerns over collaborative and participatory governance. Certain concepts related to sustainability are demonstrated to be not as salient as the most prominent perspectives because they have not permeated the discursive landscape. Ultimately, the empirical results exemplify which components of sustainability frameworks are present, in what ways, and which topics are lacking.

Robert Gibson created the sustainability principles framework building on a long history of environmental assessments and aimed to integrate emergent concepts related to sustainability and social-ecological balance into the decision-making arena. The concepts that he aimed to integrate went beyond ecological components and sought to include concepts of human equity and other anthropocentric concerns. In his book *Sustainability Assessment: Criteria and Processes,* he argues:

> However we may choose to define it, sustainability stands as a critique; it is a challenge to prevailing assumptions, institutions, and practices. The concept of sustainability would spur no interest in a world generally confident that its current approaches will resolve looming problems and ensure a viable future (Gibson 2006, p 38).

Following such a critique, Wiek and Larson (2012) modified and adapted Gibson's (2006) principles to address urban water sustainability concerns and then Larson et al (2013) applied them as an assessment in Phoenix. Therefore, it would be expected that the suite of principles would be readily applicable and present in this context. However, based on

the specific context of Rio Reimagined as an urban waterway redevelopment, certain aspects of each principle are much more salient, such as accessibility to the river as an amenity or economic driver. In the below section, I outline key results present from the empirical analysis to illuminate how the principles emerge in the context of Rio Reimagined.

a. Civility and Democratic Governance

In the context of Rio Reimagined, the principle of civility and democratic governance was the most frequently evoked. The principle itself relates to increased participatory and collaborative governance and decision making around the resource at hand. Due to the extensive scope of redeveloping over 58 miles of the Salt River, the vast presence of this principle is appropriate.

When informants were asked to address equity concerns in Phoenix and involvement with the planning process, discussion around collaborative and democratic governance became the most prominent vehicle for addressing salient and urgent challenges that the region faces. Concerns related to garnering support around the project from all governmental and residential levels were discussed as challenges and solutions needed. Elevating residential involvement to discuss participatory and distributive justice concerns was less salient than the general concept of giving the community "something they want" and allowing them to have a voice in that process.

Therefore, a tension emerges in the conversation because pre-existing inequities are in place that have not been addressed, particularly related to the community of South Phoenix, which will be discussed later. Additionally, informants consider the Rio Reimagined to be "pie in the sky" umbrella project rather than a viable, cohesive reality, even if the efforts were coordinated. This lack of pragmatism tied with such a bold vision may be a reason

why on the ground practitioners evoke the need for improved participatory processes and democratic governance. Some key illustrative quotes are seen below:

Non-governmental community well-being perspectives:

- But it almost takes a massive undertaking like that for the public to stand up and take notice. It's something so audacious that people really become engaged. Which is unfortunate, it's like, "get engaged in your neighborhood in the small things too," you know. But hopefully, that's what it'll catalyze, that kind of involvement at the local level (NC7).
- There's those conversations of the grand plan, and then there's a conversation that's more of a human aspect to it, a spiritual aspect to it. And I think it very much has to do with the communities who live around there. I think they need to be able to be at the table and be part of the process. Otherwise, there's a disconnect there (NC6).
- "I think if the planning process cannot reflect by representation, people with a deep knowledge of those most directly impacted by health disparity of the region. Then any of the altruistic rhetoric behind the project is a fallacy, it's a lie" (NC3).

Municipal environmental perspective:

- "It is the people who live close by who will have what's there. Is it something they want?" (ME 4).

