From Mountain to Maleh

Water as an Agent of Negotiation in the Kidron Valley/Wadi an-Nar

> by Rachel Cohen-Murison

A thesis presented to the University of Waterloo in fulfilment of the thesis requirement for the degree of Master of Architecture

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I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electonically available to the public.

ABSTRACT

In a site with significantly fractured political, social, and environmental governance, it comes as no surprise that the West Bank's water network is fraught with issues. Over-pumping of groundwater, inadequate sewage treatment, and contamination of surface and groundwater are by-products of the Israeli-Palestinian conflict. The West Bank's Mountain Aquifer system generates more than a third of Israel's yearly water intake (600-700 million cubic metres) but is being heavily pumped, supplying significantly more water to Israelis than Palestinians. A recharge area of 4700 square kilometres allows polluted wastewater from over two million Israeli and Palestinian inhabitants of the West Bank and Jerusalem area to enter groundwater. Over time, levels of nitrate and micro-biological contaminants from inadequate sewage treatment, dumping, and agricultural runoff have increased, compromising future drinking water quality from springs and wells.

One valley in particular, Nahal Kidron/Wadi an-Nar, receives a significant amount of pollution. It is one of the only cross-border streams between Israel and the Palestinian West Bank to not have an environmental remediation plan in place. Framed within the parameters of the current Israeli-Palestinian conflict, research on the impact of unmitigated surface and groundwater pollution, as well as social inequity between communities in the Kidron/Wadi an-Nar, has inspired this thesis's design of architecture and landscape treatment stewarding environmental and social agency.

The thesis first examines the existing context of the water network and political boundaries of the Kidron/Wadi an-Nar. Cultural history and urban theory inform the analysis of the site, further explaining how water and land are spatially negotiated and governed in a state of conflict. Finally, this thesis proposes architecture and landscape interventions at three locations along the Kidron/Wadi an-Nar. These installations operate at varying scales, from a small community park to large landscape installations, in order to serve as interfaces for independent water sourcing, distribution, and treatment outside of the existing de facto West Bank water infrastructure network. These installations do not propose a solution, however desperately needed, to the long-held conflict in the region, but instead set up a series of architecture and landscape interventions which shape how the sites would be managed in the future.

This thesis draws methodological inspiration from existing EcoPeace Ecoparks; design inspiration from the Arava Institute's sewage disposal units for rural Palestinian towns, as well as from preventative planting; and implementation tactics from the existing Kidron Action Plan steering committee and the Arava Institute's Centre for Transboundary Water Management. These projects harness respective communities's agency over their broader watershed.

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TABLE OF CONTENTS

iii	AUTHOR'S DECLARATION
V	ABSTRACT
vi	ACKNOWLEDGEMENTS
vii	DEDICATION

- ix TABLE OF CONTENTS
- LIST OF FIGURES xi
- INTRODUCTION 1

15 1.0 CONTEXT

1.1 INEFFICIENT WATER GOVERNANCE: A CASE FOR REFORM IN THE KIDRON VALLEY / WADI AN-NAR

1.2 HISTORY OF THE POLITICAL CONFLICT AND THE RELEVANCE OF WATER 1.3 ISRAELI-PALESTINIAN WATER GOVERNANCE: A DISPARATE AND INEFFICIENT SYSTEM

61 2.0 ANALYSIS

2.1 CULTURE AND LANDSCAPE URBANISM: "DESERT" AS NON-PLACE 2.2 POLITICAL BOUNDARIES AS SHAPED BY CULTURAL IDEOLOGY AND WATER: THE CASE OF JERUSALEM 2.3 POLITICIZATION OF WATER INFRASTRUCTURE BASED ON LAND 2.4 ZONES OF POTENTIAL AND WATER INFRASTRUCTURE 2.5 LAND LEGISLATION AND GOVERNANCE 2.6 LAND, WATER, AND POTENTIAL IN THE KIDRON / WADI AN-NAR

111 3.0 PRAXIS

3.1 METHOD OF DESIGN AND GOVERNANCE 3.2 INFORMING THE DESIGN: PRECEDENTS 3.3 HINNOM VALLEY / WADI A-RABABA (JERUSALEM) 3.4 AL-UBEIDIYE 3.5 MAR SABA 3.6 BAPTISMAL SITE AND THE "UN-PEACE" PARK

4.0 CONCLUSION

4.1 ECOLOGICAL AND SOCIAL IMPERATIVE 4.2 ECOLOGICAL AND SOCIAL IMPLICATIONS OF THE DESIGN

- 253 BIBLIOGRAPHY
- 267 GLOSSARY

LIST OF FIGURES

All figures and images by author unless otherwise noted.

1	Fig. 0.01 Bridge over Kidron/Wadi an-Nar below v
3	Fig. 0.02 Kidron/Wadi an-Nar site section By author. Map base from Google Earth.
7	Fig. 0.03 Integrated Watershed Management Ac Image from "Kidron Valley – Wadi el Nar Basir
7	Fig. 0.04 Sharbabil Bin Hassneh EcoPark in Jorda Image from Sharhabil Ben Hassneh EcoPark.
15	Fig. 1.01 Large arrays of rooftop water tanks on h
	more water in case of municipal shortages
16	FIG. 1.02 TRANSBOUNDARY WATER: JORDANIAN, ISR By author. GIS data from Geofabrik.de (http:/ (geocomm.com).
18	FIG. 1.03 KIDRON / WADI AN-NAR WATERSHED AND By author. Map base from Google Earth; L. Me
22	Fig. 1.04a Significant Jerusalem archeological sit By author. Map base from Google Earth; L. Me from Google Maps.
22	FIG. 1.04b CULTURAL SITES IN KIDRON/WADI AN-NA By author. Map base from Google Earth; L. Me Valley – Wadi el Nar Master Plan, 2011." Kidror mainplan/#/3.
27	Fig. 1.05 The Israeli provisional government read
	in Tel Aviv on 14 May 1948 Image from "Israel Government Press Office." Ha timesofisrael.com/leaders-grappled-over-arab
27	Fig. 1.06 Palestinian refugees crossing the Allent

Israeli War By UNRWA. In Mondoweiss. 1967. Photograph. http://mondoweiss.net/2015/01/exhibit-photosjourney/.

Fig. 1.07 Signing of the 1993 Oslo Accord on the White House lawn by Israeli Prime Minister 27

Yitzhak Rabin and Palestine Liberation Organization Chairman Yasser Arafat By Levac, Alex. In Haaretz. 13 September 1993. Photograph. http://www.haaretz.com/st/inter/ Heng/israelInCamera/editorial/index2.html.

village of ash-Sheikh Sa'd

ction Plan in Action Plan." 2013.

. http://jordanecopark.com/about/.

house roofs, like this one in Bethlehem, store

RAELI, AND PALESTINIAN //www.geofabrik.de/) and Geo Community

) STREAM eron, used with author's permission.

ites eron, used with author's permission. Data

AR REGION leron, used with author's permission; "Kidron on Basin. http://www.en.kidronbasin.org/

ding out the Israeli Declaration of Independence

łaaretz. 1948. Photograph. http://www. .bic-name-for-fledgling-state/.

by Bridge into Jordan during the 1967 Arab-

27	Fig. 1.08 Protected entrance to the Israeli settlement in Hebron By Feuillatre, David. Abhaya.xyz. 12 December 2013. https://davidwithamoviecamera. com/2013/12/15/hebron-in-photos/hebron-4/.	41 43
29	FIG. 1.09 WEST BANK OSLO DIVISIONS, GREEN LINE, AND SEPARATION BARRIER By author. Adapted from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010.	44
31	FIG. 1.10 HYDROSTRATEGIC TERRITORY MAP By author. Adapted from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010; Wolf, Aaron T. Hydropolitics Along the Jordan River: Scarce Water and its Impact on the Arab–Israeli Conflict. Japan: United Nations University Press, 1995.	47
34	FIG. 1.11 POPULATION	49
	by author. Adapted from Population and Demography. Israel Central Bureau of Statistics. http://www.cbs.gov.il/reader/?MIval=cw_usr_view_SHTML&ID=705; "Middle East: West	49
	world-factbook/geos/we.html. "Jordan." The World Bank. http://data.worldbank.org/	49
	country/jordan.	52
34	FIG. 1.12 WATER CONSUMPTION AFTER ESTIMATED LOSSES By author. Adapted from "Water Crisis." B'Tselem. http://www.btselem.org/water; "Water Authority." "Statistics." B'Tselem. http://www.btselem.org/water/statistics; Israel Water Authority. http://www.water.gov.il/Hebrew/Pages/Water-Authority-Info. aspx; "Jordan Water Sector Facts and Figures 2013." Ministry of Water and Irrigation. 2013. http://www.mwi.gov.jo/sites/en-us/documents/w.%20in%20fig.e%20final%20e. pdf.	56
35	FIG. 1.13 WEST BANK WATER EXTRACTION (MCM / year) By author. Adapted from "Water Crisis." B'Tselem. http://www.btselem.org/water; "Troubled Waters – Palestinians Denied Fair Access to Water." Amnesty International. 2009; "THE ISRAELI PALESTINIAN INTERIM AGREEMENT – Annex III." Schedule 10. Israel Ministry of Foreign Affairs. 1995. http://www.mfa.gov.il/mfa/foreignpolicy/peace/guide/ pages/the%20israeli-palestinian%20interim%20agreement%20-%20annex%20iii.	58 61
05	dspx + dpp = 40.	63
35	FIG. 1.14 OVERDRAW OF GROUNDWATER (MCM / year) By author. Adapted from Raddad, Khamis "Water supply and water use statistics in Jordan." IWG-Env, International Work Session on Water Statistics, Vienna. June 20–22 2005. https://unstats.un.org/unsd/environment/envpdf/pap_wasess4a3jordan.pdf. 3.	65
		70
36	FIG. 1.15 COMPARISON OF ISRAELI AND PALESTINIAN CONSUMPTION RATES, 1948 – 2003	
	("Groundwater Case Study," Zeitoun, Messershmid, and Attili) By Zeitoun, Mark, Messerchmid, Clemens, and Shaddad Attili. "Asymmetric Abstraction and Allocation: The Israeli–Palestinian Water Pumping Record." In Ground Water. Volume 47, Issue 1 (January–February 2009): 151.	73
38	FIG. 1.16 FRESH WATER PRODUCTION IN ISRAEL, 1948 – 2003 (EXCLUDING REUSED OR DESALINATED	74
	WATER) ("Groundwater Case Study," Zeitoun, Messershmid, and Attili) By Zeitoun, Mark, Messerchmid, Clemens, and Shaddad Attili. "Asymmetric Abstraction and Allocation: The Israeli–Palestinian Water Pumping Record." In Ground Water. Volume	

- FIG. 1.17 WATER NETWORK ADMINISTRATION: ISRAELI, PALESTINIAN, AND JOINT
- FIG. 1.18 ISRAELI AND PALESTINIAN WATER NETWORKS
- FIG. 1.19 TRANSNATIONAL HYDROGEOLOGICAL SITE SECTION PUMPING WELL DEPTHS AND LOCATIONS By author. Adapted from Zeitoun, Mark, Messerchmid, Clemens, and Shaddad Attili. "Asymmetric Abstraction and Allocation: The Israeli–Palestinian Water Pumping Record." In Ground Water. Volume 47, Issue 1 (January–February 2009): 147.
- FIG. 1.20 WEST BANK AREA C PALESTINIAN TOWNS WITH VULNERABLE WATER SUPPLY AND SANITATION By author. Data from "Humanitarian Atlas 2015." OCHA. 2015. 24. Map base from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010.
- Fig. 1.21 WSSA manhole in Bethlehem
- Fig. 1.22 Water storage tanks on roof of house in Bethlehem
- Fig. 1.23 Water tanker truck delivering water in Bethlehem
- FIG. 1.24 EXISTING KIDRON/WADI AN-NAR AGRICULTURAL AND URBAN RUNOFF ZONES WITH TYPICAL

CONDITIONS OF PALESTINIAN VILLAGE LACKING SEWAGE PIPING NETWORK By author. Map base from Google Earth.

- FIG. 1.25 EXISTING WATER INFRASTRUCTURE IN THE KIDRON / WADI AN-NAR REGION By author. Map base from Google Earth; L. Meron, used with author's permission. Data from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010.
- FIG. 1.26 ISRAELI-PALESTINIAN WATER NETWORK CYCLE SOURCING, TREATMENT, AND DISTRUBUTION
- Fig. 2.01 Pool of Siloam, Jerusalem
- Fig. 2.02 Private reservoir in the desert just east of Mar Saba, no longer in operation
- Fig. 2.03 "Sabra" film poster (1933) Image from "Chalutzim." IMDb. http://www.imdb.com/title/tt0130234/.
- FIG. 2.04 KIDRON / WADI AN-NAR CIRCULATION ROUTES By author. Adapted from "Kidron Valley Wadi el Nar Master Plan, 2011." Kidron Basin. http://www.en.kidronbasin.org/mainplan/#/3. Map base from Google Earth; L. Meron, used with author's permission.
- Fig. 2.05 Jerusalem Site Plan By author. Map base from Liana Bresler, used with author's permission; Bresler, Liana. Embedded Boundaries. M. Arch thesis. Waterloo, ON: University of Waterloo, 2010. 121.
- Fig. 2.06 Conceptual model of ancient City of David Image from Tower of David Museum. "Hezekiah's Water Tunnel in Jerusalem, the Gihon Spring, and the Pool of Siloam." Lion Tracks. http://www.bibleistrue.com/qna/pqna21. htm.

47, Issue 1 (January - February 2009): 150.

75	Fig. 2.07 A: Mikveh under southwest corner of Temple Mount Wall
75	Fig. 2.08 B: Cistern in tunnel underneath Temple Mount, City of Jerusalem
75	Fig. 2.09 C: Hezekiah's Tunnel
75	Fig. 2.10 D: Pool of Siloam
77	Fig. 2.11 Model of ancient City of David from Tower of David Museum Image from "Catholic Church, 10 Day Tour." Shalom Israel. https://welcometoyourisrael. wordpress.com/catholic-church-10-day-tour/.
79	Fig. 2.12 Sign in Ir David's archeological park
79	Fig. 2.13 Jerusalem Site Plan By author. Map base from Liana Bresler, used with author's permission; Bresler, Liana. Embedded Boundaries. M. Arch thesis. Waterloo, ON: University of Waterloo, 2010. 121.
81	Fig. 2.14 A: Ir David archeological dig under what was once the Giv'ati parking lot, owned by an
	East Jerusalem resident
81	Fig. 2.15 B: Ir David active archeological dig
81	Fig. 2.16 C: Drainage canal from Siloam Pool, looking south-east to Silwan
81	Fig. 2.17 D: Water passing under Derech HaShiloah road, emerging in Silwan/Hilweh
81	Fig. 2.18 E: Archeological park looking east into Silwan
83	Fig. 2.19 Jewish housing in Silwan
85	Fig. 2.20 Old sign at the Pool of Siloam claiming Islamic Waqf management
85	Fig. 2.21 L: Pool of Siloam around 100 years ago Image from "Jon's Israel trip 2014." Pinterest. https://www.pinterest.com/ pin/487936940849890799/.
85	Fig. 2.22 R: Pool of Siloam now
87	Fig. 2.23 Phenomenological model of Israeli–Palestinian water reservoirs, pumps, and aquifers:
	surface as armature for infrastructure
89	FIG. 2.24 WEST BANK AREA C SETTLEMENTS, TOWNS, AND VILLAGES (AREAS A AND B OMITTED) By author. Data from "Humanitarian Atlas 2015." OCHA. 2015. 21. Map base from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010; S. Harris- Brandts, used with author's permission.
93	FIG. 2.25 WEST BANK ISRAELI SETTLEMENT AND PALESTINIAN AREAS By author. Map base from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010; S. Harris-Brandts, used with author's permission.
95	FIG. 2.26 WEST BANK BARRIERS TO PALESTINIAN LAND AND LIVELIHOOD

iumanitarian Atlas 2015." OCHA. 2015. 22. Map base from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010; S. Harris-Brandts, used with author's permission.

97 FIG. 2.27 VULNERABILITY OF AREA C PALESTINIAN TOWNS WITH BARRIERS TO LAND AND LIVELIHOOD By author. Data from "Humanitarian Atlas 2015." OCHA. 2015. 4; "Humanitarian Impact of the West Bank Barrier." OCHA. 2006. Map base from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010; S. Harris-Brandts, used with author's permission.

- 99 Fig. 2.28 Marker indicating Area B to Area C transition
- 99 Fig. 2.29 Israeli military outpost of Shdema, between al-Ubeidiye and Mar Saba, as indicated by

spray-painted sign on wall

- 111 Fig. 3.01 Water tank of Bedouin family near the village of al-Ubeidiye
- 113 Fig. 3.02 Kidron/Wadi an-Nar Basin Action Plan Image from "Kidron Valley - Wadi el Nar Basin Action Plan." 2013.
- Fig. 3.03 EcoPeace (formerly FoEME) transboundary water project 113 Image from "Big Jump at the Jordan River." Youth Network for River Action. http:// en.bigjumpchallenge.net/news-details/big-jump-at-the-jordan-river.html.
- 115 Fig. 3.04 Partial Israeli–Palestinian water network diagram
- Fig. 3.05 Suzanne Dellal Centre for Dance and Theatre Square Shlomo Aronson, Tel Aviv Image from "Susan Delal Dance and Theatre Center." Shlomo Aronson Architects. http:// 116 www.s-aronson.co.il/project/susan-delal-dance-and-theater-center/.
- 116 Fig. 3.06 Kreitman Plaza – Shlomo Aronson Architects, Tel Aviv Image from "Kreitman Plaza." Shlomo Aronson Architects. http://www.s-aronson.co.il/ project/kreitman-plaza/.
- 116 Fig. 3.07 Manger Square, Bethlehem
- 116 Fig. 3.08 Gutter in Old City of Jerusalem street
- 117 Fig. 3.09 Mount of Olives, Jerusalem
- 117 Fig. 3.10 Wolfson Park – Dani Karavan, Tel Aviv
- 117 Fig. 3.11 Umayyad Palace Archeological Park - Plesner Architects, Jerusalem
- 118 Fig. 3.12 Limanim/water retention ponds (see Glossary page 271) - Shlomo Aronson, various

Israeli desert locations Image from "Erosion Control through 'Limanim' (Bay) and Ravines." Shlomo Aronson Architects. http://www.s-aronson.co.il/project/marks-in-the-landscape-project1/.