Additionally, based on the general nature of the principles, it appears that components of the discussion are nested within other principles. For example, intergenerational equity may be manifesting in conversation tangentially through topics related to civility and democratic governance as a way to elevate neighborhood-level rather than regional concerns. This aspect of Phoenix specific context will be addressed for research question

three regarding social-ecological needs and wants. Lastly, addressing the framing tasks in the next section related to this principle will show how the principle is being used to shed additional light on what challenges Phoenix is facing in this arena.

b. Livelihood Sufficiency and Opportunity

The code livelihood sufficiency and opportunity was the second most prevalent coded principle and was the most frequent co-occurring principle. Additionally, it was the most prevalent code in the interviews. This principle encompasses a range of concepts and in particular, relates to developing environmental amenities, increasing community assets, and economic development. All references to increased community well-being including physical and social connectivity were also encompassed within this code.

When comparing across stakeholder groups, the community well-being perspectives elevated livelihood sufficiency and opportunity more often than the environmental concerns. Regional perspectives also addressed livelihood sufficiency more than social-ecological system integrity. The influence of economic development will also be addressed in depth when discussing the macro-discourses, so I will primarily focus on the other components related to this principle such as connectivity and specific livelihood improvements below:

Municipal Community Well-Being:

- We want to see a lot more trees along the river, we want to have just a continuous path because right now, you can't really get on a bike and continuously ride around the river. There's a lot of sort of construction, so we have these ways to make the pedestrian and the bike experience, more, how would you call it, just less, you know, more continuous and less disruptive" (MC6).

Non-governmental Environmental:

- One, I think, is definitely connecting people to the river and connecting the river to people, providing opportunities for recreation whether it's like bike trails or hiking trails or actually being on the water, enjoy fishing if that's an option is certain areas. Yeah, so recreation, connecting people. Doing it in areas where it makes sense, there are opportunities to do so, I think doing riparian restoration and actually ... In whatever capacity that means (NG 6).

News Media:

- Tempe Town Lake's success-the lake has had a $1.5 billion economic impact on the city- prompted other elected and civic leaders to explore projects for the rest of the riverbed (Boehm, August 18)
- Eight communities along the river will oversee the creation of this river corridor as they partner to create a point of pride and an anchor of water — and economic development — in the Valley (Millard, November 2018).

Due to the high occurrence of code occurrences, a variety of sub-topics emerge within the use of this principle, which will be discussed in further detail in the context of the framing, macro-discourse, and social-ecological needs sections.

c. Social-Ecological System Integrity

The code for social-ecological system integrity aims at capturing reduced anthropocentric damages to the ecological system as a whole. In Wiek and Larson (2012), they also build a principle related to the ecological system and geophysical space as the watershed (local to global scales). Based on the results of this study, it appears that social-ecological system integrity is motivated through the lens of rectifying past environmental

degradation and that the concept of reducing tradeoffs between social and ecological concerns is still anthropocentrically oriented.

However, the non-governmental environmental informants chose to evoke the deepest perspectives related to elevating ecological concerns. This may be due to the scope and nature of their professional positions and their primary social role. Municipal environmental informants did not choose to evoke as deep of an environmental perspective, which may mean that their institutional roles are not solely environmental as situated within the governmental context.

Furthermore, perspectives on ecological and habitat restoration were predominantly from the perspective of Dryzek's (2013) ecological modernity, which subjugates nature as the object of human manipulation and with nature as external to human development. One of the ways this manifested was as framing the river as an amenity and that restoring the physical space into something more aesthetically appealing was the way to achieve social-ecological integrity. Some exemplary quotes for social-ecological system integrity are seen below:

- Ecosystem services can be considered things like even the functions of what goes in a river system. So, you're talking about water quality and quantity. You're talking about sediment transport. You're talking about all those different functions of the system itself that provide services to the community, to better the community. Whether it be just from the look of the river, so from a visual standpoint, that aesthetic value, or from more of a quality of life value, meaning come out and do the recreating, and it being more of a safe environment, down to, like I said, the water, having the clean water and stuff like that (R1).

- And dammed and impacted to such a degree that I feel like it was degraded I had friends how talked about driving their jeeps through it as high school kids. Nobody, there was a period of time where nobody wanted to live near there. That's where everything was run down. So, I think we have seen a real interesting shift from that (MC 4).
- Well, I don't know if it's possible, but it's critical, I think. The minute we get out of balance on one of those, the whole thing throws out of balance. Someone has to be wise enough to come in and say, "Human needs are such. Nature's needs are such." One won't work without the other. So, I'm hoping that there is a balance between, and I don't even know that they're that different. I look now at, people call us on a regular basis and say, "You know, there's a javelina in the front yard and he's eating my plants. Come get him." And we're like, "No, we don't do that." Maybe javelina's a bad example, there's a lot of people that don't like javelinas, but whatever it is, it all works in a balance. And we have to respect that balance (NE1).

Overall, a strong desire for improved environmental health near and on the river are a significant driver for Rio Reimagined. Although the perspective has shifted beyond replicating Tempe Town Lake, the baseline agreement is that the presence of the river's corridor cutting through so many could provide significantly more value through any attempts at restoration. Notably, the extent of restoration and habitat is limited to access, amenitization, and structured educational opportunities rather than native wilderness due to the hospitability of the desert. Therefore, a man-made and almost utopian relationship of manufactured natural relationships.

d. Notable absences

The individual informants with a deep systems-level perspective addressed the local to global scales, precaution adaptability, and resource efficiency principles the most frequently. However, in aggregate, these codes are distinctly less present in the discursive landscape for Rio Reimagines. This observation is reinforced by the principle by principle and framing results.

Of the ecological and systems-level perspectives, resource efficiency was primarily discussed from a water perspective. The code surrounding precaution and adaptability was discussed rarely, but included speculation around climate change, heat, and drought. Local to global scales were primarily discussed when ecological concerns across the river corridor were evoked and also in the context of the river's history of damming and modification. These results indicate a need for greater education regarding urban ecology and a deeper focus on watershed level and regional concerns.

Furthermore, the term "water positive" that has been used in relation to this project winterpretations. Based on this confusion, I recommend an alternative and more palatable, precise term be used to reference water resource efficiency. Additionally, due to either a lack of education of the river's geography or in communication, there is a perception that Rio Reimagined is attempting another Tempe Town Lake, which is a perception that should be mitigated.

Framing tasks and empowering story-lines

The prognostic, diagnostic and motivational framing tasks predominantly related to democratic governance and livelihood sufficiency and opportunity. Some of the problems had to do with the overall degradation of the river, calling it a scar, something that had been neglected (e.g. we turned our backs on it), and governance or funding

challenges. For example, one regional informant describes the transformation possible in the river:

> There was no economic benefit. There was no environmental benefit. In fact, along the river bottom, along the south banks of the river bottom on the west end was one of the largest and earliest garbage dumps for the entire region. All of that had to be taken out. You had to reclaim that as just good land next to the river bottom. It couldn't be a garbage dump anymore for everybody. These are big, really big challenging issues and they take a lot of time (R4).

One of the predominant hesitations raised by the stakeholders was the vast ambition of such a development on the corridor. Not only are there collaborative challenges to get the suite of interests and perhaps competing interests on board, but the temporal scale of such a project takes a very serious set of people driving the project, but also for securing funding.

Another consistent challenge is how to appropriately respond to community concerns related to the Rio Salado Habitat Restoration near the Central Avenue bridge:

> And so not knowing going in is this a habitat or a park is kind of a big problem when you're designing a public space. Likewise, when during that process we heard from local community members that they felt they'd really been cheated, they wanted a beautiful park space and they had a kind of deep-down feeling that a really fantastic park would revitalize the area. And they didn't think what they got was sufficient. And I think there's a lot to that. (NE6).

Some of the solutions provided range from very pragmatic to socio-emotional:

> We need to detox South Phoenix, then it really come from the people. It was thrown there. Back to the river and what it represents, water is life, and it's healing. Without water, we can't live, so it really has to do with healing, and the healing of South

> Phoenix, the healing of the people. If we don't start there, if we don't come at it in a humanity and a spiritual aspect, we're just still not getting it. We're thinking tangible only. Then that's not small development. That's not smart designing (NC6).