- 118 Fig. 3.13 Hebron Road Sabil at its founding in 1901 (top) and nowadays (bottom), Jerusalem Top image from Harvard, Central Zionist Archives. Ben David, Lenny. In "Mystery Picture: A Fountain Found and a Windmill Disappears." Israel National News. 19 June 2015. http:// www.israelnationalnews.com/News/News.aspx/196969.
- Fig. 3.14 Preventative planting 118 Image from "Israel condemns Jerusalem church vandalism." Associated Press. 9 October 2012. https://www.yahoo.com/news/israel-condemns-jerusalem-churchvandalism-155619966.html,

118	Fig. 3.15 Sabil at the Ahmad Ibn Tulun Mosque, Cairo Image from "Moschea di Ibn Tulun." Egitto per Caso. http://www.egittopercaso.net/		standpipe adjacent
	cairo/moschea-ibn-tulun.php.	131	Fig. 3.32 Al-Bustan Palestinian social adv
119	Fig. 3.16 Lavoir, Antigua By Schediwy, Robert. "Antigua, laundry fountain." 1971. In Wikimedia. https://commons. wikimedia.org/wiki/File:Antigua,_laundry_fountain.JPG.	133	FIG. 3.33 EAST JERUSALEM NEIGHBOURHOOD By author. Map base from Liana Bresle Embedded Boundaries. M. Arch thesis.
119	Fig. 3.17 Zimbabwe Bush Pump (B Type) Image from Morgan, Peter. "The Zimbabwe Bush Pump, Inspection of the 'B' type Bush Pump Part 1. The pump head." 2012.	133	Fig. 3.34 Gan Hamelech / Al-Bustan, at th By author. Map base from Google Sketc
119	Fig. 3.18 Lavoir, Martinvelle Ry Clauda at Stanbane L'ODANCE, "Photos de Containes, de Lavoirs," La vigio de l'equi	135	Fig. 3.35 Looking up Hinnom/Wadi a-Raba
110	http://www.lavigiedeleau.eu/node/226.	137	Fig. 3.36 Temporary tourist bridge over th Image by Greenspan, Dudu. In "Ze'elim
119	Fig. 3.19 Lavoir de Concise, Savoie Mont Blanc Image from "Lavoir de Concise." Thonon les Bains. http://www.thononlesbains.com/fr/		
	patrimoine-culturel/1/111629-lavoir-de-concise.html.	137	Fig. 3.37 Emek Shaveh's diagram of the Is
119	Fig. 3.20 Livestock nose pump Image from Smith Thomas, Heather. "How to let your cattle pump their own water." Beef		Kidron, Gan Hamelech/al-Bustan, Hinnom
	Magazine. 12 October 2012. http://www.beefmagazine.com/pasture-range/how-let- your-cattle-pump-their-own-water.		strip Image from "From Territorial Contiguit through Natinoal Parks in East Jerusale national-parks-in-east-ierusalem-up
121	Fig. 3.21 Hinnom/Wadi a-Rababa in East Jerusalem looking south-east down Kidron/Wadi an-		
	Nar Image from Dychel, Jackie, 2009, "Hinnom 1," https://exploratorius.wordpress	139	Fig. 3.38 "1944 Open Space Plan" (Kendal
	com/2009/03/29/hell/.		Boundaries" by L. Bresler (page 34)
123	Fig. 3.22 Hinnom/Wadi a–Rababa site within Kidron/Wadi an–Nar By author. Map base from Google Earth; L. Meron, used with author's permission.		Jerusalem, the city plan – preservation 1918–1948 (London: Hist Majesty's Stati
125	FIG. 3.23 JERUSALEM SITE PLAN By author. Map base from Liana Bresler, used with author's permission; Bresler, Liana. Embedded Boundaries. M. Arch thesis. Waterloo, ON: University of Waterloo, 2010. 121.	139	Fig. 3.39 Plesner Architects' Hinnom Valle Image from "Gey-Ben-Hinom National plesnerarchitects.com/en/landscape/
126	FIG. 3.24 HINNOM / WADI A-RABABA SITE PLAN	139	Fig. 3.40 Border between irrigated and no
	by author, map base nonn boogle sketchup; L. Meron, used with author's permission.	141	Fig. 3.41 Blocked stormwater drain in Silw
128	Fig. 3.25 Hebron Road sabil	142	Fig. 3.42 Aerial map of Zurich Garden
129	Fig. 3.26 Stormwater drain in West Jerusalem		
129	Fig. 3.27 Irrigation in Zurich Garden at top of Hinnom/Wadi a-Rababa	143	Fig. 3.43 Top of valley – Zurich Garden
129	Fig. 3.28 Sultan's Pool with Israeli stage and seating	143	Fig. 3.44 Zurich Garden where landscape
130	Fig. 3.29 Al-Bustan looking east into Silwan	143	Fig. 3.45 Zurich Garden looking south-ea

Fig. 3.30 Blocked stormwater drain in al-Bustan 131

Fig. 3.31 East–West Jerusalem area marker surrounded by solid waste, with a solitary Israeli

In Palestinian social advocacy centre in state of disrepair

131

148

permission.

USALEM NEIGHBOURHOODS BY MAJORITY DEMOGRAPHIC – ARAB AND JEWISH base from Liana Bresler, used with author's permission; Bresler, Liana. daries. M. Arch thesis. Waterloo, ON: University of Waterloo, 2010. 121.

elech / Al-Bustan, at the bottom of the Hinnom/a-Rababa Valley ase from Google Sketchup; L. Meron, used with author's permission.

up Hinnom/Wadi a-Rababa from Gan Hamelech / Al-Bustan

ry tourist bridge over the Gan Hamelech/al-Bustan park pan, Dudu. In "Ze'elim forward." Israel HaYom. 23 November 2015. http://

aveh's diagram of the Israeli–desired archeological park connecting the

lech/al-Bustan, Hinnom/Wadi a-Rababa, and Mitchell Gardens in a continuous

m Territorial Contiguity to Historical Continuity: Asserting Israeli Control Parks in East Jerusalem." Emek Shaveh. http://alt-arch.org/en/ in-east-jerusalem-update-2014/.

en Space Plan" (Kendall) including Hinnom Valley, as found in "Embedded

44 Master Plan, Open Space. Great Britain. 1948. In Kendall, Henry, ed. city plan – preservation and development during the british mandate on: Hist Majesty's Stationery Office, 1948).

Architects' Hinnom Valley site plan -Ben-Hinom National Park, Jerusalem." Plesner Architects. http:// s.com/en/landscape/gey-ben-hinom-national-park-jerusalem/.

etween irrigated and non-irrigated land

stormwater drain in Silwan, East Jerusalem

arden where landscape transitions

arden looking south-east, down Hinnom/Wadi a-Rababa

FIG. 3.46 OVERALL SITE - EXISTING PATHS OF TRAVEL, POLITICAL ZONING, AND KEY POINTS By author. Map base from Google Sketchup; Google Maps; L. Meron, used with author's

150	FIG. 3.47 PLANTING STRATEGY Images from "Silk Italian Olive Branches." Silk Spectacular. http://www.silkspectacular. com/silk_olive_tree_branches.html; "Here's Why You Should Eat Tamarind." Healthy Definition_http://bealthydefinition.com/wby_you_should_eat_tamarind/. http://	171	Fig. 3.60 Al-Ubeidiye farmland (in gray), ad By author. Map base from Google Sketch
	cdn1.medicalnewstoday.com/content/images/headlines/266/266580/eucalyptus-	172	Fig. 3.61 Statue emphasizing the importan
	innovativeprivatelabel.com/ingredients/health-benefits-pistachio-nuts/; "Pteris Fern	172	Fig. 3.62 Agriculture in the inner valleys of
	fern.html; "Reed Canary Grass." Minnesota Seasons. http://minnesotaseasons.com/	173	Fig. 3.63 Water tank of Bedouin family belo
		173	Fig. 3.64 Migratory storks in valley
150	Fig. 3.48a Bioretention landscaping on north hill (Mount Zion): orchard with tamarind forming	175	Fig. 3.65 Effluent entering Kidron / Wadi an By author. Map base from Google Sketch
	border		
150	Fig. 3.48b Dechlorinated pool water and urban runoff are both used to feed grass planters and	177	Fig. 3.66 Concept diagram – water recuper By author. Map base from Google Sketch
	trees further down the valley		
151	FIG. 3.48c WATER SYSTEM DESIGN	177	Fig. 3.67 Bottom of the valley at Stream
151	Fig. 3.48d Greywater filtration system: grass planters	178	FIG. 3.68 OVERALL SITE – EXISTING PATHS OF
151	Fig. 3.48e Hinnom /Wadi a- Rababa section through stormwater ponds looking north-west		KEY POINTS By author, Man base from Google Sketch
152	FIG. 3.49 OVERALL SITE – LANDSCAPE DESIGN INTERVENTIONS By author. Map base from Google Sketchup; Google Maps; L. Meron, used with author's permission.	180	FIG. 3.69 PLANTING STRATEGY
154	FIG. 3.50 CLOSE-UP - ARCHITECTURE AND LANDSCAPE DESIGN INTERVENTIONS By author. Map base from Google Sketchup; Google Maps; L. Meron, used with author's permission.		rinages from "slik rtatian olive Branches com/silk_olive_tree_branches.html; "F Flowers in Israel. http://www.flowersinis "Foxtail Millet." Organic 2 City. http://w
157	Fig. 3.51 Perspective from Alpert Music Centre looking south-east		wildflowers.co.il/hebrew/plant.asp?ID={
159	Fig. 3.52 Pool perspective looking north-west towards Alpert Music Centre		Alamy. http://www.alamy.com/stock-p
161	Fig. 3.53 Perspective descending from Abu Tor – children on their way to pool/music school		About Water Hyacinth Control." Gardenin
163	Fig. 3.54 Kidron/Wadi an-Nar beneath the village of al-Ubeidiye		Com/ornamental/water-plants/water- Canary Grass." Minnesota Seasons. http
165	Fig. 3.55 Al-Ubeidiye site within Kidron/Wadi an–Nar By author. Map base from Google Earth; L. Meron, used with author's permission.	180	Fig. 3.70a Bioretention landscaping: terraci
167	Fig. 3.56 Monastery of St. Theodosius from west		and plantings
	Image from "The Feast of St Theodosius." Travel Palestine. http://travelpalestine.ps/ which-event/calendar-of-events/the-feast-of-st-theodosius/.	180	Fig. 3.70b Water filtration system part d) ve
167	Fig. 3.57 Monastery of St. Theodosius winter aerial view		plants for livestock
	Image from "Theodosius Stock Photos and Images (960)." Alamy. http://www.alamy. com/stock-photo/theodosius.html.	181	Fig. 3.70c Blackwater filtration system at b
167	Fig. 3.58 Al–Ubeidiye inner valley with solid waste accumulation	181	FIG. 3.70d WATER SYSTEM DESIGN
168	FIG. 3.59 AL-UBEIDIYE SITE PLAN	181	Fig. 3.70e Water filtration system part c) or
	By author. Map base from Google Sketchup; L. Meron, used with author's permission.		entry)
			· • • •

djacent to open hillside chup; L. Meron, used with author's permission.

nce of water in al-Ubeidiye

f the village

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n-Nar Stream beneath the road at al-Ubeidiye hup; L. Meron, used with author's permission.

eration in "terra praeter" chup; L. Meron, used with author's permission.

TRAVEL, AGRICULTURAL LAND, POLITICAL ZONING, AND

chup; L. Meron, used with author's permission.

es." Silk Spectacular. http://www.silkspectacular. "Polygonum equisetiforme, Horsetail Knotweed." nisrael.com/Polygonumequisetiforme_page.htm; /www.organic2city.com/index.php?route=product/ olymitana." Wild Flowers of Israel. http://www. D=540; "Weed Identification Chart." yribbon. dance.com/index.php?q=weed-identification-chart; -photo/pteris-fern.html; "Vallisneria Spiralis." allisneria+spiralis; "Is Water Hyacinth Invasive: Learn ning Know How. https://www.gardeningknowhow. --hyacinth/water-hyacinth-control.htm; "Reed tp://minnesotaseasons.com/Plants/reed_canary_

cing with gabion baskets, anti-erosion control layer,

vertical flow septage reed bed (above soil entry) with

bottom of hill; first phase of treatment

one of the septage vertical flow reed beds (below soil

181	Fig. 3.70f Water filtration system part a) solid stormwater interceptor and b) biogas reactor	206	Fig. 3.89 Stormwater channel running under stair
182	Fig. 3.71 Inspired by existing sabils found at roadsides around Jerusalem, this sabil is a hollow	206	Fig. 3.90 Local workers tap into an ancient cisterr
	structure with an operable panel, allowing water tanks to be replaced or refilled	207	Fig. 3.91 Kidron/Wadi an-Nar Stream
182	Fig. 3.72 Lavoirs satisfy local need for washing water, while also creating a social space	207	Fig. 3.92 Solid waste in Kidron/Wadi an-Nar
183	Fig. 3.73 Already used in North America, the livestock nose–pump is activated by goats and	207	Fig. 3.93 Channel running behind monastery wall
	sheep, minimizing spillage and human involvement	208	FIG. 3.94 OVERALL SITE - EXISTING PATHS OF TRAVEL
183	Fig. 3.74 Gabion basket retaining walls and plants further downhill catch urban runoff, while also		by author, map base norr budgle sketchup, L.
	hosting migratory birds passing through the valley at this spot	210	FIG. 3.95 PLANTING STRATEGY
184 187	FIG. 3.75 OVERALL SITE – LANDSCAPE DESIGN INTERVENTIONS By author. Map base from Google Sketchup; L. Meron, used with author's permission. FIG. 3.76 CLOSE-UP – ARCHITECTURE AND LANDSCAPE DESIGN INTERVENTIONS		com/silk_olive_tree_branches.html; "Haloxy cs/haloxylon-articulatum/; "Polygonum equis Israel. http://www.flowersinisrael.com/Polygo incisa (Lam.) DC." Flora of Israel Online. http:/ articulata (Forssk.) Moq." Flowers of Israel On
	By author. Map base from Google Sketchup; L. Meron, used with author's permission.	211	FIG. 3.96a WATER SYSTEM DESIGN
189	Fig. 3.77 Perspective from vertical flow septage reed bed (above soil entry) looking west towards	211	Fig. 3.96b Garden construction: gabion baskets ar
	terraces	212	FIG. 3.97 OVERALL SITE - LANDSCAPE AND ARCHITEC
191	Fig. 3.78 Perspective on steps looking towards lavoir		By author, Map base from Google Sketchup; L.
193	Fig. 3.79 Uphill perspective from Kidron/Wadi an-Nar Stream with solid stormwater interceptor,	214	FIG. 3.98 CLOSE-UP - ARCHITECTURE AND LANDSCA
	anaerobic digestor, and biosolid tank in foreground at the edge of existing farmer's olive grove		By author. Map base from Google Sketchup; L.
195	Fig. 3.80 Mar Saba Monastery	217	Fig. 3.99 Perspective looking south towards Wome
197	Fig. 3.81 Mar Saba site within Kidron/Wadi an-Nar	219	Fig. 3.100 Perspective at water retention garden a
	By author, map base from Google Earth; L. Meron, used with author's permission.	221	Fig. 3.101 Perspective looking west towards garde
199	FIG. 3.82 MAR SABA SITE PLAN	223	Fig. 3.102 KKL/JNF-funded Israeli agriculture in Ar
	By author, map base from Google Sketchup; L. Meron, used with author's permission.	223	Fig. 3.103 Israeli baptismal site on the left and Jor
200	Fig. 3.83 Lookout spot	223	Fig. 3.104 Qasr el Yahud and the mine warning sig
201	Fig. 3.84 Women giving written prayers to the monastery's monks, as they are not permitted to	225	Fig. 3.105 Eritrean baptismal ceremony with musi
	enter and pray	227	Fig. 3.106 Baptism in Jordan River
201	Fig. 3.85 Laura (hermetic cell)	231	Fig. 4.01 Sharif Waked, Jericho First
201	Fig. 3.86 View south-east from top of hill		cm, acrylic on canvas. In the Israel Museum.
203	Fig. 3.87 Cave of Xenophon cliff with old laura (hermetic dwellings)		
205	Fig. 3.88 Local Palestinian workers from nearby villages are already employed by the monastery		

to help with extending its path system and maintaining the site

rn in the Tower of Arcadius son of Xenophon

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L AND KEY POINTS
. Meron, used with author's permission.
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lk Spectacular. http://www.silkspectacular. (ylon Articulatum." Botany. http://botany.cz/ uisetiforme, Horsetail Knotweed." Flowers in gonumequisetiforme_page.htm; "Pulicaria b://flora.org.il/en/plants/PULINC/; "Anabasis online. http://flora.org.il/en/plants/anaart/.

and low vinyl sheet piling flood walls

CTURE DESIGN INTERVENTIONS .. Meron, used with author's permission.

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nen's Tower sabil and rest stop

after a rainstorm

en and stair

rea C around Jericho

ordanian on the right

gns

Sic

02. 2 panels 200 x 160 cm, 40 panels 40 x 27

- FIG. 4.02 OTHER POSSIBLE DESIGN SITES 244 By author, Map base from Goodle Earth: L. Meron, used with author's permission.
- FIG. 4.03 CROSS-BORDER STREAMS WEST BANK CONTEXT 251 By author. Data from Asaf, L., Negaoker, N., Tal, A., Laronne, J., and N. A. Khateeb. "Transboundary Stream Restoration in Israel and the Palestinian Authority." In Integrated Water Resources Management and Security in the Middle East. Edited by Lipchin, C., Pallant, E., Saranga, D., A. Amster. NATO Science for Peace and Security Series (Dordrecht: Springer, 2007): 286.
- Fig. 5.01 Israeli standpipe at the intersection of Gey Ben Hinom and Ma'alot Ir David Streets, 253

Jerusalem

- Fig. 6.01 Standing in cistern beneath the Old City of Jerusalem 267
- Fig. 6.02 Separation Barrier in Bethlehem 268
- 269 Fig. 6.03 L: Ramallah checkpoint By Czech160. "Ramallah Checkpoint." Digital photograph. 2004. Wikimedia. https:// commons.wikimedia.org/wiki/File:RamallahCheckpoint.JPG.
- Fig. 6.04 R: Sharbabil Bin Hassneh EcoPark in Jordan 269 Image from "Sharbahil Ben Hassneh EcoPark." http://jordanecopark.com/about/.
- 270 Fig. 6.05 Agriculture gate By al-Bazz, Ahmad, and Activestill.org. In "PHOTOS: When Israel decides to cut Palestinian farmers off from their land." 19 May 2015. https://972mag.com/photos-when-israeldecides-to-cut-palestinian-farmers-off-from-their-land/106877/.