Most solutions that did not relate to funding mechanisms and federal governmental approval addressed the need for collaborative, if not harmonious efforts to address the range of challenges that Rio Reimagined aims to alleviate in the Phoenix metropolitan area. For example, the American Institute of Architects hosted a competition for ideas for a precedent project and they "creative and collective effort is needed to integrate the priorities of open space, environmental quality, housing, transportation, economic and workforce development, and identity among communities connected by the Rio Salado."

Much of the collective action framing to rally support is directed toward the political leadership in the valley. It would seem that failure to support this iteration of Salt River redevelopment, in honor of long-standing public figures such as Senator John McCain and ex-Congressman Ed Pastor, would be choosing to leave "a scar" in the area and proactively forego the bountiful opportunities for beautification, community connectedness, and increased ecological vitality. For instance, Senator McCain is mentioned 346 times and is cited as the spark that ignited a cohesiveness around the project. However, in the months following his passing, the motivational frames have shifted beyond the original frames. This may be due to the development and maturation of the project now that some of the ceremonial ribbon cutting and initial press have emerged.

Most broadly, exemplar motivational frames involve language that is all encompassing and nearly impossible to disagree with:

> This effort will take resources, energy, time and persistence, but ultimately it will enhance the environment, boost our economy and unite our people," she said, sharing

> a message from the senator. "All of Arizona benefits when we enhance our communities" (ASU Now 04/02/18)

Economic and environmental improvements for the benefit of all residents is what Rio Reimagined puts on the table. Not only for our generation but for generations to come. In spite of potential challenges, the opportunity to provide an iconic amenity and priceless improvements to Phoenician's quality of life is a vision that certainly resonates across a range of stakeholders.

Coding and Broad Nature of Sustainability Principles

Although intercoder reliability was conducted for the codebook and sample data set, it is important to note that there remains a degree of prioritization involved in the code implementation, particularly due to the overlapping and broad nature of the Sustainability Principles. For instance, concepts of social justice and equity are common across multiple codes. One example is that equitable access to the river and its amenities were categorized as livelihood sufficiency, because the Wiek and Larson (2012) definition of livelihood sufficiency is more precise than Gibson's (2006). Therefore, when more precise categorizations were provided by the Wiek and Larson (2012) principles, those were given elevated preference to reduce overlap and broad bucketing by the Gibson (2006) principles. Additionally, the sustainability principles are anthropocentric in focus which creates a challenge capturing more tangible or expert ecological perspectives. Although many principles aim to capture ecological values, the broad, overarching nature of environmental improvement and amenitization reflects an overall lack of tangible ecological perspectives.

Macro-environmental discourses

The macro-level discourses that predominantly emerged in this context mimicked the three dominant principles because of the method of analysis. Although this is an approximation, the overarching anthropocentric and governance perspectives overlap based on the literature. In future analyses, the interviewee discourse map will prove as a guide to break down the more nuanced and overarching perspectives.

I expected that economic rationality would be a primary discourse because it is a strong motivator for all municipalities along the corridor as related to Rio Reimagined. Especially as Maricopa County, the regional area where metropolitan Phoenix is situated, is consistently the fastest growing county in the nation. Furthermore, in Phoenix's development, growing trends in post-suburban development are calling for infill, public transportation, and convenience. The push for Rio Reimagined at part of this process is reflected in the perception of the environment as an amenity and that economic and business incentives are the way in which this process must unfold.

Ecological modernity is not a deep respect of ecology, nor does it elevate restoration as part of systems-level thinking. Therefore, to pursue a more balanced approach to sustainability, further integration of elevated systems-level watershed and ecological concerns need to be addressed at a regional level. Furthermore, exploration of where the individuals sit in weak versus strong orientation within this discourse is needed. This is because although many of the environmentally oriented individuals likely hold a deeper understanding of ecological systems than is captured by the social-ecological system integrity Gibson (2006) principle, which was used as the proxy for ecological modernity.