Fig. 6.06 Green Line for West Bank 270

By author. Adapted from Shoshan, Malkit. Atlas of the Conflict Israel-Palestine. Rotterdam: 010 Publishers, 2010.

- Fig. 6.07 Barrier Gate 270 By ARIJ. In "Israel inaugurates Gilo '300' Terminal in Bethlehem." POICA. http://poica. org/2005/11/israel-inaugurates-gilo-300-terminal-in-bethlehem/.
- Fig. 6.08 L: Fire damage to a JNF forest just outside of Jerusalem (December 2016), particularly 271

problematic given the arid climate

By Lidman, Melanie. In "After devastating fires, JNF skips trees for the forest." The Times of Israel. 19 December 2016. http://www.timesofisrael.com/after-devastating-fires-jnfskips-trees-for-the-forest/.

Fig. 6.09 R: Limanim or wadi dams in the Negev desert are able to sequester significant water 271

which would otherwise be lost to evaporation and runoff Image from "Limans in the Desert." KKL-JNF. http://www.kkl-jnf.org/water-for-israel/ water-in-the-desert/limans/.

- 272 Peres (Minister of Foreign Affairs), and Yitzhak Rabin (Prime Minister of Israel), were awarded the Nobel Peace Prize of 1994 in recognition of their "efforts to create peace in the Middle East." ("The Nobel Peace Prize 1994") The possibility of peace was short-lived, with the protracted conditions agreed upon in the Oslo II agreement of 1995 leading to further tension By Saar, Yaakov, and Government Press Office. "Flickr – Government Press Office (GPO) - THE NOBEL PEACE PRIZE LAUREATES FOR 1994 IN OSLO." 10 December 1994. In Wikimedia. https://commons.wikimedia.org/wiki/File:Flickr_-_Government_Press_Office_ (GPO)_-_THE_NOBEL_PEACE_PRIZE_LAUREATES_FOR_1994_IN_OSLO..jpg.
- 274 Fig. 6.11 Har Homa settlement in East Jerusalem By Reuters. In "Israel votes down legalization of settlement on Palestinian land." Deutsche Welle. 6 June 2012. http://www.dw.com/en/israel-votes-down-legalizationof-settlement-on-palestinian-land/a-16004033.
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- 275 Fig. 6.13 R: Solomon's Pools (reservoirs) near Bethlehem
- 276 Fig. 6.14 Dead Sea P88 pumping station Image from "P88-Pumping Station – Israel." Baran Group. http://www.barantelecom. com/project_page.asp?project_id=30.
- 276 Fig. 6.15 Infiltration basin / recharge pond By LOFTUS. In "Soil Aquifer Treatment. Sustainable Sanitation and Water Management. http://www.sswm.info/es/content/soil-aquifer-treatment.
- Fig. 6.16 Reverse osmosis desalination station 276 By Ben Sales/JTA. In AFP. "Europe-funded desalination plant to supply water to Gaza." The Times of Israel. 20 March 2014. http://www.timesofisrael.com/europe-fundeddesalination-plant-to-supply-water-to-gaza/.
- Fig. 6.17 Sapir (Israeli national water company) pumping station at Lake Kinneret 276 By Naumi, Yaakov. In Traiman, Alex. "Palestinian water shortages and Israel's water supply: behind the headlines." Jewish News Service. http://www.jns.org/latestarticles/2016/7/1/palestinian-water-shortages-inundate-israel-with-imageproblems#.WMD1 PnvuUk=.
- FIG. 6.18 ISRAELI AND PALESTINIAN WATER NETWORKS WEST BANK CLOSE-UP 277 By author. Map base from Google Earth; Shoshan, Malkit. Atlas of the Conflict Israel-Palestine, Rotterdam: 010 Publishers, 2010.

Fig. 6.10 After the first round of Oslo Accords in 1993, Yasser Arafat (leader of the PA), Shimon



INTRODUCTION



✓ Fig. 0.01 Bridge over Kidron/Wadi an-Nar below village of ash-Sheikh Sa'd

WATER AS NEGOTIATOR: THESIS TITLE AND THE SIGNIFICANCE OF WATER IN A STATE OF CONFLICT

As rain soaks the hills of the West Bank and slowly percolates through the ground, layers of aquifer¹ and aquitard divert flows into an unseen underground geography. Lenses of water cut through limestone before reaching the lowest of aquifer systems: Maleh. Due to its depth below 1000 metres, this aquifer is not directly affected by the pumping of water from Israeli and Palestinian wells,² while water extracted closer to the surface has become impacted by the Israeli-Palestinian conflict. These higher aquifers of the Mountain Aquifer group generate more than a third of Israel's yearly water supply (600-700 million cubic metres) but are already being heavily pumped.³ A recharge area of 4700 square kilometres allows polluted wastewater from over two million Israeli and Palestinian inhabitants of the West Bank and Jerusalem area to enter groundwater.⁴ In the recharge area, around 46 million cubic metres (mcm) of this sewage are derived from Palestinian communities, and 15 mcm from Israeli settlements.⁵ Overall, levels of nitrate and micro-biological contaminants have increased, compromising future drinking water quality from springs and wells. The subterranean recharge zones currently exist outside the realm of enforceable sovereign law, due to lack of proper governance between Israel and the Palestinian Authority (PA) in a state of conflict. And so, both groundwater and surface water continue to be polluted, to the detriment of all communities.

Framed within the current reality of the Israeli-Palestinian conflict, this thesis's research on the impact of unmitigated groundwater pollution between communities in the Kidron Valley/Wadi an-Nar has informed my design of architecture and landscape architecture as a stewarding environmental and social agent in spite of the Israeli restrictions imposed through military control. This thesis perceives water issues within the Kidron Valley/Wadi an-Nar first through an ecological lens, proceeding to situate them in political space. This thesis recognizes the social injustice of Palestinian West Bank water disparity existing side-by-side with the Israeli and Palestinian ecological injustice of water pollution. Two issues are thus present: a lack of water for Palestinians, and mutual contamination of Israelis' and Palestinians' shared water source. The journey from mountain to Maleh is the starting point from which my thesis interest emerges. It refers to the passage of water through strata of rock which have been incorporated into the conflict based upon Israeli and Palestinian claims to accessing it. Overpumped and contaminated, these bodies of water will bear the marks of the conflict by virtue of their ecological degradation.

Throughout the West Bank, cesspit leachate, raw effluent, and household garbage pass between land under Palestinian Authority (PA)⁶ control and Israeli occupation, ultimately contaminating surface and groundwater. Nahal Kidron (in Hebrew), also called Wadi an-Nar (in Arabic), is one valley in particular which receives a significant amount of pollution. It is also one of the only cross-border streams between Israel and the Palestinian West Bank to not have an environmental remediation plan in place.

In 2010, the Kidron Basin Working Group, an integrated water basin management team, proposed a master plan to tackle the watershed's issues jointly between Israeli and Palestinian experts.⁷ The interdisciplinary steering committee which oversaw the development of the Master Plan was made up of experts from various fields including environmentalism and environmental economics, law, urban planning, hydrology, transportation, archeology, landscape architecture, community planning, tourism, and municipal governance.⁸ There were a number of

Fig. 0.02 Kidron/Wadi an-Nar site section

¹ See Glossary page 268.

² Amjad Aliewi, "Water Resources in Palestine," House of Water and Environment, http://www.hwe.org.ps/. 3 Zecharya Tagar, Tamar Keinan, and Gidon Bromberg, "A Seeping Timebomb: Pollution of the Mountain Aquifer by Sewage," in Water Resources in the Middle East: Israel-Palestinian Water Issues - From Conflict to Cooperation, edited by Hillel Shuval and Hassan Dweik (New York: Springer-Verlag Berlin Heidelberg, 2007), 418. 4 Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 418.

⁶ See "Palestinian Authority (PA)" (page 273) and "Nation (Palestinian)" (page 272) in Glossary

^{7 &}quot;Kidron Valley – Wadi el Nar Basin Action Plan," 2013, 54.

^{8 &}quot;Kidron Valley – Wadi el Nar Basin Action Plan," 9.

INTRODUCTION

representatives advising the process at this stage including Israelis from the Milken Institute, the Peres Center for Peace, and the Jerusalem Institute for Israel Studies, the City of Jerusalem, and the Dead Sea Drainage Authority, as well as Palestinians advising in an unofficial capacity from Al-Quds University, Bethlehem University, and the Palestine Hydrology Group.⁹ The goals of the Master Plan were: to foster cooperation, partnership, coexistence, and empowerment between Kidron/Wadi an-Nar inhabitants; solve the sewage problem; engage the watershed in tourist/ recreation activities, while preserving heritage sites; plan for future fundraising; strengthen the connection between the valley's ridges and the stream; and allow the Master Plan to serve as a basis for an action plan and statutory plans¹⁰.

Emerging from the Master Plan, the team of experts created the 2012 Kidron Action Plan.¹¹ During the Action Plan process, Israeli and Palestinian collaboration was key, with the mayor of the West Bank village of al-Ubeidiye, S. A. Al Assa, readily seeking to engage due to the immediate health risks the contamination poses.¹² He also brought together the mayors of neighbouring towns to work towards solving sewage issues.¹³ Currently, there are around fifteen sub-committees which have been created from the Action Plan which work beside each other to tackle one environmental initiative at a time.¹⁴ This projects focus on water pollution, solid waste, irrigation, rain water harvesting, recycling, environmental education, bio gas, and joint scientific ventures¹⁵. However, one of the most critical components of the plan, the development of infrastructure to treat, collect, and distribute over fifteen million cubic metres of sewage from Jerusalem and nearby West Bank Palestinian

communities, budgeted at 355 million NIS (approximately 96 million USD),¹⁶ has not been allowed to proceed. A stream of effluent has been left flowing due to the two governments resisting collaborative water management at the watershed level. Such collaboration would be necessary to establish a joint sewage treatment plant.¹⁷

The steering committee's proposed transboundary basin management has not been validated by governments on both sides yet, but is in the midst of being refined for implementation. In the meantime, the sub-committees have been successful at completing small ecological remediation and community/social-welfare projects within the area since 2012. Several of their implemented projects, as outlined in the Action Plan, include: the clean-up of a dump near the Greek Orthodox monastery of Mar Saba, a few kilometres east of Bethlehem; the establishment of a new landfill site at a different location; sourcing funds for more waste disposal units; establishing LTSER (long term social and ecological research) platforms; and introducing wetland remediation technology at a Palestinian school.¹⁸ Another group advocating for a grassroots and collaborative approach to water management, the Arava Institute (an Israeli environmental research group dedicated to helping train future domestic and international environmental experts in cross-boundary environmental management). has established what they call a Centre for Transboundary Water Management. The Centre tackles the lack of Palestinian sewage treatment through a decentralized approach by partnering with Palestinian affiliates to provide off-grid Palestinian communities with black water septic tanks and greywater recycling treatment.¹⁹ Both the Action Plan sub-committees and the Centre for Transboundary Water Management's self-governance and scale of operation have informed this thesis's method of design implementation.

⁹ R. Laster, "Kidron Valley/Wadi Nar International Master Plan," in Transboundary Water Resources Management: A Multidisciplinary Approach, edited by Jacques Ganoulis, Alice Aureli, and Jean Fried (Weinheim, Germany: Wiley-VCH Verlag & Co., 2011), 243.

^{10 &}quot;Kidron Valley - Wadi el Nar Master Plan, 2011," Kidron Basin, http://www.en.kidronbasin.org/mainplan/#/3, 3

^{11 &}quot;Kidron Valley – Wadi el Nar Basin Action Plan," 5.

^{12 &}quot;Kidron Valley – Wadi el Nar Basin Action Plan," 5.

^{13 &}quot;Kidron Valley – Wadi el Nar Basin Action Plan," 5.

^{14 &}quot;Kidron Valley – Wadi el Nar Basin Action Plan," 5.

^{15 &}quot;Kidron Valley – Wadi el Nar Basin Action Plan," 5.

^{16 &}quot;Kidron Valley – Wadi el Nar Basin Action Plan," 54.

¹⁷ R. Laster, Personal interview, 1 June 2016.

¹⁸ R. Laster, Personal interview, 1 June 2016.

¹⁹ Clive Lipchin, "Israel is first in the world in wastewater reuse, but the Palestinians are last," Jerusalem Post, 20 February 2017.

The design work presented here has been inspired by the work of an NGO called EcoPeace Middle East, which has offices and representatives in Tel Aviv, Bethlehem, and Amman. EcoPeace is relevant in that they assemble a team of Palestinian, Israeli, and Jordanian environmental experts to advance projects on sustainable development and peace.²⁰ Cross-border environmental and peacebuilding issues are discussed between Palestinian, Israeli, and Jordanian researchers, who develop a common vision together. They then present the vision to their respective communities for feedback. While the organization as a whole supports a two-state solution and UN recognition of Palestine as a state,²¹ their goal is to pursue ecological and social advancement in spite of the conflict. EcoPeace has successfully combined social and ecological mediation at a small scale through the establishment of what they call "EcoParks".²² One such initiative is located in the Palestinian West Bank village of Auja, just north of Jericho. The small community of 4500 accomodates tourism generated around the Auja Spring and oasis, with Palestinian children visiting from across the West Bank. EcoPeace's Environmental Education Center raises environmental awareness about the importance of preserving the integrity of the local water source and the region's cultural heritage, while locals also benefit from ecotourism and using the building's amenities.23 The location and program of this thesis's design interventions have been inspired by EcoParks in terms of their establishing an important social space for Palestinians and Israelis to engage with independent water management at culturally significant sites.

- 3) improve spiritual, mental and physical wellbeing of both local residents and visitors;
- 4) promote local sustainable eco-tourism entrepreneurship





Fig. 0.03 Integrated Watershed Management Action Plan

Fig. 0.04 Sharbabil Bin Hassneh EcoPark in Jordan

^{20 &}quot;Jordan Rift Valley Center for Environmental Education and Eco-Tourism Development in Palestine," Friends of the Earth Middle East (FoEME), http://foeme.org/uploads/Auja flyer.pdf.

^{21 &}quot;About Us," EcoPeace Middle East, http://foeme.org/www/?module=about us.

²² According to EcoPeace, their EcoParks are "places where local, regional and international youth and tourists can come together to learn about and experience the shared environment." These parks have four goals:

¹⁾ present a model on how to protect the Jordan River Valley and conserve its existing habitats;

²⁾ provide environmental education, increase knowledge and interest in the environment locally, regionally and internationally;

^{(&}quot;EcoParks," EcoPeace Middle East, http://80.179.140.91/~eco/projects/ecoparks/).

^{23 &}quot;Jordan Rift Valley Center for Environmental Education and Eco-Tourism Development in Palestine."

Finally, this thesis acknowledges that water infrastructure is incorporated into the conflict when hosted on contested land. This thesis defines "terra praeter" as land which Palestinians and Israelis use for recreation or livestock-keeping. This land is also used in spite of each other's de facto water infrastructure, serving such recreational or agrarian purposes as municipal water delivery and sewage pipes, reservoirs, water cisterns, domestic cesspits, etc. It is used in resistance to the volatile ownership of the land. Unregistered West Bank Palestinian miri or mewat land,²⁴ recognized as state or disputed land by Israel, is the "open," unsettled, and undeveloped space that makes up the majority of the Kidron/Wadi an-Nar valley east of the Jerusalem urban zone. It is located in Areas A and B²⁵ between villages at the top of the valley slope and the established farms at the bottom, as well as throughout the course of the valley which runs through portions of undeveloped desert in Area C.²⁶ Habitual temporary usage establishes a semi-claim to the land for shepherds, villagers, or tourists. But temporary usage does not guarantee land will be protected from Israeli development or ecological degradation. Preventative planting and landscape remediation can establish longer-term claims to land as protected under law, while also better maintaining the ecological well-being of a site.

Measures like "preventative planting," the autonomous planting of cultivable trees adjacent to settlements and villages in the West Bank, have protected land claims for both Israelis and Palestinians and prevented development on the land.²⁷ Occuring particularly in the urban regions around Jerusalem, this compromises the size and freedom of access of Palestinian communities. Across the West Bank, Palestinian land title is compromised in several ways: Palestinian land can transfer to the control of the Israel Civil Administration²⁸ through the absence of the owner under Absentee Law, through lack of continuous cultivation, or by being sold by the

25 See Areas A and B definition under "Oslo Accords" in Glossary page 272.

27 Shaul Ephraim Cohen, The Politics of Planting: Israeli-Palestinian Competition for Control of Land in the Jerusalem Periphery (USA: The University of Chicago Press, 1993), 111.

Palestinian owner(s) to an Israeli buyer.²⁹ For instance, in the case of Beit Surik the planting of orchards is a preventative measure in anticipation of expansion of the neighbouring settlements of Har Adar and Mevasseret Tzion.³⁰

The JNF (Jewish National Fund) is an NGO and parastate entity in charge of developing Israeli state land for the benefit of the Jewish people³¹ while also staging environmental projects like forest fire prevention, environmental education endeavours, and water body rehabilitation and conservation.³² It has cultivated forests from the planting of around 240 million trees, mainly pine, in Israel/Palestine since 1901.³³ Planting occurs throughout Israel and the West Bank, but targets areas around the greater Jerusalem area preventing Palestinian planting while maintaining land reserves for new Israeli settlements.³⁴ The JNF had extended their planting to encroach upon Beit Surik.³⁵ In response, the town planted their own trees, protected them from being uprooted, and expanded their cultivated land.³⁶ The JNF recognizes that trees standing for over three years cannot be removed, unless a court order is engaged, and they would prefer to not enter into a legal dispute.³⁷ Planting can therefore establish legal rights over land for future agriculture needs.³⁸ This method has inspired the thesis's landscape design and temporality, proposing landscape architecture beyond the official politicized water network while also securing its territorial claim for the community it serves. Inspired by these precedents, this thesis asks: can architecture, as the interface between humans and the environment, play a role in individual communities, in order to promote social empowerment and ecological remediation?

38 Cohen, The Politics of Planting, 191.

²⁴ See Glossary page 273.

²⁶ See Area C definition under "Oslo Accords" in Glossary page 272.

²⁸ See Glossary page 271.

²⁹ Cohen, The Politics of Planting, 159

³⁰ Cohen, The Politics of Planting, 162.

³¹ Irus Braverman, Planted Flags: Trees, Land, and Law in Israel/Palestine (New York: Cambridge University Press, 2009), 23.

^{32 &}quot;About KKL-JNF," Keren Kayemeth Lelsrael Jewish National Fund, http://www.kkl-jnf.org/about-kkl-jnf/.

³³ Braverman, Planted Flags, 164.

³⁴ Braverman, Planted Flags, 48.

³⁵ Cohen, The Politics of Planting, 159.

³⁶ Cohen, The Politics of Planting, 162.

³⁷ Cohen, The Politics of Planting, 178.

This thesis proposes architecture and landscape interventions at two locations of terra praeter along the Kidron Valley in the West Bank, and one other functioning between West and East Jerusalem. These interventions operate at varying scales, from a small community park to large landscape installations, in order to serve as interfaces for independent water sourcing, distribution, and treatment outside of the existing de facto West Bank water infrastructure network. Inspired by EcoPeace's model, architecture and landscape installations are proposed for construction and maintenance jointly by local trades, under the guidance of a local representative. The local representative is also part of an NGO steering committee of Israeli and Palestinian experts who implement projects for the ecological and social benefit of the watershed and not just individual communities. The planning of such a project is inspired as a modified version of the Kidron Action Plan model of integrated water resource management (IWRM). This thesis proposes joint Palestinian-Israeli administration at the upper level and does not incorporate government control over its committee.

This approach is applicable to the Kidron/Wadi an-Nar due to two main factors. Firstly, it is one of the only transboundary streams running between Israel and the West Bank without an ecological remediation plan in place, thereby involving Israeli and Palestinian stakeholders. Secondly, while more boundaries are put up, more land used to develop Israeli settlements, and the Israeli-Palestinian Joint Water Committee is disintegrating, there is no voice for Palestinian water rights. The benefit of such a model is that committee members have a role to play as technocrats influencing the government for increasing Palestinian water sovereignty and improving equitable water sourcing, distribution, and treatment. They also consider the geological and geographical imperative to the water cycle, not according to political boundaries, which is a more holistic approach to handling water problems. It also encourages government to alter its role in controlling decision-making, collaborating with a team of stakeholders on an even playing field rather than at the top of the hierarchy as

administrator. The steering committee can also better distribute resources to tackle common water problems between villages in the watershed, instead of having individual municipalities approach foreign donors for aid. The design of architecture and landscape interventions, as well as the new proposed water governance method, can serve as a model for other transboundary wadis in the West Bank.

A Haaretz article from July 2016 mentions the recent but undated suspension of the Joint Water Committee (JWC) (the bilateral legislative group authorizing Israeli and Palestinian water infrastructure in the West Bank).³⁹ which has not been functioning for the past five years. Water technocrats including hydrologists have been meeting in its place to attempt to carry out the Kidron sewage treatment plant project, but the official joint water committee is not currently convening. There is therefore more imperative than ever to now foster long-term ties with water experts and local water administrators who can help Palestinians negotiate for greater sovereignty over their resource in the interim, transitioning into when a peace deal is negotiated. During the early stages of the al-Aqsa intifada of 2000, although violence resulted in nine incidents of damage to water infrastructure, both Israeli and Palestinian water technocrats who had established a level of cooperation beforehand were better able to mitigate water issues during the violence.⁴⁰ During this time, the Palestinian and Israeli heads of the JWC signed a declaration agreeing that water and sewage infrastructure should be spared from attacks, asking the public not to destroy infrastructure or the maintenance and repair staff who serviced them.⁴¹ Israeli columnist, Zeev Schiff, reported that the water experts at the time had an "unlikely cooperation," which protected water infrastructure for both groups during the violence.⁴² Even in times of war, "the only area in which Israelis and Palestinians are continuing cooperation, in spite of 25 difficult months of intifada, is water". 43 But

³⁹ Amira Hass, "Israel Blocking Plan to Double Water Supply to West Bank," Haaretz, 9 July 2016, http://www. haaretz.com/israel-news/.premium-1.729777?=&ts= 1484180304655. 40 Zeev Schiff, "Unlikely Cooperation," Haaretz, 13 February 2001, in Jeffrey K. Sosland, Cooperating Rivals: The Riparian Politics of the Jordan River Basin (Albany, NY: State University of New York, 2007), 172. 41 Sosland, Cooperating Rivals, 172.

⁴² Sosland, Cooperating Rivals, 172.

^{43 &}quot;Israel, Palestinian Cooperate on Water," Jewish Telegraphic Agency, 5 March 2003, in Sosland, Cooperating

INTRODUCTION

measures of water cooperation should not be exclusively conducted in private, where top-level administration can compromise broader societal trust between Israelis and Palestinians over water. As Jeffrey Sosland explains in his book, Cooperating Rivals, "secret TFC [tactical functional cooperation] will only create a bond between technocrats and possibly national leaders. It will not achieve the important peopleto-people confidence and trust that is needed to end a protracted conflict and for a peace to prove enduring."44

While peace may not come about in the immediate future, it is still something both sides wish to accomplish. Bilateral groups like EcoPeace, the Arava Institute, and the Kidron/Wadi an-Nar steering committee work towards a prospective future by challenging the current Israeli occupation without compromising both groups' critical ideology: greater agency over water and land for Palestinians, and security for Israelis. The water governance strategy presented in this thesis counters the current failure of the JWC to resolve water issues at a large scale while also setting up a sustainable framework to help Palestinian water autonomy for the future. It is therefore a subtle act of resistance, not complicit with the occupation's inequitable claims to water and land.

The thesis first examines the existing context of the water network and political boundaries of the Kidron/Wadi an-Nar. It then provides analysis through cultural ideology and urban theory, further explaining how water and land are negotiated in space and governed by legislation on-site. Finally, design proposals are suggested for three sites along the Kidron/Wadi an-Nar. The first design intervention proposed is a park in the Hinnom Valley/Wadi a-Rababa in Jerusalem: a recreational pool and series of water retention ponds for Palestinians and Israelis in the neighbouring communities. The project seeks to engage the immediate communities around the valley in a common recreational space while also providing flood mitigation for the neighbourhood at the bottom of the valley. This site has a long history of mixed Israeli and Palestinian use as a recreational space, and is also crucial in mitigating downhill flooding in the East Jerusalem community of Silwan. The landscape installation of water retention ponds and orchards under Palestinian domain transgresses the Green Line (1949 Armistice Line),⁴⁵ moving west to meet the swimming pool and the rest of the park, which is a communal space with Israelis.

The second site of design intervention is the Palestinian farming town of al-Ubeidiye, a few kilometres down the Kidron/an-Nar Valley. Located beside the important Palestinian Christian monastery of St. Theodosius, the architectural installation provides local women and children with much-needed social space, as well as providing tourists with a rest stop, and would make use of the local Palestinian limestone trade for installation of pavers and gabion baskets. A large landscape installation of blackwater filtres takes polluted water from the Kidron/an-Nar Stream and treats it, providing potable water to visitors and livestock, while further claiming the land for the townspeople by growing a continuous corridor of plants on the hillside.

The third site of design intervention is a path of contemplation and a resting area for visitors to the Mar Saba monastery, a few kilometres east of the Palestinian town of al-Ubeidiye. The site's unique cliffs and architecture have made it a site of pilgrimage and recreation for Palestinians and tourists alike. Engaging the help of the local Palestinian Bedouin who maintain the site on behalf of the monks, this installation is a path network along the hillside, culminating at a seasonal waterfall and stormwater retention pond half a kilometre downstream. The intervention allows women and other visitors who are not allowed into the male-only grounds of the monastery to use the path for spiritual contemplation, recreation, and rest. These installations do not propose a solution, however desperately needed, to the longheld conflict in the region, but instead set up a series of architectural and landscape interventions which would shape how the sites would be managed in the future.



1.0 CONTEXT

1.1 INEFFICIENT WATER GOVERNANCE: A CASE FOR REFORM IN THE KIDRON VALLEY / WADI AN-NAR 1.2 HISTORY OF THE POLITICAL CONFLICT AND THE RELEVANCE OF WATER 1.3 ISRAELI-PALESTINIAN WATER GOVERNANCE: A DISPARATE AND INEFFICIENT SYSTEM

✓ Fig. 1.01 Large arrays of rooftop water tanks on house roofs, like this one in Bethlehem, store more water in case of municipal shortages







Green Line (1949 Armistice Line)

watershed boundary

secondary wadi ~~~



6 km

1.1 INEFFICIENT WATER GOVERNANCE: A CASE FOR REFORM IN THE KIDRON VALLEY / WADI AN-NAR

وادي النار ديرخ جرمدار

WADI AN-NAR NAHAL KIDRON

The Kidron Valley, or Wadi an-Nar in Arabic, runs thirty-two kilometres east to the Dead Sea from Jerusalem. Descending from the hills of the Old City to the lowest terrestrial point on Earth, navigating the valley has long held deep cultural significance to Christians, Muslims, and Jews. In Antiguity, the valley was associated with the biblical Valley of Jehoshaphat, where in the Christian Bible, it is mentioned as being the place where all nations will be assembled on the day of judgement (Joel 3:2-3:2). At the headwaters of the valley in Jerusalem, the Gihon Spring and stream also played a part in local water and harvest rituals.¹ Whether bringing sustenance to some of the oldest inhabited monasteries in the world² or being used in the practice of baptism, water continues to be celebrated within Christian Palestinian culture. Spiritual use of water also exists in the ancient mikveh, or Jewish purifying pools, found at the head of the Kidron, underneath the old city of Jerusalem. Well into the 1930s, Jews and Muslims would also pray together for rain at the Tomb of Samuel, north of Jerusalem.³

In addition to its cultural value, the Kidron watershed also contributes to greatlyneeded aquifer recharge in an area with scarce water resources. To the detriment of culturally and environmentally significant sites in the West Bank and Jerusalem, political conflict between Israel and the Palestinians has created barriers to water sourcing, treatment, and distribution, detracting from the health of the watershed and its people.⁴ The wastewater production derived from central collection from Israeli

and Palestinian households in the Kidron/an-Nar area entering into the Kidron/an-Nar Stream in 2010 was 9.5 mcm per year.⁵ This waste should ideally be captured closer to Jerusalem and not let to flow openly through the entire valley. In addition, unlined cesspits contribute approximately 1.1 mcm per year of leachate from al-Ubeidiye,⁶ a town without central sewage collection, to permeate soil, ultimately contaminating aquifers. While successive water management studies have taken place since Teddy Kolleck and Elias Freig (the ex-mayors of Jerusalem and Bethlehem respectively) expressed interest in cleaning up the Kidron in 1991,⁷ a sewage treatment plant has been proposed, to no avail.⁸ The Kidron Stream still remains one of the only cross- WHY THE KIDRON? border streams between Israel proper and the Palestinian West Bank which does not have a consolidated sewage treatment plan in place, with tensions running high over the resulting water management issues.⁹

To understand the current state of affairs, one must first grasp how the existing water network is at odds with international law and the changing demographic needs of Kidron/Wadi an-Nar inhabitants. This has come about due to the protracted state of conflict between Israel and the Palestinians.

¹ Y. Zohar, Personal interview, 18 May 2016.

^{2 &}quot;Mar Saba Monastery," Israel Land of Creation, www.goisrael.com.

³ Nir Hasson, "The brief moment in history when a common Israeli-Palestinian identity existed," Haaretz, 2 April 2016, http://www.haaretz.com/israel-news/.premium-1.711988.

⁴ Zafrir Rinat, "Most Polluted River in Israel and West Bank to Stay Filthy Because of Government Vacillation," Haaretz, 2 September 2015, http://www.haaretz.com/israel-news/science/.premium-1.674045.

⁵ Simone Klawitter, Natalie Mutlak, Georg Meran, Nir Becker, and Nader Khateeb, "WWT management option for the Kidron Valley/Wadi Nar," Paper prepared for the German-Israeli-Palestinian research project: "From conflict to collective action: institutional change and management options to govern transboundary watercourses," 8 May 2008, http://collectivewater.umweltoekonomie.tu-berlin.de/collectivewater/index.html. 6 Klawitter, Mutlak, Meran, Becker, and Khateeb, "WWT management option for the Kidron Valley/Wadi Nar." 7 Richard Laster, Kidron Valley/Wadi Nar International Master Plan, http://www.inweb.gr/twm4/abs/LASTER%20 Richard.pdf.

⁸ Rinat, "Most Polluted River in Israel and West Bank to Stay Filthy."

⁹ Rinat, "Most Polluted River in Israel and West Bank to Stay Filthy."



1.2 HISTORY OF THE ISRAELI-PALESTINIAN POLITICAL CONFLICT AND THE RELEVANCE OF WATER

The Israeli-Palestinian conflict is a term used to describe the ongoing confrontation between Israelis and Palestinians since the events leading up to and following Israel's creation in 1948. Major nationalist movements grew in force among Arab and Jewish populations in the Mandate of Palestine during the late 19th and early 20th centuries, with violent clashes between portions of these groups occuring in the 1920s. On 29 November, 1947, the General Assembly of the United Nations adopted Resolution 181, recommending the adoption of a plan to partition Palestine into a Jewish and an Arab state.¹⁰ The following day, both Arab and Jewish militia groups became engaged in a period of local fighting, bolstered by foreign involvement from other states.¹¹ The Arab forces were losing significantly by the spring of 1948, with around 750 000 Palestinian refugees displaced.¹² The Declaration of the Establishment of the State of Israel took place on 14 May 1948. The following day, the civil conflict expanded into an inter-state war as several Arab League (an organization of North African and Arabian Arab countries) countries invaded, resulting in a fight for territory which culminated in the 1948 Jordanian annexation of the West Bank and the Egyptian military control of Gaza respectively, with Israel controlling the rest of the former Mandate of Palestine.¹³ After the defeat, known as al-nagba (the catastrophe) to Palestinians, an All-Palestine Government was established in Gaza by the Arab League on 22 September, 1948, later transitioning to an Egyptian administration and occupation in 1959, and finally a Palestine Liberation Organization (PLO) administration in 1964.

The 1967 Arab-Israeli War (also known as the Six-Day War) between Israel, Jordan, Egypt, and Syria resulted in another Arab loss, with Israel seizing the West Bank, Gaza, and East Jerusalem from Egypt and Jordan, while also capturing the Golan Heights from Syria and the Sinai peninsula from Egypt.¹⁴ Around one guarter of West Bank Palestinians fled to Jordan during and right after the war.¹⁵ With the release of United Nations Resolution 242 in October of that year,¹⁶ the UN Security Council soon put pressure on Israel to negotiate peace with the Arab world by relinquishing the land it had captured during the 1967 War. However, negotiations fell through, leading to two major Israeli territorial moves: the separation of East Jerusalem from the rest of the West Bank and the modification to prewar land legislation and governance of the West Bank.¹⁷ Fearing security threats from the Jordanian border, small Israeli settlements which served a paramilitary purpose were established along the Jordan Valley in the West Bank as of 1968, aided by the army in their establishment.¹⁸ Other settlements, like Qiryat Arba, were illegally constructed by orthodox Jews for ideological reasons without Israeli permission.¹⁹ In the case of Hebron, a city which had seen constant Jewish presence until the 1929 Hebron massacre, the temporary return of a small group of religious Jews on the occasion of Passover in April of 1968 was allowed by the military govenor of Hebron as it was an important religious site for Jews as well as Muslims, and Christians.²⁰ This temporary allowance extended into the Israeli government's acquiescence, military aid and protection of Jewish settlers who didn't leave, and the growth of the re-established Jewish community in the heart of a Palestinian city for messianic-political reasons.²¹

20 Idith Zertal and Akiva Eldar, Lords of the Land: The War Over Israel's Settlements in the Occupied Territories,

^{10 &}quot;Resolution 181 (II) Future Government of Palestine," United Nations, https://unispal.un.org/DPA/DPR/unispal. nsf/0/7F0AF2BD897689B785256C330061D253.

¹¹ Mark Tessler, ed., A History of the Israeli-Palestinian Conflict, second edition (Bloomington, IN: Indiana University Press, 2009), 263.

^{12 &}quot;Palestine Refugees," UNRWA, https://www.unrwa.org/palestine-refugees.

¹³ Tessler, A History of the Israeli-Palestinian Conflict, 264.

¹⁴ Tessler, A History of the Israeli-Palestinian Conflict, 399. 15 Tessler, A History of the Israeli-Palestinian Conflict, 403.

¹⁶ Yehuda Lukacs, ed., The Israeli-Palestinian Conflict – A Documentary Record 1967-1990 (Cambridge, UK: University of Cambridge, 1992), 1.

¹⁷ Tessler, A History of the Israeli-Palestinian Conflict, 466.

¹⁸ Tessler, A History of the Israeli-Palestinian Conflict, 466.

¹⁹ Tessler, A History of the Israeli-Palestinian Conflict, 467.

^{1967-2007,} translated by Vivian Eden (Nation Books: New York, 2007), 18. 21 Zertal and Eldar, Lords of the Land, 21.