Overall, the Dryzek (2013) principles are complex and broad because they are aimed to be broadly encompassing. Although Rio Reimagined discourses certainly relate to these broader discourses, I recommend that further operationalization of these discourses are conducted in further studies. If discourse is the mode through which societally, we represent, manifest, and elevate reality, then deeper attention is necessary to address how sustainability discourse permeates.

Themes Representing Specific Needs and Wants

Connectedness: Community, Transportation, and Nature

An additional thread of the Rio Reimagined discourse is deeply rooted in the region's history. Situated within the fastest growing county in the nation, the Phoenix metro area is transitioning from a majority car-centric culture to become more connected and alternative transportation friendly. Tempe, Mesa, and Phoenix have led the way with the light rail and the strong bicycle culture in Tempe and areas serviced by circulator buses. However, a long history of the car-centric and fast, but scattered growth that has occurred in Phoenix poses a series of challenges, as one interviewee captures:

> "When a child can't walk to school, or can't choose to ride their bike or walk, then that becomes an issue. An issue that supports things like health and wellness too. The same thing about access to food. There's fundamental needs of a community that you have to think about when you think about social impact. Where is my ability to access my basic needs within a five to ten-minute walk?" (R2).

Furthermore:

> And that's all about connection, the connection to your city, to your community, and what makes that into when you start asking people, "What connects you to your

> city, to your community?" Man, those are important. Those are important for everybody (NC6).

These perceptions of connectivity extend beyond equity concerns, but also for the regional identity as a whole: “Wouldn't it be great if the cities came together and say, 'Let's have a project ... that sort of makes us look a bit more like a coherent metro area than just something that's sort of all over the landscape’” (Boehm 12/24/17). Connectivity is one of the strongest themes for Rio Reimagined, whether it is physical or social.

Nature as an amenity: restoration for urban comfort

Only a limited number of interviewees expressed a deeper understanding of ecological perspectives as contributions to this discourse. Many individuals discussed the restoration of the habitat in the river as possibly detrimental because of the Airport and FAA regulations as well as increased encounters with too many large wildlife such as javelina and mountain lions.

The Gibson principles are fundamentally anthropocentrically oriented and thus it appears an ecological modernity perspective was adopted. Even though there were individuals with a profound ecological background, they acknowledged that the primary driving force behind this project as economic and aesthetic. With that acknowledgment, the actors with the strongest knowledge of ecology emphasized the necessity for incorporating resilience and watershed level concerns, citing flood and drought mitigation as a clear benefit of the project. Lastly, there was also a sense of hesitation from those same actors related to the ecological viability of any restorations due to the sensitivity of human-wildlife relationships. They noted that the educational and simple exposure to biodiversity and natural spaces would be the strongest contributions of the manufactured developments (“restorations”) around the riverbed.

Community Relationships and Participatory Justice

The relationship between ASU and the municipalities and various communities is seen both positively and negatively. One of the concerns is that ASU that ASU does not participate in inclusive decision-making processes that should be healing the tensions present in communities near the river. ASU is not the root cause of existing development pathways but is a current manifestation of them, particularly in South Phoenix:

> Yeah, well cus' the thing is. Ever since I, when I was a little boy growing up here, South Phoenix always received things last. Because everything north of the river was flourishing, [inaudible] things in the south, south of the river. And that has a lot to do with, you may have heard this term before, a lot of the old guards here in South Phoenix still remain, and this, with the generations trying to keep this up, and they want South Phoenix to be viable, but they don't want to expand. And growing from here, growing up in South Phoenix, it has grown immensely in recent years, but we have not grown enough (ME1).