Post-1967, the Palestinians regrouped and released a new political and national agenda which favoured the self-determination of the Palestinian people in the face of Israeli occupation and the Arab powers which prior-to, had sought to act on their behalf. Many Palestinian armed resistance groups grew abroad during this period, supported and hosted by Arab League countries: the Palestine National Liberation Movement (Fatah), for instance, was supported by Saudi Arabia, Kuwait, Libya, Algeria, Syria, and through private Palestinian sources in 1970.²² Although the Palestinian Liberation Organization (PLO), acting as the confederation of many of these groups, had been established as the governing party of the Palestinian people in 1964, unified governance was hard to achieve. Sub-faction guerrilla groups like the Popular Front for the Liberation of Palestine (PFLP) recruited Palestinians from Lebanese refugee camps to carry out plane hijackings or used their location within Lebanon²³ and the East Bank in Jordan²⁴ to attack Israel. This militarism, which both Lebanon and Jordan disapproved of, provoked a Jordanian military expulsion of the PLO from Amman in the spring of 1971.²⁵ It also resulted in the 1982 Israeli invasion of southern Lebanon, during the Lebanese Civil War, and the Siege of Beirut, which collapsed the PLO's hold in Lebanon after much bloodshed.²⁶ A surprise attack from a coalition of Arab states led by Egypt and Syria sparked the 1973 Arab-Israeli War (Yom Kippur War), resulting in a period of increased tension between Israel and its neighbours. Domestically, a Palestinian uprising known as the First Intifada started in 1988, the same year the PLO announced its Declaration of Independence from its position, now in Algeria.²⁷ It combined civil disobedience and resistance (peaceful and violent) to Israel. Crack-down from Israel and fractured Palestinian leadership resulted in 1135 Palestinian casualties by Isael by 1992,²⁸ as well as significant







Clockwise from top left:

Fig. 1.05 The Israeli provisional government reading out the Israeli Declaration of Independence in Tel Aviv on 14 May 1948

Fig. 1.06 Palestinian refugees crossing the Allenby Bridge into Jordan during the 1967 Arab-Israeli War

Fig. 1.07 Signing of the 1993 Oslo Accord on the White House lawn by Israeli Prime Minister Yitzhak Rabin and Palestine Liberation Organization Chairman Yasser Arafat

Fig. 1.08 Protected entrance to the Israeli settlement in Hebron

²² Tessler, A History of the Israeli-Palestinian Conflict, 431.

²³ Tessler, A History of the Israeli-Palestinian Conflict, 451.

²⁴ Tessler, A History of the Israeli-Palestinian Conflict, 456.

²⁵ Tessler, A History of the Israeli-Palestinian Conflict, 463.

²⁶ Tessler, A History of the Israeli-Palestinian Conflict, 589.

²⁷ Avraham Sela, "The First Intifada: How the Arab-Israeli Conflict Was Transformed," *Haaretz*, 13 December 2012, http://www.haaretz.com/israel-news/the-first-intifada-how-the-arab-israeli-conflict-was-transformed.pre-mium-1.484677.

²⁸ Tessler, A History of the Israeli-Palestinian Conflict, 753.

Palestinian killings of supposed collaborators,²⁹ Israeli casualties, house demolitions, imprisonments, and further distrust between Israelis and Palestinians.

The 1990s issued in a period of bilateral peace negotiations, largely assisted by international mediators. Two important water negotiations between Israel and the Palestinian Authority were established during this period at the Oslo Declaration of September 1993, and at the Oslo II (Interim Agreement) two years later.³⁰ The Accords resulted in Palestinian leader Yasser Arafat and Israeli Prime Minister Yitzhak Rabin agreeing that Israel would gradually cede control of the Palestinian territories to the Palestinian Interim Self-Government within a five year interim period, culminating in the following aims: the establishment of a Palestinian Legislative Council for the Gaza Strip and the West Bank, the withdrawal of the Israeli Civil Administration, and a peace settlement (Oslo Accord I, Article I). The Oslo Accords established a tiered governance sytstem in the West Bank, separating the land into three zones of administration: Area A (full Palestinian civil and military control), Area B (Palestinian civil and Israeli military control) and Area C (full Israeli civil and military control). In practice, the Interim Agreement was never concluded, and the West Bank remained divided into Areas A, B, and C, maintaining the legislation that in 1995 had placed some 73 percent of West Bank land and 4 percent of West Bank population under exclusive Israeli military and civil control.³¹ Area C started to be developed by Israel for settlements, water extraction and treatment, agriculture, archeology, and for military purposes. Several UN resolutions state that they do not recognize the legality of West Bank settlements and have urged Israel to desist.³²

The subsequent peace talks following the Oslo Accords, including the Camp David Summit (2000), the Taba Summit (2001), and the Arab Peace Initiative proved



FIG. 1.09 WEST BANK **OSLO DIVISIONS, GREEN** LINE, AND SEPARATION BARRIER

Area A

Area B

Area C

Mediterranean/Dead Sea

No man's land

Seam zone

Separation Barrier -Green Line seam zone



Green Line (1949 Armistice Agreement Line)



road

Separation Barrier

Separation Barrier under construction after 2006



Separation Barrier approved



²⁹ Tessler, A History of the Israeli-Palestinian Conflict, 749.

³⁰ Sosland, Cooperating Rivals, 161.

³¹ Neve Gordon, Israel's Occupation (Los Angeles: University of California Press, 2008), 177.

[&]quot;Security Council Resolution 446," United Nations, https://www.un.org/Docs/scres/1979/scres79.htm. 32

unfruitful at reestablishing trust and continued negotiation between the two parties. After the ratification of the Oslo II Accord, Israeli and Palestinian water administrators convened regularly to negotiate, but issues guickly emerged. Palestinian frustration centred around the Joint Water Committee's (JWC) refusal to issue drilling permits, as well as location disputes with the Israeli Civil Administration. Israelis claimed that Palestinians were compromising groundwater quality through inadequate sewage treatment, as well as tapping into Israeli water pipelines without permission.³³

In his book, Hydropolitics Along the Jordan River, Aaron T. Wolf, a professor of geography and consultant to the World Bank, posits several "hydroconspiracy theories"³⁴ which attempt to link Israel's territorial conquest to water. Given the high value placed on water in the Middle East, he considers whether there is a hydraulic imperative to Israel's establishing water infrastructure by way of settlements and agricultural land in the West Bank, Gaza, and along the north and eastern borders with Lebanon, Syria, and Jordan. Hydraulic imperative is based on water scarcity or the location of key water resources.³⁵ He concludes that although water resources did not play a factor in the territorial conquests of the wars of 1967, 1978, or 1982, planning measures were taken in the 1970s to outline beneficial hydraulic locations for Israel.

In 1977, Israeli Prime Minister Menachem Begin asked the water commissioner, Menachem Cantor, to create a map of Israeli water usage from water originating in the West Bank, and to speculate on which land areas Israel could relinquish, if still protecting water resources was the prime goal. Cantor's map established a dividing line (called the "red line"), drawn north to south, beyond which it would be

FIG. 1.10 HYDROSTRATEGIC TERRITORY MAP





³³ Sosland, Cooperating Rivals, 169.

³⁴ Aaron T. Wolf, Hydropolitics Along the Jordan River: Scarce Water and its Impact on the Arab-Israeli Conflict (Japan: United Nations University Press, 1995), 70.

³⁵ Wolf, Hydropolitics Along the Jordan River, 80.

CONTEXT

inadvisable for Israel to relinquish control.³⁶ A hydrostrategic zone was drawn along the inside border between Israel and the West Bank, going beyond the pre-1967 border (see Fig. 1.10 Hydrostrategic Territory Map). Groundwater and surface water were prime sources at this point, before the advent of advanced desalination supply. The hydrostrategic zone was based on consideration towards drilling depths and cost in the western mountain, coastal plain, and Judaean hills,³⁷ as well as security needs, watershed boundaries, and population centres.³⁸ This red line was included in some settlement plans during the late 1970s, with five settlements around Elkanna reportedly partly being sited due to their advantageous hydrostrategic location on one side of the red line.³⁹ Therefore, while some settlements as of the 1970s were located on land partly due to their strategic position to pump groundwater in the West Bank, there is no proof of such a phenomenon providing impetus for current settlement planning. Indeed, fifty five percent of Israel's domestic water supply now comes from desalination,⁴⁰ a significant and sudden increase from its total reliance on ground and surface water in 2004.⁴¹

³⁶ Wolf, Hydropolitics Along the Jordan River, 79.

³⁷ Wolf, Hydropolitics Along the Jordan River, 79.

³⁸ Wolf, Hydropolitics Along the Jordan River, 80.

³⁹ Wolf, Hydropolitics Along the Jordan River, 79.

⁴⁰ Rowan Jacobsen, "Israel Proves the Desalination Era Is Here," Scientific American, 29 July 2016, https://www.

scientificamerican.com/article/israel-proves-the-desalination-era-is-here/.

⁴¹ David Talbot, "Megascale Desalination," *MIT Technology Review*, https://www.technologyreview.

com/s/534996/megascale-desalination/.

ISRAELI, PALESTINIAN, AND JORDANIAN UNEVEN WATER SOURCING, DISTRIBUTION, AND TREATMENT

Israel, the Palestinian Authority, and Jordan obtain water from the same, very limited, sources. The aquifers supplying groundwater to these nations are severly overdrawn. Since the Oslo II Accord, Israel has taken advantage of the location and quantity of pumped water from occupied territory, far exceeding Palestinian levels. In terms of consumption, Palestinians consume far less water on average than Israelis, however, Israel's recycling of grey and blackwater far surpasses that of the Palestinians.



FIG. 1.13 WEST BANK WATER EXTRACTION (MCM / year)

Oslo II Accord (1995) Palestinian West Bank water sourcing (B'Tselem)

Oslo II Accord (1995) Israeli West

Bank water sourcing (Amnesty

unlimited from Jordan River and Coastal Aquifer Basin wells 483 MCM from Western, Northeastern, and Eastern Aquifer Basin wells

Oslo II Accord (1995) "Existing Extractions, Utilizations, and Estimated Potential" – Western

International)



80 MCM from drilling of new West Bank wells 118 118 MCM from Western, Northeastern, and Eastern Aquifer Basin wells

> 483





ISRAELI AND PALESTINIAN UNEVEN WATER SOURCING AND CONSUMPTION OVER TIME

Taken from the "Groundwater Case Study" by Zeitoun, Messershmid, and Attili (2009), the following two charts show Palestinian and Israeli consumption rates and fresh water production from 1948–2003. Excluding reused or desalinated water, Israeli freshwater production and consumption are almost equal, with ground water extractions favoured over surface water. Israeli agricultural consumption during the late 1990s was around three times as much as total Palestinian consumption.







FIG. 1.16 FRESH WATER PRODUCTION IN ISRAEL, 1948 – 2003 (EXCLUDING REUSED OR DESALINATED WATER) ("Groundwater Case Study," Zeitoun, Messershmid, and Attili)



1.3 ISRAELI-PALESTINIAN WATER GOVERNANCE: A DISPARATE AND INEFFICIENT SYSTEM

Given the state of conflict, the Israeli-Palestinian water network throughout the West Bank, inclusive of the Kidron/an-Nar watershed, is highly convoluted. While legal aspects of Israeli and Palestinian major water projects within the West Bank must be approved by Israel's Water Authority (as well as to the Palestinian Water Authority⁴² in the case of Palestinian projects), technical aspects of these projects must also pass through the Israeli-Palestinian Joint Water Committee (JWC) and sometimes also the Executive Action Team (EXACT), a team of Jordanians, Israelis, and Palestinians established after the Madrid Peace Conference of 1991.⁴³ Born out of the Oslo II Accord in 1995, the JWC was originally intended to exist for a maximum of five years, but given the protracted lack of renegotiation, it has existed as the West Bank's governing water body until very recently. A July 2016 article in Haaretz online mentions the suspension of the committee, with the Israeli Civil Administration operating independently in approving fifteen water projects over the past two to three years.⁴⁴ The JWC had not passed Palestinian proposals since 2010,⁴⁵ possibly due to the fact that Palestinian members of the committee have refused to meet, claiming they have been asked to approve projects exclusively benefitting Israeli settlements.⁴⁶ Over this same period of time, the JWC has approved all Israeli applications for new water supply facilities for settlements while rejecting every Palestinian application for non-domestic wells in the Western Basin of the Mountain Aquifer.⁴⁷ Because of the overwhelming rejection rate, when issues arise within Palestinian jurisdictions, such as those caused by a supply pipe extension or water gauge installation,⁴⁸ modifications to the network are often carried out without receiving authorization from the JWC. This

43 Anders Jägerskog, "Why states cooperate over shared water: The water negotiations in the Jordan River Basin," in *Water Resources in the Middle East: Israel-Palestinian Water Issues - From Conflict to Cooperation*, edited by Hillel Shuval and Hassan Dweik (New York: Springer-Verlag Berlin Heidelberg, 2007), 196.



FIG. 1.17 WATER NETWORK ADMINISTRATION: ISRAELI, PALESTINIAN, AND JOINT

⁴² See Glossary page 273.

⁴⁴ Hass, "Israel Blocking Plan to Double Water Supply."

⁴⁵ A. Nassar, Personal interview, 19 May, 2016

⁴⁶ Hass, "Israel Blocking Plan to Double Water Supply."

⁴⁷ Jan Selby, "Cooperation, domination and colonisation: The Israeli-Palestinian Joint Water Committee," in

Water Alternatives, Volume 6, Issue 1, (Brighton, UK: University of Sussex, 2013), 1-24.

⁴⁸ A. Nassar, Personal interview, 19 May, 2016.

FIG. 1.18 ISRAELI AND PALESTINIAN WATER NETWORKS



contributes to the future risk of the project's legitimacy and transparency, and may result in demolition.⁴⁹ In a news article from July 2016, Israel's deputy coordinator of government activities in the territories, Brig. Gen. Guy Goldstein, is cited as saying that the JWC has been suspended, resulting in the Israeli Civil Administration promoting its projects independently.⁵⁰

Water Sourcing

In terms of water sourcing within the West Bank, the quantity and location of Israel's pumping of the Mountain Aquifer is politically contentious to Palestinians and the international community.⁵¹ This is due to the ongoing sourcing allowances made in the Oslo II Accord of 1995. This interim agreement between the Palestinian Authority and Israel did not significantly change Israel's control over the shared water source.⁵² But since the conditions stipulated were intended to be temporary for the population and water requirements at that time, Palestinian water autonomy has now been rendered grossly inadequate. The Oslo II Accord allowed Israel to extract 80% of the Mountain Aquifer, while the Palestinians were to access the remaining 20%.⁵³ Palestinians could continue extracting around 118 mcm/year from existing West Bank drills, and a further 70-80 mcm/year from the underutilized eastern basin of the Mountain Aquifer.⁵⁴ Due to poor equipment and overestimations of the available water in their drill zones, the Palestinians have been left with only 103 mcm/year from their existing drills, while Israel has not allowed them to drill the eastern basin.⁵⁵ This is due to Israel's fear of salt water infiltration into Israeli wells if the eastern basin

42



- effluent water

- pipeline
- seasonal river
- river





⁴⁹ A. Nassar, Personal interview, 19 May, 2016.

⁵⁰ Hass, "Israel Blocking Plan to Double Water Supply."

^{51 &}quot;Troubled Waters – Palestinians Denied Fair Access to Water" (London: Amnesty International Publications,

^{2009), 20.} 52 "Water Crisis," B'Tselem, 28 September 2016, http://www.btselem.org/water/oslo_accords.

^{53 &}quot;Water Crisis."

^{54 &}quot;Water Crisis."

^{55 &}quot;Water Crisis."



				NORTH-EASTERN BASIN														
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loses water from pumping.⁵⁶ Israel's national water carrier, Mekorot, sells Palestinian municipalities 63 mcm/year to compensate, but Palestinians still have a substantial lack of water.⁵⁷ In terms of groundwater recharge, there are about 585 mcm/year that are collected in Israel's recharge areas of the West Bank.⁵⁸ These locations of collection are the north-west and west basins in Israel, as well as the Jordan Valley. The western and north-western catchment areas have already completely exhausted their renewable recharge, and the Jordan Valley is close to the same state.⁵⁹

In addition, Israeli settlements in the West Bank, which are also not legitimately recognized by the international community, are supplied with significantly more water than their Palestinian neighbours. In 2008, settlements in the Jordan Valley were allocated 487 L/person/day of water, while settlements in the northern Dead Sea region were allocated 727 L/person/day.⁶⁰ These figures are far greater than the 79 L/person/day of water supplied to their Palestinian West Bank neighbours who are connected to the water piping network,61 and also greatly exceed water consumption in Israel, at 165 L/person/day.⁶² This leaves Palestinians with a domestic supply⁶³ of approximately 21 L less than the WHO recommended minimum of 100 L/ person/day.⁶⁴ The quantity of Palestinian supply is determined by the PA's purchase of water from Israel as well as their own lesser Palestinian supply, with expensive water-tankers compensating for outdated or non-existent distribution infrastructure in certain areas. In the Bedouin villages of al-Hadidya, al-Farsiya, and Ras al-

- 62 Hareuveni, "Dispossession and Exploitation," 24.
- 63 Mark Zeitoun, Clemens Messerchmid, and Shaddad Attili, "Asymmetric Abstraction and Allocation: The
- Israeli-Palestinian Water Pumping Record," in Ground Water, Volume 47, Issue 1 (January-February 2009), 146. https://www.ncbi.nlm.nih.gov/pubmed/18754797.
- 64 "Water Crisis."



FIG. 1.20 WEST BANK AREA C **PALESTINIAN TOWNS** WITH VULNERABLE WATER SUPPLY AND SANITATION



⁵⁶ Wolf, Hydropolitics Along the Jordan River, 60.

^{57 &}quot;Water Crisis.

Wolf, Hydropolitics Along the Jordan River, 60. 58

⁵⁹ Wolf, Hydropolitics Along the Jordan River, 60.

⁶⁰ Eyal Hareuveni, "Dispossession and Exploitation: Israel's Policy in the Jordan Valley and Northern Dead Sea," edited by Yael Stein and Shaul Vardi, translated by Zvi Shulman, May 2011, http://www.btselem.org/sites/default/ files/201105 dispossession and exploitation eng.pdf, 24.