Therefore, the emergent discourse implies that equity concerns should be addressed more clearly as embedded processes in the decision-making process. With ASU leading the way, they are being held responsible for not reconciling existing participatory and distributive inequities. Although there are discourses and participants absent from this study, all interviewees exhibited an understanding and emphasis on an inclusive participatory process. Therefore, there is either a perceptive disconnect or a participatory chasm that underlies more of these concerns, such as affordable housing and the light rail.

One of the greatest sustainability challenges that emerged only rarely during interviews and not during formal presentations and discussions is in regard to the homeless population that often uses the riparian habitat and public space for homesteading:

> I'll give an example, and that's homeless advocacy. I know for many years that the riverbed, good or bad, becomes a residential living quarters for homeless populations because they can be hidden, and they're in those areas. Certainly, that is part of the non-invested stakeholder. It will need to be dealt with, and just pushing them back into the neighborhoods or up into areas where they're not going to be wanted (NC4).

Although this is a known issue and there are non-governmental organizations that are aimed to assist this population, homelessness and poverty along the Salt River is still a concern that must be addressed (Palta et al. 2016) if the Rio Reimagined serves to be considered sustainable and adhere to the suite of principles this study relies upon. Therefore, one strong area of focus moving forward should be on how to properly mobilize resources to create alternative affordable housing options along the river and generate a sense of inclusivity alongside safety within any new developments.

ASU

As an ASU affiliate, I was able to receive assistance from the conveners of the project for my sampling process. So, the key stakeholders I primarily engaged with were connected to the university. Some interviewees were engaged through snowball sampling. Many of the individuals I interviewed through snowball sampling expressed hesitation regarding ASU's role in the project based on negative community perceptions of the university. In the other interviews, most individuals were outwardly supportive of ASU's role in Rio Reimagined. Regardless of my demeanor or character, my primary social role as a student of ASU influenced the way individuals reacted to my interview request and possibly the way they approached the interview itself.

Also, I believe that those who were most responsive to interview were passionate about sharing their ideas and thoughts. However, there are opinions that are missing from my study due to this sampling affiliation and those who did not interview. Therefore, future studies should engage with those less educated or those with varied engagement to garner a deeper perspective on Rio Reimagined.

CHAPTER 7

CONCLUSION

Discourse is the way groups, individuals, and societies manifest reality through language. Rio Reimagined's outcome will be driven by the degrees of power that are given to certain story-lines about the project, which are being negotiated during the emergent discourse. The dominance of three sustainability principles demonstrate that thus far, Rio Reimagined is an incomplete sustainability project.

One of the strengths of the sustainability principles in this study was that operationalizing the framework exposed resilience and systems thinking are salient among many actors, but not elevated. Concerns over addressing the drivers of participatory and distributive justice are only vaguely present. Therefore, to move sustainability literature toward the solutions space, a greater understanding of systems-level social and ecological concerns needs to be disseminated.

This study extends sustainability literature through the operationalization of the concepts represented in these frameworks as a methodological tool to address how sustainability principles manifest in an urban waterway redevelopment context. Outlining the way sustainability principles are framed and motivated in this situation subsequently exposes gaps in the understanding of how key components to sustainability are elevated, abstracted, or ignored in the planning and communication of waterways. Additionally, this study integrates across distinct disciplines and provides a bridge between environmental discourse and social movement literature to more deeply understand the ways restoration movements manifest in an urban waterway development context.

Furthermore, the findings from this study illuminate policy-relevant and use-inspired information that is highly relevant and timely for Rio Reimagined. Lastly, as urban

waterway management shifts beyond waste disposal and flood mitigation (O'Neill 2006) this study can be replicated to other river restorations and urban environmental movements. With a growing focus on the amenitization and increased community livelihood around urban waterways (Breen and Rigby 1996), continued studies that focus on the sustainability of water resources linked to community development are more urgent.

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APPENDIX A

SUPPLEMENTAL DEFINITIONS WITH QUOTES

Sustainability Principles and Framing Tasks: Sample of Partial Codebook

Sustainability Principle	Short Description (Gibson 2006, Wiek and Larson 2012)	Exemplar Quote
Social-Ecological System Integrity	Need to reduce indirect and overall as well as direct and specific human threats to system integrity and life support viability; surface flows for biocentric and anthropocentric needs.	“And they have all this extra parking, and they try to put people where every open piece of ... a dirt lot, or what have you. At the same time, it's like, "Okay, we're trying to ..." I think Maricopa County flood control has the whole plot of the skeet's that they've replanted, and they're doing a lot of salt cedar clearing, and all this restoration work down there on the west side of the river, and it's just like, "Nah, we're here to party!"
Livelihood Sufficiency and Opportunity	Human well-being; livelihood and economic uses of water; opportunities to current community members to seek improvements in livelihood	The community said, "Fix it. Get that back. We want this connection. We want this access. We don't want it to be broken up like that. Well here, we've never had it except for Tempe in the middle.”; We need to get people to the river, and we need to get access and how we change the experience of water in the river, and that's the narrative that needs to be derived."
Intra-generational Equity	Reduce gaps in citizen sufficiency and opportunity; address distributive and participatory inequities	“I'll give an example, and that's homeless advocacy. I know for many years that the riverbed, good or bad, becomes a residential living quarters for homeless populations because they can be hidden, and they're in those areas. Certainly, that is part of the non-invested stakeholder. It will need to be dealt with, and just pushing them back into the neighborhoods or up into areas where they're not going to be wanted.”

Inter-generational Equity	Representing the needs of future generations to preserve or enhance the opportunities and capabilities available to them	“That leads back to the real and the vision and the water and what that means to people. We wouldn't have a city without the canal system, the engineering that those who came before us left. How do we recognize that and preserve it and respect it, but how does it stay for future generations? How do we keep that going?”
Civility and democratic governance	Collective responsibility through personal and institutional responsibility for sustainable social and water practices	“We also described the importance of making sure that you understood all the stakeholders in such a project, because failure to take into account people who have an interest in, if not feeling as though they have a real place of standing in such a project, if we didn't address that, we were going to have challenges.”
Resource Efficiency	Focuses on co-benefits and efficient use and re-use of resources	“Reviving the Salt River corridor can be done in an environmentally conscious way with an eye to water conservation;” “So it's habitat restoration. It's the address of invasive plants and species. It's the proper use of water that becomes exemplary in the way that we learn how to treasure this resource. “
Precaution and Adaptation	Anticipate, mitigate, and adapt	“Anytime water is implicated in the future of this region, it has to be done so with an eye towards a long-term understanding about how we have to take care of that resource. So, we're well aware of that, and we want to include people in this process who have something to say about that.”
Inter-connectivity from Local to Global Scales	Incorporation of watershed level concerns and understanding that water resources are related to the geography of water basins and exist within and beyond multiple political and social jurisdictions	“If that's the right or the wrong decision, that's the framework of what exists today. And so, I look at that and I begin to ... because that is something that's more of a national issue, meaning that all our water comes from the Colorado that is shared with other states, that becomes a national issue. Those are legislative matters that have gone before us that are not easy to change on a federal level, nor am I suggesting that they should be. But they are the underpinnings of where we start today.”