^{61 &}quot;Water Supply," B'Tselem, 27 September 2016, http://www.btselem.org/water/discrimination in water supply.
Akhmar, in the northern Jordan Valley, residents buy water from water-tankers at a cost of at least 9 USD per cubic metre (up to 400% as much as the price of water delivered through pipelines),⁶⁵ consuming 20 L/person/day, the amount necessary for short-term survival in humanitarian disasters, as determined by the World Health Organization (WHO).⁶⁶ Israel refuses to supply the Palestinians with more water siting the high loss rate: about a third of water supplied to the West Bank is lost due to faulty pipes and theft.⁶⁷ The water governance body for Bethlehem, the WSSA, which serves the 120 000 inhabitants, is attempting to reduce losses and improve flow by installing new monitoring equipment.⁶⁸ Water sourcing for Palestinian municipalities can also be piecemeal, combining Palestinian and Israeli-sourced water. The WSSA (Water Supply and Sewerage Authority) of Bethlehem purchases an average of 10 000 cubic metres/day, with 32% derived from the Palestinian Water Authority (PWA), 65% from Mekorot, and a further 3% from a smaller Jerusalem water company called Hagihon.⁶⁹

Water Distribution

In terms of distribution, both domestic and industrial water sourcing in the West Bank are primarily distributed from the piping supply network, under the authority of both Palestinian and Israeli bodies. Palestinian and Israeli agriculture operates on both collected rainwater and piped supply. Israeli settlements and Palestinian urban areas receive the majority of their water from Israeli water companies. In zones where civilian control is managed by the Palestinian Authority (Areas A and B) from that point on, exclusive of East Jerusalem, regional water distribution authorities (which can be public-private enterprises like the WSSA in Bethlehem) facilitate water distribution to







Fig. 1.21 WSSA manhole in Bethlehem

Fig. 1.22 Water storage tanks on roof of house in Bethlehem

Fig. 1.23 Water tanker truck delivering water in Bethlehem

^{65 &}quot;Water Supply."

⁶⁶ Hareuveni, "Dispossession and Exploitation," 25.

^{67 &}quot;Water Crisis."

⁶⁸ A. Nassar, Personal interview, 19 May, 2016.

⁶⁹ A. Nassar, Personal interview, 19 May, 2016.

regions of a town. Such regional water authorities are also in charge of creating piping infrastructure for sewage collection and treatment, to varying degrees of success. For instance, while the areas of Bethlehem under the WSSA's domain generate 2.9 mcm of sewage per year, only 60% of the network is covered to take sewage to the regional sewage treatment plants, with the resultant sludge pumped directly into the Kidron/Wadi an-Nar Stream.⁷⁰ The WSSA's sewage distribution network constructed in the 1990s is undersized, covering 70% of their service area, and is composed of steel pipes in various states of deterioration.⁷¹

Water Treatment

The remainder of the sewage is derived from Palestinian towns which are not hooked up to the municipal grid. Most West Bank Palestinian and some Israeli municipalities around Jerusalem and Bethlehem do not have full access to adequate sewage treatment. There are only five sewage treatment plants for the West Bank Palestinian population,⁷² resulting in an excess of 46 mcm of untreated sewage per year.⁷³ Israeli settlements have experienced delay in the building of their sewage infrastructure, due to the unwillingness of local authorities to fully finance their sewage treatment. The Israeli Finance Ministry requires settlements to pay for the full treatment of their sewage, while offering special government loans and grants that Israel-proper municipalities are not offered.⁷⁴ Despite legal actions being launched by the Israeli Minister of the Environment against settlement waste dumping, illegal sewage discharge occurs in over sixty settlements.⁷⁵ The settlements therefore release about 15 mcm per year of unsatisfactorily treated sewage into the West Bank.76

While there is typically better sewage treatment and water recycling within the Israeli network, a significant proportion of Palestinian and Israeli sewage generated in un-serviced areas is dumped into unlined cesspits and/or disposed of into the Kidron/Wadi an-Nar stream itself, leading to contamination of subterranean aquifers, groundwater, and surface water, which some local Palestinian farmers use to irrigate their crops.⁷⁷ Approximately 730 tons of pesticide per year released in West Bank farms⁷⁸ compound the problem. Nitrate infiltration in Ramallah, for instance, is estimated to take around 15 years to reach groundwater,⁷⁹ polluting the groundwater and surface water supply for Israelis and Palestinians in the Mountain Aquifer's recharge area,⁸⁰ one of the most significant sources of water for both Israelis and Palestinians generating 600-700 mcm of water/year.81 Palestinian and Israeli domestic and agricultural water storage is accommodated via private, family-owned water tanks, with larger arrays for Palestinian households which experience periods of water shortages. Israeli and Palestinian sourcing and treatment in the West Bank are also accommodated separately by wells, pumps, and cesspits, with the addition of an Israeli desalination plant.82

Between Israelis and Palestinians, water sourcing, distribution, and treatment are not equal, leading to increased tension. Although proposals have been put forward for the construction of a sewage treatment plant to handle the Kidron/Wadi an-Nar's pollution, the various stakeholders cannot agree on how the project should be managed between Israelis and Palestinians.⁸³ Similarly, disagreement between the Israeli and Palestinian governments also prevented a comprehensive watershed management scheme, put forth by an interdisciplinary team of Palestinian and Israeli

82 Malkit Shoshan, Atlas of the Conflict: Israel-Palestine (Rotterdam: 010 Publishers, 2010), 244-261.

⁷⁰ A. Nassar, Personal interview, 19 May, 2016.

⁷¹ A. Nassar, Personal interview, 19 May, 2016.

⁷² Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 419.

⁷³ Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 419.

⁷⁴ Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 420.

⁷⁵ Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 420. 76 Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 420.

⁷⁷ Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 418.

⁷⁸ Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 419. 79 Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 419.

⁸⁰ Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 419.

⁸¹ Tagar, Keinan, and Bromberg, "A Seeping Timebomb," 418.

⁸³ Zafrir Rinat, "Most Polluted River in Israel and West Bank to Stay Filthy."

FIG. 1.24 EXISTING KIDRON/WADI AN-NAR AGRICULTURAL AND URBAN RUNOFF ZONES WITH TYPICAL CONDITIONS OF PALESTINIAN VILLAGE LACKING SEWAGE PIPING NETWORK

In the typical Palestinian village, potable water is sourced partly through piped water delivery, if it is even connected to the regional piping network. Water delivery tankers also partly or fully supply the remaining required water. Water is stored in domestic water cisterns. Waste water is stored in typically unlined cesspits or dumped into nearby unoccupied land.



experts, from gaining statutory authority in the Kidron/Wadi an-Nar watershed.⁸⁴

Water Infrastructure Funding

Given the state of Palestinian water disparity, many international companies and governments have gotten involved, bringing in their own expertise and money. There are several such projects currently underway with the WSSA in Bethlehem, accommodated through partnerships with French, Spanish, and Moroccan organizations to facilitate endeavours like establishing GIS units and leak detection units in the network, or implementing a water safety plan.⁸⁵ The City of Paris and Alps Grenoble are funding a master plan for water and wastewater agglomeration in Bethlehem, seeking to overcome the flooding in rainfall periods by creating GIS drawings and outputs.⁸⁶ Larger foreign donor projects sometimes occur in Area C, and are therefore likely to be delayed due to negotiations or demolished. For instance, the construction of a reservoir in the Area C portion of the Bethlehem neighbourhood of Beit Jala has been suspended until Israel releases a permit of construction.⁸⁷ Throughout the West Bank, Israel has sometimes allowed foreign donor projects to proceed on condition of Palestinian approval of Israeli settlement infrastructure, making the foreign donors complicit in the occupation.⁸⁸

Dumping sewage just outside of the urban realm (whether into Palestinian or Israeli zones) is a result of an inefficient and politically conflicted system at play in the Kidron watershed. It occurs because there is currently inadequate implementation of sewage treatment infrastructure and solid waste removal. Nor have both parties adequately or jointly used the potential of the stream and landscape as a source, distributor, and treatment mechanism of water. In such a state, contamination and Palestinian water disparity will continue unabaited.

⁸⁴ R. Laster, Personal interview, 1 June 2016.

⁸⁵ A. Nassar, Personal interview, 19 May, 2016.

⁸⁶ A. Nassar, Personal interview, 19 May, 2016.

⁸⁷ A. Nassar, Personal interview, 19 May, 2016.

⁸⁸ Jan Selby, 'Water cooperation — or instrument of control?' Global Insights Policy Brief (University of Sussex, March 2013), http://www.sussex.ac.uk/global/showcase/globalinsights.



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2.0 ANALYSIS

2.1 CULTURE AND LANDSCAPE URBANISM: "DESERT" AS NON-PLACE
2.2 POLITICAL BOUNDARIES AS SHAPED BY CULTURAL IDEOLOGY AND WATER: THE CASE OF JERUSALEM
2.3 POLITICIZATION OF WATER INFRASTRUCTURE BASED ON LAND
2.4 ZONES OF POTENTIAL AND WATER INFRASTRUCTURE
2.5 LAND LEGISLATION AND GOVERNANCE
2.6 LAND, WATER, AND POTENTIAL IN THE KIDRON / WADI AN-NAR

61

✓ Fig. 2.01 Pool of Siloam, Jerusalem

2.1 CULTURE AND LANDSCAPE URBANISM: "DESERT" AS NON-PLACE

This thesis's design installations are located in land which is perceived as non-space, or *jarda*, land which has deep ties to Jewish and Arab cultures and has shaped their perception of developed versus undeveloped land in the context of the harsh environment of the desert. The land that hosts most of the pollution in the Kidron/Wadi an-Nar is desert: arid, hot, and sparsely vegetated. The desert as biome has provided much inspiration to both Jewish and Arab authors who have produced texts providing insight into the respective cultural interpretation of undeveloped land. In the West Bank, though both Palestinian and Israeli villages and cities exist at the periphery of the desert, this desert area functions as the *jarda*; the symbolic non-space which needs to complement a place for it to have cultural significance in both Jewish and Arab cultures. Understanding the cultural foundation accordingly, this thesis is better able to describe its approach to locating the proposed design installations.

In "Between City and Desert," architect Manuel Herz notes the two designations of space referred to in the Talmud (text of rabbinical discourse)¹ and Jewish Bible: the City and the Desert.² For the previously nomadic Jewish tribes, the establishment of the Temple in Jerusalem marked the "significance of architecture as a means of unifying a nation. It became the Jewish symbol of settlement and urban life," even in the Diaspora. Outside the boundary of the city walls, the openness of the desert is a limitless space; the realm of the indefinite, a place to bury the dead, both Jewish and later Christian,³ a land where resources could be sourced and waste is dumped. This non-delimited expanse of land (outside the realm of Jewish settlement) is recognized through the biblical metaphor of the City and Desert, which ultimately suggest categorizations of space as symbols, rather than proposing literal interpretations



Fig. 2.02 Private reservoir in the desert just east of Mar Saba, no longer in operation

^{1 &}quot;The Talmud," Reform Judaism, http://www.reformjudaism.org/talmud.

² Manuel Herz and Eyal Weizman, "Between City and Desert," Manuel Herz Architects, http://www.manuelherz. com.

³ Gideon Avni and Zvi Greenhut, "Chapter 1: Architecture, Burial Customs and Chronology," in *The Akeldama Tombs*, edited by Gideon Avni and Zvi Greenhut (Jerusalem: Israel Antiquities Authority, 1996), 1.

of cities and deserts. Over the past century however, the modern Zionist narrative represented this symbolic space in both a figurative and literal sense.

The twentieth century Zionist vision to shape a homeland in Palestine/Israel out of existing urbanized space as well as in undeveloped or less developed rural land demanded a revisiting of the City-Desert metaphor. The City could now be interpreted as any Jewish settlement, combining the return to the homeland with the essence of Jewish life in Antiquity in a land left to run wild (the Desert) without a Jewish presence during this interim of absence.⁴ The Desert was a metaphor for the unknown and untamed, but at the same time informed how early Zionists viewed the literal desert of Palestine/Israel.

To the Zionist pioneers of the late nineteenth to early twentieth centuries, the symbolism of the biblical Desert metaphor was applied to the actual deserts of the country (the Negev, the Arava, and the Judean deserts) which were typically sparsely populated.⁵ Zionist youth especially enjoyed investigating the desert's unique geology and novel flora and fauna. This wandering exploration was seen as exotic in its initial undertaking, as well as rewarding once mastered as an exercise in navigation or reconnaissance. Inhabited by local Bedouin tribes who often served as their first guides, the desert offered relief for Zionist youth from the increasingly complex state of conflict. It was a counter- or non-place⁶.

The desert in Palestinian Arab culture can be interpreted as having similar origins to those of the Zionist tradition. There are two main interpretations; the first corresponds to the view of desert as non-place. This can been seen most

SABRA IDENTITY AND ZIONISM

The film, "Sabra," (1933), later titled, "Chalutzim," was one of the earliest Zionist films on record. The film depicts Zionism's agricultural development in what was once desert as bringing social progress to both Arabs and Jews (Aitken, 642). The poster depicts a settlement as an island in a sea of desert

"Sabra," or prickly pear, is a slang term used to describe native-born Israeli Jews, alluding to their endurance in a hostile environment, despite conditions.



Fig. 2.03 "Sabra" film poster (1933)

Yael Zerubavel, "Desert and Settlement: Space Metaphors and Symbolic Landscapes in the Yishuv and Early Israeli Culture," in *Jewish Topographies*, edited by Julia Brauch, Anna Lipphardt, and Alexandra Nocke (England: Ashgate Publishing Company, 2008), 214.
 Zerubavel, "Desert and Settlement." 215.

Zerubavel, Desert and Settlement, 213.
 Zerubavel, "Desert and Settlement," 213.

⁶ Zerubavel, "Desert and Settlement," 213.

emphatically through Arab literary sources. Pre-Islamic Arabic gasidah poetry, a type of Arabic ode, was characterized by a thematic prelude, called a *nasib*, in which the poet elaborates on lost love, lost home, and ruins.⁷ The protagonist typically experiences such loss for something they experienced in the past in the context of travelling through the desert. The desert is seen here as a space of absence, with the protagonist seeking to cross the threshold into makan, or place, somewhere across the void.⁸ The ruin embodies a sense of longing for what once was, an unoccupied and obsolete place now turned non-place, as the protagonist experiences the travel to and from nodes as a solitary and lonely journey.

"My homeland is my new gasidah,"⁹ is how exiled Palestinian poet Mahmoud Darwish describes his relationship with his Palestinian homeland. Parts of Darwish's poetry read as nasib, lamenting his lack of homeland: "I have no harbor/ to say I have a home...... No land below me so I can die as I wish/ and no sky."¹⁰ To Darwish, the Palestinian Territories are metaphorically a jarda, an open land without borders that he can no longer access in exile, seen from outside.¹¹

Similar to the Zionist metaphor of desert, Darwish's gasidah on the Palestinian Territories employs the desert as a metaphor to explain the open-ended, alienated state of his homeland. In the vein of Darwish, when non-Bedouin Arab poets discuss the desert environment surrounding them, it is typically portrayed as a place of alienation from modern life, a symbol of spiritual isolation, or a place of war.¹² The similar interpretation of desert between urban Arab and Jewish cultures come from their joint history as tribal, nomadic peoples who eventually urbanized in fortified

A traveler told another: We won't return the way...

(Mahmoud Darwish)

I don't know the desert, but I grew on its limits words The words said their words, and left like a separated woman, I left as her broken spouse, I did not keep except the rhythm I hear it, and I follow it. and I raise it a dove in the passage to the sky, the sky of my song, I am the son of the Syrian coast, I live it a journey or shrine between the people of the sea, but the mirage draws me east to the ancient nomads, I bring the beautiful horses their water, I take the pulse of the alphabets in their echoes, and I return a window facing two ways I forget who I will be so I can be a people in one, and contemporary to the praises of the unfamiliar mariners beneath my windows, and the letter of the warring to their own: we won't return like we left we won't even return... now and then!

I don't know the desert, no matters how I visit its foreboding. And in the desert the invisible said to me: Write! I said: On the mirage there is other writing He said: Write so that the mirage becomes greener So i said: I'm short of absence And I said: I have yet to learn the words He said to me: Write so you will know them, and to know where you were, and where you are and how you came to be, and who you'll be tomorrow, put your name in my hand and write to know who I am, and pass a cloud in the expanse So I wrote: whoever writes his story inherits the land of words, and posses significance thoroughly!

I don't know the desert, but I take leave of her: peace to the tribe east of my song: peace to the multiply descended on a sword: peace to the son of my mother beneath a palm tree: peace to the mu'allagah that guards our stars: peace to the people passing memory to mine: peace to the peace upon me between two gasidahs: a gasidah written and another whose poet died desiring! Am I myself? Am I here... or there? In every "you" I, I am you the interlocutor, it is not exile to be you. It is not exile to be the I in you. And it is not exile for the sea and desert to be the song of the traveler for the traveler: I won't return, like I left. I won't even return... now and then!

^{7 &}quot;Nasib," Encyclopaedia Britannica, 2017, https://www.britannica.com/art/nasib.

⁸ Najat Rahman, Literary Disinheritance (Plymouth, UK: Lexington Books, 2008), 60.

⁹ Najat Rahman, Literary Disinheritance, 61.

¹⁰ Najat Rahman, Literary Disinheritance, 61.

¹¹ Maysa Abou-Youssef Haward, "Communities at the Margins: Arab Poetry of the Desert," Aridlands Newsletter,

No. 50, November/December 2001, https://cals.arizona.edu/OALS/ALN/aln50/hayward.html.

¹² Abou-Youssef Haward, "Communities at the Margins."

cities. However, one group of Arabs still remains nomadic to this day, and as such, maintain a different view of the desert.

Still an active minority throughout the Middle East and North Africa, the Bedouin do not interpret the desert as a hostile barrier between permanent points of occupation. It is instead seen as a framework supporting life at alternating locations of one's tribe's own choosing. When a new camp is established, it becomes the loci for the community. Members of the community pivot around the camp to navigate, with the camp's location changing over time based on what the desert allows them to sustain. Bedouin poetry's overarching theme is that of growing community without borders in a land without borders; hospitality, plants, livestock, and food feature as literal and metaphorical icons of small-scale abundance in what can sometimes be a harsh environment.¹³

Whether viewed as hostile by urban dwellers, or fertile in its expansive possibilities by the Bedouin, or a place outside the protected realm of public Jewish space, Israelis and Palestinians view the desert as shaping community in spite of its harsh demands. Bedouin poets describe life in terms of the livestock, water, guests, and food that they've sustained despite the exigencies of their location. Israel's occupation of the West Bank means that Palestinians and Bedouin can no longer autonomously live in or travel through the desert territory of this area. This is apparent in the municipality of al-Ubeidiye, as Bedouin shepherds living in Area C are unable to have their livestock graze in the desert as they once did before an Israeli bypass road bisected the land.¹⁴ Although their villages and cities exist at the periphery of the desert, it is the *jarda*, the symbolic non-space, which needs to compliment place for it to have cultural significance in both Jewish and Arab cultures.

The contemporary Zionist interpretation of non-place includes zones in the West Bank falling outside the domain of settlements and private Israeli/settlement roads in Area C. This includes rural Area C land which is sparsely inhabited by Palestinians/Palestinian Bedouin, like on the slopes of the Kidron Valley/Wadi an-Nar, as well as the Area A and B Palestinian villages and hillsides surrounding it. To Israel, this land is effectively *jarda*; to be viewed as hostile and unknown from the safety of one's own camp. Prompted also by political expediency, Israeli land is walled off, whether behind the Separation Barrier¹⁵ or enclosing settlements. This thesis's proposed design installations are located in non-space at the edges of existing communities in order to embrace the cultural value of *jarda*. In such locations, architecture and landscape architecture may operate more as the crossing point or nexus of many paths, rather than an enclosure.

¹³ Abou-Youssef Haward, "Communities at the Margins."

^{14 &}quot;Al 'Ubeidiya Town Profile," The Applied Research Institute – Jerusalem, 2010, http://vprofile.arij.org/bethlehem/pdfs/VP/Al%20'Ubeidiya tp en.pdf.

¹⁵ See Glossary page 268.

FIG. 2.04 KIDRON / WADI AN-NAR **CIRCULATION ROUTES**

Israel-proper urban zones and Israeli West Bank settlements Palestinian urban zone Area C undeveloped (under full Israeli civil and military administration)

- _____ possible hiking route
- —— possible biking route
- ____ possible off-road trail
- main road
- — private Israeli road
- ← Kidron / Wadi an-Nar

The Kidron/Wadi an-Nar Valley bisects the West Bank at its most narrow point. Only a few roads bridge the valley, with adjacent major highways running northsouth in the Dead Sea Valley and Jerusalem.

The Kidron/Wadi an-Nar enters the desert just east of al-Ubeidiye. The wadi has been used for millenia as a circulation route linking the Dead Sea to Jerusalem. The Kidron Master Plan proposed a series of recreational paths for hikers, off-road vehicles, and cyclists based on key heritage sites, high points, existing path networks, and topography. These suggested paths are illustrated in the following circulation routes diagram.





2.2 POLITICAL BOUNDARIES AS SHAPED BY CULTURAL IDEOLOGY AND WATER: THE CASE OF JERUSALEM

Water has long held a deep cultural value in Jerusalem and has shaped its political boundaries. While key water sites from the Judean period reveal this cultural value, their archeological excavation in East Jerusalem claims land from East Jerusalem Arabs, incorporating archeology into the conflict. At the location of the ancient mikveh, the ritual Jewish ablution pools, between the Mount of Olives and the Old City, the Kidron Valley/Wadi an-Nar starts to emerge. The portion of the Kidron/ Wadi an-Nar found in Jerusalem, also known as the Valley of Jehoshaphat, King's Valley, or Wadi al-Joz, is attributed with being the place where all nations will be assembled on the day of judgement, according to the Christian Bible (Joel 3:2-3:2). The Bible also mentions the valley as being used for ritual cleaning of unclean things from the Temple (2 Chronicles, Chapter 29, Verse 16), and the valley also hosted numerous Jewish burial grounds up until the fall of the Second Temple.¹⁶ The Spring of Gihon, located in the valley, was once the main source of water for the Pool of Siloam. The Pool is located in the excavated Judean (pre-Babylonian exile) site in Jerusalem, now called the City of David by Israelis, or Wadi Hilweh by Palestinians. Preceding an Assyrian siege, King Hezekiah supposedly extended the city walls to secure water for the impending time of need.¹⁷ The sites of the spring, Siloam Tunnel, and pool now fall within the Israeli annexed mixed Jewish and Arab area of East Jerusalem, in the neighbourhood of the City of David/Wadi Hilweh and the larger, predominantly Palestinian urbanized village of Silwan, both of which having expanded into the valley over the past fifty years.

The City of David/Wadi Hilweh is located in East Jerusalem and was annexed by Israel in 1967. Although the village of Silwan maintained a mixed demographic of Arab Christians, Muslims, and Yemenite Jews until the 1936 Arab Revolt in Palestine,



Fig. 2.05 Jerusalem Site Plan 1:20 000

¹⁶ Y. Zohar, Personal interview, 18 May 2016.

^{17 &}quot;Hezekiah's Tunnel Reexamined," Bible History Daily, http://www.biblicalarchaeology.org/daily/biblical-sitesplaces/jerusalem/hezekiah%E2%80%99s-tunnel-reexamined/.

SECTION THROUGH CITY OF DAVID

The following image depicts a historical representation of what the walled City of Jerusalem, Kidron Valley (called Emek Yehoshafat/Wadi al–Joz specifically at this point in Jerusalem), and City of David could have looked like in Antiquity. The section shows Hezekiah's Tunnel bringing water from the Spring of Gihon to the Pool of Siloam, running underneath the City of David/Wadi Hilweh neighbourhood.

The corresponding photos show the current conditions of several pieces of ancient water infrastructure in the City of Jerusalem.



Fig. 2.06 Conceptual model of ancient City of David







Clockwise from top left:

Fig. 2.07 A: Mikveh under southwest corner of Temple Mount Wall

Fig. 2.08 B: Cistern in tunnel underneath Temple Mount, City of Jerusalem

Fig. 2.09 C: Hezekiah's Tunnel

Fig. 2.10 D: Pool of Siloam

ANALYSIS

by 1938, the Jews were removed due to Arab rioting.¹⁸ Since 1991, the previously Arab neighbourhood now plays host to a tense relationship between Jewish and Arab residents, due to the influx of Jews purchasing properties from Arabs and moving in.¹⁹ This is viewed by Arab residents of Silwan as furthering the Israeli occupation of their land, generating attacks against Jewish households²⁰ and frequent arrests of Palestinian residents by Israeli police.²¹ The motivation for Jewish families to move into such a neighbourhood, knowing that their reception is often hostile, stems from their ideological perception of the land as being part of their Jewish history, and therefore, something to be reclaimed. East Jerusalem in particular is key to the religious (as opposed to secular) Zionist movement's yearning for a "unified" capital for the Jewish people, something lost since the fall of the Second Temple around two thousand years prior.²² The movement to strengthen Jewish existence around East Jerusalem has been supported by some Israelis while being heavily criticized by others, as it takes advantage of Israel's annexation of East Jerusalem, a predominantly Palestinian territory, after the 1967 War. Israel claims that it is authorized to administer East Jerusalem as a part of their conquered territory, while Palestinians and a large majority of the international community disagree.²³

Ongoing Israeli archeological work also adds to the tension, as it expands into these neighbourhoods on behalf of private archeological organizations operating in tandem with the Israeli Antiquities Authority.²⁴ The main Israeli group funding archeology around the City of David and East Jerusalem is Ir David, also known as



Fig. 2.11 Model of ancient City of David from Tower of David Museum

¹⁸ Nadav Shragai, "11 Jewish Families Move Into J'lem Neighborhood of Silwan," *Haaretz*, 1 April 2004, http:// www.haaretz.com/11-jewish-families-move-into-j-lem-neighborhood-of-silwan-1.118528.

¹⁹ Nir Hasson, "East Jerusalem Remains 'Arab' Despite Jewish Settlers, Experts Say," *Haaretz*, 2 October 2014, http://www.haaretz.com/israel-news/.premium-1.618734.

²⁰ Abe Selig, "Silwan Violence Reaches New Heights," *The Jerusalem Post*, 28 June 2010, http://www.jpost. com/lsrael/Silwan-violence-reaches-new-heights.

²¹ Anna Lekas Miller, "Israel's Land Grab in East Jerusalem," *The Nation*, 17 April 2013, https://www.thenation. com/article/israels-land-grab-east-jerusalem/.

²² Alick Isaacs, "Zionism and Jerusalem," The Jewish Agency for Israel, http://www.jewishagency.org/jerusalemday/content/38161.

²³ Shoshan, Atlas of the Conflict: Israel-Palestine, 368.

²⁴ Jonathan Cook, "Archaeology used politically to push out Jerusalem Palestinians," The Electronic Intifada, https://electronicintifada.net/content/archaeology-used-politically-push-out-jerusalem-palestinians/7733.

Elad. Its website advertises Jerusalem tours and events in the archeological sites of the City of David, the Mount of Olives, and Armon Hanatziv.25 While the Israel Antiquities Authority conducts the excavation of the City of David, Elad/Ir David funds their ventures.²⁶ In the organization's words, "As excavations are completed, the area is opened to tourism to further deepen visitors' understanding of its monumental past. Additional educational programming geared towards Israeli students, adults and soldiers reconnects them to their history and heritage."27

Elad/Ir David has been criticized of "Judaization:" namely, of working to unearth, exhibit, and strengthen the case for Jewish existence in Jerusalem.²⁸ Touring the City of David archeological park, signs posted by the foundation inform visitors of the Judean history of the site, without much mention or description of other periods (Ottoman or Umayyad, for instance). Discussing the ongoing excavations at the site of their future tourist centre, on what used to be the Givati parking lot, owned by a local Arab family, the organization acknowledged the discovery of strata from Persian, Hellenistic, Hasmonean, Roman, Byzantine, and Abbasid periods.²⁹ However, they proceed to indicate that the signage and guidance they provide reflects the "dominant" periods and that guides may provide information about the site as they see fit.³⁰

In addition to funding excavations in Jerusalem, Elad has also facilitated Jewish settler expansion in East Jerusalem, and in particular, in Silwan.³¹ Developing

ARCHEOLOGY AND IDEOLOGY

Attempting to further substantiate Jewish existence in Jerusalem, Ir David's signage implies that the current site in question could be part of the biblical King David's Palace, including a reference from the Jewish Bible. Upon reading further, one finds that "other scholars contest this view," putting the identity of the site into question. There have been successive generations of various people inhabiting the site, including Jews.

THE LARGE **STONE STRUCTURE**

The Remains of King David's Palace?

"And Hiram king of Tyre sent messengers וושלח חירם מלך צר מלאכים אל הוד ועצי ארוים וחרשי to David, and cedar - trees, and carpenters, and masons; and they built David a house" (II Samuel 5:11)

conducted by Eilat Mazar, have revealed the remains of a ממצאים המעידים על יקמתו בראשית המאה העשירית לפנה"ס, large building, known as the Large Stone Structure. Finds uncovered in relation to the structure indicate that it was בית הארזים" שבנה דוד, אך יש חוקרים החולקים על התארוך ועל built in the early 10th century BCE during the reign of King David. In Mazar's opinion the building can be identified with the royal "House of Cedar", King David's Palace. Other החפירה בעיצומה ורבים מסודותיה של עיר דוד עודם טמונים במעבה scholars contest this view.





אדמה.

Fig. 2.12 Sign in Ir David's archeological park

Fig. 2.13 Jerusalem Site Plan 1:20 000

^{25 &}quot;The Ir David Foundation," City of David, http://www.cityofdavid.org.il/en/The-Ir-David-Foundation.

²⁶ "The Ir David Foundation.

^{27 &}quot;The Ir David Foundation."

²⁸ Moriel Rothman-Zecher, "10 Reasons you Should Never Visit the 'City of David' [Again]," The Leftern Wall (blog).

²⁹ Nir Hasson, "Underground Jerusalem: An Interactive Journey," Haaretz, 24 May 2015, http://www.haaretz. com/st/c/prod/eng/2016/05/jeruz/01/.

³⁰ Hasson, "Underground Jerusalem."

³¹ Nir Hasson, "Hidden Link Unearthed Between State, Settler Group at Israel's Most Controversial Dig," Haaretz, 17 Nov. 2014, http://www.haaretz.com/israel-news/.premium-1.626823.

properties which were either sold or acquired through transfer under Absentee Law³² post-1967 War, Elad has helped many Israeli settlers secure property and build compounds within Silwan, sometimes by purchasing the homes through a company registered abroad.³³ This is done in order to establish Jewish presence on the land, as in ancient times; so says Yigal Kaufman, a spokesman for Elad: "The City of David is the most ancient core of Jerusalem, and we want it to become a Jewish neighbourhood."³⁴ Neither welcomed nor safe, settlers live in guard-protected compounds, travelling sometimes in cars with bullet-proof glass to and from West Jerusalem. Israeli police are required to protect the settlers by law, garnering more ire from the local Arabs when the two groups enter into conflict.

Elad/Ir David's archeological work in the City of David starts at a site on the south side of the Old City walls, in Hilweh, a predominantly Arab neighbourhood. Tourists access the entrance to the City of David archeological park up a fenced road, sometimes with a roadblock or guards at the end. The top of the park introduces visitors to some Second and First Temple finds. Continuing south, tourists can access Siloam Tunnel (also known as Hezekiah's Tunnel) and the Spring of Gihon. The route continues through an above-ground path or through the tunnel, underneath the Arab neighbourhood of Hilweh, emerging below what used to be a mosque and daycare at the Pool of Siloam. A gated exit marks the end of the extent of the park. Beyond this point lies the Arab neighbourhood of Hilweh.

In order to encompass the extent of the water tunnel and pool, Ir David has created a gated park for tourists and the Israeli administrators of the park to operate within. While it used to be under the authority of the Jerusalem Islamic *Waqf*, an Islamic religious trust operated jointly under Palestinian-Jordanian rule and financed



Clockwise from top:

Fig. 2.14 A: Ir David archeological dig under what was once the Giv'ati parking lot, owned by an East Jerusalem resident

Fig. 2.15 B: Ir David active archeological dig

Fig. 2.16 C: Drainage canal from Siloam Pool, looking south-east to Silwan

Fig. 2.17 D: Water passing under Derech HaShiloah road, emerging in Silwan/ Hilweh

Fig. 2.18 E: Archeological park looking east into Silwan

³² See Glossary page 268.

³³ Hasson, "Hidden Link Unearthed Between State."

³⁴ Joel Greenberg, "Settlers Move Into 4 Homes in East Jerusalem," *The New York Times*, 9 June 1998, http:// www.nytimes.com/1998/06/09/world/settlers-move-into-4-homes-in-east-jerusalem.html

JEWISH HOUSING IN SILWAN

Jewish housing in the East Jerusalem neighbourhood of Silwan with protected rooftop solarium and lookout apparatus.



Fig. 2.19 Jewish housing in Silwan

by Jordan, Elad/Ir David has now acquired control of the Pool of Siloam. Along with other sites, it seeks to develop the City of David in the name of Jewish archeology and history. The expansion of the domain of Elad/Ir David over Palestinian land, either through the construction of new tourist infrastructure (a new East Jerusalem visitor's centre on what used to be a Palestinian parking lot and community centre)³⁵ or in establishing settlements, operates at a much larger scale underneath or into Palestinian land.

In such a manner, cultural ideology shapes political boundaries. This ideology results in dispute over how land should be used, and even named. Whether called the "City of David" by Israeli settlers, or "Hilweh" by Palestinians, the ground through which Jerusalem's most culturally significant source of water flows is contested. As in the time of the Judean siege, boundaries are erected to protect access to water, and Palestinians from East Jerusalem cannot enter the park from the bottom of the hill. However, the water no longer serves any purpose as a resource. It is a cultural artifact, justifying territorial claim to satisfy history.

POOL OF SILOAM AND CHANGING OWNERSHIP

Over the past hundred years, the City of Jerusalem has been built up around the Pool of Siloam. At one point, the Islamic Waqf of Jerusalem administered the pool, but the stream and accompanying path and stairs have now been claimed by the City of David as part of the archeological park. On the upper level surrounding the pool, an East Jerusalem mosque and daycare mark the territorial shift between Israeli and Palestinian, unbeknownst to tourists.







Fig. 2.20 Old sign at the Pool of Siloam claiming Islamic Waqf management

Fig. 2.21 L: Pool of Siloam around 100 years ago

Fig. 2.22 R: Pool of Siloam now

³⁵ Nir Hasson, "Israel Approves New East Jerusalem Visitors' Compound, Razes Palestinian Community Center," *Haaretz*, 13 February 2012, http://www.haaretz.com/israel-news/israel-approves-new-east-jerusalem-visitorscompound-razes-palestinian-community-center-1.412700.

2.3 POLITICIZATION OF WATER INFRASTRUCTURE BASED ON LAND

The site can be interpreted as a physical interface, or surface, for staging infrastructural inputs and outputs, operating in dynamic reciprocity over time. In keeping with landscape architect James Corner's theory on landscape urbanism, the term "surface" is employed here to correlate the horizontal field of action which hosts the shifting effect of populations according to their programmatic demand. This creates what Corner describes as "an ecology of various systems and elements that set in motion a diverse network of interaction."³⁶ While Corner's theory is focused on an urban context for the term "surface," in this thesis it is used to describe land facilitating water sourcing, distribution, and treatment which stage highly complex networks constrained by political inefficiency.

Any site which stages water infrastructure, whether it be Palestinian or Israeli, is considered part of a politicized realm due to the fact that the infrastructure is operated by one group in spite of the other. Accordingly, there are three categories of water infrastructure in the West Bank: sourcing, treatment, and distribution. Sourcing infrastructure includes wells, a desalination plant (exclusively Israeli), reservoirs, and sewage treatment plants. Distribution infrastructure like piping, meters and gauges, and water delivery trucks also serve the region. In terms of politicization of sourcing and distribution, for instance, many Palestinian and Israeli communities in the West Bank receive at least some of their water through Mekorot. Both Israeli sourcing and distribution infrastructure are seen by Palestinians as supporting the occupation, as Israel stations wells, reservoirs, water tanks, desalination plants, and sewage treatment plants in West Bank land which Palestinians view as their own.





Fig. 2.23 Phenomenological model of Israeli-Palestinian water reservoirs, pumps, and aquifers: surface as armature for infrastructure

2.4 ZONES OF POTENTIAL AND WATER INFRASTRUCTURE

Area C, with its points of water extraction, Israeli roads, agricultural sites, military training areas, and settlements, will be critical to Israel in future peace negotiations. For the moment, the majority of Area C remains less populated than Areas A and B, with approximately 180 000 – 300 000 Bedouin and Palestinians in villages, and around 325 000 Israeli settlers living in 125 settlements and 100 outposts.³⁷ It is underserviced in terms of Palestinian infrastructure pertaining to water, communications, roads, and energy. Most Area C land in the Kidron/Wadi an-Nar is made up of Israeli settlements, hillsides below Palestinian villages or settlements, or the large expanse of land in the Judean desert, also called el-Bariyah by Palestinians,³⁸ further east from urban zones. Hillsides in Area C, typically used for agriculture or animal grazing, become part of the sewage and solid waste disposal system through lack of existing infrastructure. Due to the high cost of cesspit pumping and solid waste removal, as well as the lack of official Palestinian dumpsites and sewage treatment facilities, these sites host dump trucks offloading construction waste, tankers emptying cesspit sludge into waterways, and others burning household garbage. One unofficial dumpsite was located on the road to Mar Saba, where the solid waste of 250 households from nearby villages has been dumped beside the road for an extensive period of time.³⁹ The site was only recently cleaned of its solid waste, transported elsewhere, as part of the Kidron/Wadi an-Nar Action Plan.⁴⁰ This detrimental use of the valley's land did not come from governmental regulation, but rather, a lack thereof.