Framing Tool	Key Definition (Benford and Snow 2000)	Exemplar Quote
Diagnostic	What's the problem? Who's to blame?	"There was no economic benefit. There was no environmental benefit. In fact, along the river bottom, along the south banks of the river bottom on the west end was one of the largest and earliest garbage dumps for the entire region. All of that had to be taken out. You had to reclaim that as just good land next to the river bottom. It couldn't be a garbage dump anymore for everybody. These are big, really big challenging, complex issues, and they take a lot of time."
Prognostic	What's the solution? Plan of attack, how can we fix the challenges we face?	"Well we need to find a way for the entire region to invest in it as well. I don't know exactly how that happens. There are all sorts of investment mechanisms that can be utilized for that, but one of them might even be something as simple as a county wide tax that goes to pay for restoration of the Rio Salado. Or something like that."
Motivational	Call to arms, rallying everyone. Vocabularies of motive (e.g. severity, urgency, efficacy, and propriety/duty)	"This is what I think is happening," is everyone is coming to the table and saying, "Hey, this is important to us. This is a wonderful opportunity for us to sit down and work together instead of independently and having all these little isolated projects, but we're competing for federal funding, or we're looking for this. Or we're looking for that." It's kind of a hodgepodge of different projects that may or may not ever get off the ground. I do get a sense that it is, "Hey, this is important. Let's do this." What does that look like, we're not sure yet, but it is important. The river is important, the corridor's important. This is important for Phoenix"

APPENDIX B

SUPPLEMENTAL TABLES

IRB Approved Interview Protocol

Interview Protocol
1. What is Rio Salado 2.0 and how did you first hear about the project? **a. What is your involvement with Rio Salado 2.0?**
2. From your perspective, what are the main motivations behind Rio Salado 2.0?
3. What will Rio Salado 2.0 bring to the region? For instance, Tempe Town Lake is often looked to as a vibrant economic benefit and environmental amenity as well as the Rio Salado Audubon Habitat Restoration Area as an ecological restoration and environmental amenity.
4. Who should participate in the planning process of Rio Salado 2.0? Who should not participate?
5. Do you believe that there is a shared vision from leaders across the river for Rio Salado 2.0?
6. Do you believe that it will be possible to balance human needs (including uses of water and other natural resources) with ecosystem needs by restoring and protecting the life supporting functions of the river?
7. Do you believe that the current discussion of the project aims to provide equitable access and provision of economic and natural resources across all communities along the river? (Now and into the future?)
8. Development on the Salt River has a rich and dynamic history in the Phoenix area. To what extent to you believe Rio Salado 2.0 stands apart or within prior Salt River development visions? **a. What values remain the same?** **b. What values might be different moving forward?**

Intercoder Reliability Raw Agreement:

Code	Percent Across Coders (%)
Motivational	100.00
Diagnostic	85.71
Prognostic	88.89
Local to Global Scales	100.00
Intragenerational Equity	72.73
Intergenerational Equity	85.71
Civility and Democratic Governance	82.76
Resource Efficiency	76.92
Livelihood Sufficiency Opportunity	82.05
Social Ecological System Integrity	81.48
Total	83.74

APPENDIX C

PREVIOUSLY PUBLISHED WORK PERMISSIONS

A preliminary version of this study was awarded the Central Arizona Project's Award for Outstanding Water Research in 2018. As part of the award, the paper was presented to the Arizona Hydrological Society's annual conference and published publicly online. The chair of this study, Dr. Dave D. White, is the co-author of the previously published work. He has granted full permission and approved this thesis.

APPENDIX D

IRB APPROVALS

Dave White
Community Resources and Development, School of
602/496-0154
Dave.White@asu.edu
Dear Dave White:
On 3/19/2018 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	A social science content analysis of news media and interviews regarding possible waterway developments along the Salt River in Phoenix, Arizona
Investigator:	Dave White
IRB ID:	STUDY00007964
Funding:	Name: National Science Foundation (NSF)
Grant Title:	
Grant ID:	
Documents Reviewed:	• Horvath_White_FramingRioSalado2.pdf, Category: Recruitment Materials; • Horvath_White_FramingRioSalado2.docx, Category: IRB Protocol; • Horvath_White_FramingRioSalado2.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Horvath_White_FramingRioSalado2.pdf, Category: Consent Form; • DCDC III Project Description FINAL.pdf, Category: Sponsor Attachment;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 3/19/2018.
In conducting this protocol, you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).
Sincerely,
IRB Administrator
cc: Veronica Horvath
Veronica Horvath
Dave