For Israeli settlers, undeveloped hilltops within Area C are scouted for establishment as future settlement outposts.⁴¹ Even before a mobile dwelling has been erected to attempt a de facto claim to the land through a physical Israeli presence, the land has been perceived as being valuable for future occupation. There is a need



FIG. 2.24 WEST BANK **AREA C SETTLEMENTS, TOWNS, AND VILLAGES**

^{37 &}quot;Area C," B'Tselem, http://www.btselem.org/topic/area c.

^{38 &}quot;El-Bariyah: wilderness with monasteries," UNESCO, http://whc.unesco.org/en/tentativelists/5708/.

³⁹ S. A. Al-Assa, Personal interview, 13 May 2016.

⁴⁰ R. Laster, Personal interview, 1 June 2016.

⁴¹ See Glossary page 274.

within the Palestinian community to spread out from urban areas as well into Area C, as they are only left to build upwards within Areas A and B. Although this same land may be viewed by Palestinians as having potential for future Palestinian use, it is often lost to Israeli expansion or the Israeli government not granting Palestinians building permits for it.

Land gains potential at the periphery of existing infrastructure. It is the perceived empty land adjacent to human habitation, to be claimed by future branches that keep growing outwards. Seemingly mundane at times, this could take the form of a new Israeli cell phone tower extending one of their national cell phone company's networks in the West Bank, which Palestinians argue is illegal; or the construction, without permit, of a Palestinian water pipeline connecting Palestinian villages through Area C, which Israel argues is illegal because they did not proceed under the Joint Water Committee. Although both sides would prefer to operate independent from one another, significant infrastructure is shared between Israelis and Palestinians. As long as the West Bank is under occupation, Israeli and Palestinian infrastructure is partisan. Especially in transboundary regions like the Kidron/Wadi an-Nar, these new inputs and outputs are ultimately vetoed by political groups on both sides which contribute to resource disparity for Palestinians.

2.5 LAND LEGISLATION AND GOVERNANCE

To better understand the partisan nature of water infrastructure, one must first have a better understanding of the land upon which such infrastructure is hosted. Land in the West Bank has undergone significant legislative modifications over the past two hundred years due to successive changes in administration. Under Ottoman rule in the mid-nineteenth century, followed by British mandate and then Jordanian occupation, the current fragmentation of land under Israeli occupation can be explained through the compilation of land laws and applied territorial governance which have shaped it. The following section will explore these various land legislation and governance systems and explain their significance to contemporary West Bank infrastructure provision.

Land Governance

While land legislation maintains individual property rights, land governance is what mandates civil and military control over the West Bank on a territorial scale. At this scale, Israel and the Palestinian Authority contest the land which they hope to officially control and develop due to several key factors in the conflict: Israel's occupation of land outside of its 1948 borders, the Oslo II Accord's tri-part zoning of civilian and military command, as well as the failure to review the progress of the Oslo Accords after their interim period concluded in 1999.⁴² Area C has been under Israel's military and civil control since 1967. Israel was supposed to have transferred part of Area C to the Palestinians by the end of 1999,⁴³ however, the Camp David talks of July 2000 to January 2001 failed to establish a final plan of Palestinian sovereignty, as Israel proposed conditions the Palestinian leadership would not accept.⁴⁴ This included an Israeli offer of limited Palestinian sovereignty in around 86 percent of the West Bank and Arab neighbourhoods of East Jerusalem, while Israel could hold onto



FIG. 2.25 WEST BANK **ISRAELI SETTLEMENT** AND PALESTINIAN AREAS



⁴² Raja Halwani and Tomis Kapitan, The Israeli-Palestinian Conflict: Philisophical Essays on Self-Determination, Terrorism and the One-State Solution (London: Palgrave Macmillan, 2008), 51.

⁴³ Halwani and Kapitan, The Israeli-Palestinian Conflict, 51.

⁴⁴ Halwani and Kapitan, The Israeli-Palestinian Conflict, 52.

their major settlements, maintaining security control over them and their connecting roads and borders⁴⁵. The lack of agreement resulted in the protracted continuation of the terms of the Oslo Accords which, as of 2017, have still not been resolved. Therefore, while Israel claims the West Bank is "disputed territory"⁴⁶ and justifies their stance due to prior Egyptian and Jordanian occupation of Gaza and the West Bank after the 1947-1948 War,⁴⁷ to Palestinians and the international community, any Israeli activity in the West Bank is an occupation⁴⁸.

The Oslo Accords established that Palestinians would gain full civil and military control over Area A (17.2 percent of the West Bank) and civil control over Area B (23 percent). However, this cumulative 40.2 percent of land did not take into account a West Bank Palestinian population growth from 1.25 million in 1990 to 2.5 million in 2006,⁴⁹ Palestinians residing in Area C, Israeli settlement growth in Area C, and land losses from the construction of the Separation Barrier⁵⁰ which started in 2001. Land is therefore limited for Palestinian growth. Palestinians may attempt to obtain a Civil Administration permit for constructing in Area C, but only 5% are approved on average.⁵¹ For the year of 2010, for instance, only four (1%) of the fourhundred and forty Palestinian building permit applications in Area C were approved.⁵² From January 2006 to 30 June 2016, 1113 Palestinian houses were demolished in Area C.⁵³ While Palestinian farmers and shepherds have restricted access to land in



FIG. 2.26 WEST **BANK BARRIERS TO PALESTINIAN LAND AND** LIVELIHOOD



Israeli settlement areas – built up, municipal, and regional

Israeli nature reserve or agriculture

Israeli military zone

roads

Green Line checkpoint

internal checkpoint

internal partially staffed checkpoint



agricultural gate

earthmound

road block

Mediterranean/Dead Sea

No man's land

Seam zone

Separation Barrier -Green Line seam zone



Green Line (1949 Armistice Agreement Line)

Separation Barrier

Separation Barrier – under construction after 2006

> Separation Barrier approved



Jordan-Israel border

⁴⁵ Halwani and Kapitan, The Israeli-Palestinian Conflict, 52.

^{46 &}quot;Israel, the Conflict and Peace: Answers to frequently asked guestions," Israel Ministry of Foreign Affairs, http://www.mfa.gov.il/mfa/foreignpolicy/issues/pages/faq peace process with palestinians dec 2009. aspx#Settlements1.

⁴⁷ Tessler, ed., A History of the Israeli-Palestinian Conflict, 419.

⁴⁸ Tessler. ed., A History of the Israeli-Palestinian Conflict, 419.

^{49 &}quot;Demographic and Socioeconomic Status of the Palestinian People at the end of 2006," Palestinian National Authority: Palestinian Central Bureau of Statistics, 2006, http://www.pcbs.gov.ps/Portals/ pcbs/PressRelease/ endyear2006 E.pdf.

⁵⁰ See Glossary page 268.

^{51 &}quot;Bulldozers at the ready: The politics of planning and demolition in Area C," The Economist, 30 July 2015, http://www.economist.com/news/middle-east-and-africa/21660172-politics-planning-and-demolition-area-c-bulldozers-ready.

^{52 &}quot;Area C: The Key to the Two-State Solution," PASSIA, http://www.passia.org/publications/bulletins/area-c/ area-c.pdf, 5.

^{53 &}quot;Israel Demolished more Palestinian homes in West Bank in first half of 2016 than in all of 2015," B'Tselem, http://www.btselem.org/press releases/20160727 house demolitions in area c.

Area C for agriculture and grazing, their houses may be susceptible to demolition. There have also been accounts of Palestinians using Area C valleys to bypass checkpoints, entering East Jerusalem on foot, while in danger of being shot at by the Israeli military.⁵⁴ Israel has countered this by routinely burning groundcover for greater visibility.

Although Israeli military infringements into Area A also take place, Area C remains the most contested land, as its resources and control are in the hands of Israel and it has the lowest level of inhabitation. Area C is part of the demographic battle between Palestinians and Jewish settlers and will be crucial in prosepective peace negotiations. The State of Israel was founded as a Jewish homeland which would maintain a majority Jewish population, as defended by different Israeli governments throughout the years.⁵⁵ While Palestinian leadership has expressed that the Palestinian people do not wish to become part of a state supporting Jewish nationhood as they do not recognize the right to Jewish self-determination,⁵⁶ the Israeli government would also not want to give nationality to the millions of West Bank Palestinian Arabs, resulting in a minority Jewish population.⁵⁷ In housing around 400 000 Israeli settlers in 131 newly constructed settlements since 1967 throughout Area C⁵⁸, the future of a territorially unified sovereign Palestinian state is less feasible.

Land Legislation

All present day Palestinian legislation in the West Bank and Gaza is made up of a combination of the following: Ottoman period law, British Mandate laws, PA laws

57 Gordon, *Israel's Occupation*, 6.



FIG. 2.27 VULNERABILITY OF AREA C PALESTINIAN TOWNS WITH BARRIERS TO LAND AND LIVELIHOOD

	towns with obstacles
	to land and livelihood
	nfrequently
	moderately
	frequently town populations
	*< EUUU 1000 - 10 000
	>10 000
	Israeli settlement
	areas – built up,
	regional
	rogionat
	Israeli nature reserve or agriculture
	Israeli military zone
	roads
	Green Line checkpoint
	internal checkpoint
	internal partially
	staffed checkpoint
	barrier gate
	agricultural gate
	earthmound
	road block
	Mediterranean/Dead Sea
	No man's land
	Seam zone
	Separation Barrier – Green Line seam zone
	Green Line (1949 Armistice Agreement Line)
	Separation Barrier
	Separation Barrier – under construction after 2006
	Separation Barrier – approved
	lordan-larael border
N	

⁵⁴ Village resident, Personal interview, 15 May 2016.

⁵⁵ Gordon, Israel's Occupation, 6.

Article 20 of the 1968 PLO Charter: "Judaism, being a religion, is not an independent nationality. Nor do Jews constitute a single nation with an identity of its own; they are citizens of the states to which they belong." ("The Palestinian National Charter: Resolutions of the Palestine National Council July 1-17, 1968," Yale Law School: Lillian Goldman Law Library, http://avalon.law.yale.edu/20th_century/plocov.asp#art20).

^{58 &}quot;Population," Peace Now, http://peacenow.org.il/en/settlements-watch/settlements-data/population.

enacted since 1994, and Jordanian legislation. Land laws specifically are derived from common and civil law, but according to Palestinian legal experts, "no longer reflect the national interest of the emerging Palestinian state,"⁵⁹ due to their outdated nature, leaving land vulnerable to claims conflict with Israel. PA-administered land is also subject to non-PA laws from Israeli military orders and international agreements. Starting with the Ottoman Land Law of 1858, ongoing land law in Palestine was not definitive on private land rights and maintained unclear records of landholders.⁶⁰ While this was the practiced system of land legislation prior to 1967, Israeli occupation has leveraged a lack of registered Palestinian land to seize land after the 1967 War, re-categorizing land under a new, less nuanced, system favouring designating land as either state or private.

Near the end of the sixteenth century in Ottoman-governed Palestine, enforcement of taxation and social imbalance between peasant farmers (*fellahin*) and their farm administrators (*multazim*) resulted in *fellahin* leaving the land so as to avoid defaulting on taxation.⁶¹ This led to few *miri* owners registering their properties in Ottoman Palestine. By the end of the eighteenth century, as much as a quarter of cultivated land in Palestine had been abandoned.⁶² The Ottoman Land Law of 1858 sought to collect more tax from the Palestinian farmers, and established a categorization of land in the following five land types:⁶³

- 1) *Mulk*: Private land held primarily within cities, extending to villages and rural areas only encompassing the housing plot and immediate garden.
- 2) Miri: Land of the emir which farmers were permitted to use as private usufruct



Fig. 2.28 Marker indicating Area B to Area C transition

Fig. 2.29 Israeli military outpost of Shdema, between al-Ubeidiye and Mar Saba, as indicated by spray-painted sign on wall

⁵⁹ Hiba Husseini, "Legal Report Palestinian National Authority Land Administration Project," Ministry of Planning, PNA, 2008, http://www.husseini1.com/resources/file/publications/1273744294012/Legal%20Report,%20Palestinian%20National%20Authority,%20Palestinian%20Land%20Administration,%20Ministry%20of%20Planning,%202008. pdf, 2.

⁶⁰ Husseini, "Legal Report Palestinian National Authority Land Administration Project," 32.

⁶¹ Cohen, The Politics of Planting, 31.

⁶² Cohen, The Politics of Planting, 31.

⁶³ F. Ongley, trans., The Ottoman Land Code (London: William Clowes and Sons, 1892).

ANALYSIS

state land. The code primarily focused on this type of land as it generated the most revenue. Miri land made up the vast majority of agricultural land, with mewat as reserve. Emphasizing agricultural productivity, the Land Law stated that *miri* land left uncultivated for a period of three years was reverted to the state, at which point it would be known as machlul land and would be treated as escheated state land.

- 3) Waqf: Land held in a religious trust, protected from division or state seizure.
- 4) Matruka: Public usage land primarily in and around a village. It could accommodate public services like schools, courts, and administrative buildings, as well as roads, some pastures, and groves.
- 5) Mewat ("dead land"): Undeveloped land not used for cultivation which was either too distant (at the minimum distance of about a mile and a half from the outmost extremity of a village) or too stony. Such land was sometimes used by Bedouin for small farming. Mewat could be converted to miri land after continuous cultivation of about three years, as well as with permission from the state.

The Ottoman land categorizations favoured agriculturally-productive land as a source of tax revenue for Istanbul. However, enforcement of the law was undermined locally, as *fellahin* were wary of the government's attempt to register them to specific plots of land. They would have something to lose formally⁶⁴ and were also at higher risk of debt due to failed crops.⁶⁵ The majority of *fellahin* chose not to register land, in order to avoid possible debt and tax demands. Although opting out of registering land had its advantages even up until Jordanian rule, farmers and landowners who had not registered their land by the time Israel occupied the West Bank in 1967 were then at risk of losing their land altogether.

Another shift in land law came during the British mandate rule of Palestine, when they created a new category of "public lands" which encompassed all government land.⁶⁶ This policy, combined with the open-ended and outdated Ottoman land registry has been leveraged during the Israeli occupation of the West Bank. After the 1967 War and the end of Jordanian occupation, absent West Bank land owners who fled to Jordan found it difficult to provide proof of ownership to register their land, as documents had either been removed from the country or were not available. Israel reinterpreted *mulk* (private) ownership as being any land with title ownership or cultivated miri land.⁶⁷ As of 1980, any other categories, with the exception of waqf, were not recognized as being privately owned, and were therefore deemed public (state) land.⁶⁸ Most of this land now falls under Area C governance. This in turn has led the Palestinian Authority to take the protectionist measure of allowing miri land under its jurisdiction to be turned into mulk or waqf.⁶⁹ According to a 2006 report published by Peace Now,⁷⁰ Israel has four categories for West Bank land: state land, private Palestinian land (registered private Palestinian land, under the new designation of *mulk* or cultivated *miri* land), survey land (land whose ownership is in dispute), and Jewish land (land purchased by Jews).⁷¹ They contest that the majority of land that West Bank settlements are built on falls under state land, followed by private Palestinian land.

Further land law issues arise for Palestinians from land alienation through the Israeli military declaring training zones or the establishment of an Israeli nature reserve. During the Elon More case of 1979, the Israeli High Court ruled that construction of a settlement on private Palestinian land seized by the military was illegal.⁷² While this

⁶⁴ Cohen, The Politics of Planting, 32.

⁶⁵ Cohen, The Politics of Planting, 34.

⁶⁶ Cohen, The Politics of Planting, 94.

⁶⁷ Husseini, "Legal Report Palestinian National Authority Land Administration Project," 32.

⁶⁸ Cohen, The Politics of Planting, 97.

⁶⁹ Husseini, "Legal Report Palestinian National Authority Land Administration Project," 32.

⁷⁰ Peace Now is an NGO activist group advocating for a two-state solution to the Israeli-Palestinian conflict. 71 Dror Etkes and Hagit Ofran, "Breaking the Law in the West Bank - One Violation Leads to Another: Israeli Settlement Building on Private Palestinian Property," Peace Now, 2006, http://peacenow.org.il/wp-content/uploads/2009/01/Breaking The Law in WB nov06Eng.pdf, 12. 72 Etkes and Ofran, "Breaking the Law in the West Bank," 10.

precedent was upheld for decades, after the Oslo Accords, the military seizures were used again for the construction of bypass roads, the separation barrier, as well as buffer zones around settlements.73 There is little faith on the side of Palestinians in the appeals process for land conflicts, with the majority of cases settled in favour of the Israeli government.74

Compounding the issues presented by the Israeli reclassification and alienation of land, the Palestinian land laws and procedures currently in effect are inefficient and under-regulated, spurring a review in 2008 contracted out by the Palestinian Authority.⁷⁵ Inheriting the inefficiencies of the Ottoman Land Law of 1858, British law, and lax implementation of land registration under Jordanian rule until 1967, it was found that the Palestinian Land Authority has only registered approximately 30% of Palestinian properties in the West Bank as of 2008.⁷⁶ This happens because of the lack of in absentia claims from Palestinian refugees after the 1967 War, as well as an absence of registration culture in the community stemming from resistance to the Ottoman Land Law (1858),⁷⁷ with the Palestinian property market relying more on social networks to secure land than official legal procedures.⁷⁸ After the 1967 War, Israel seized Jordanian state land amounting to approximately 12% of the West Bank.⁷⁹ They also seized private properties from the war, some of which were *miri* land which was now abandoned, amounting to 8% of West Bank land. It was then categorized as survey land.⁸⁰ A further 16% was seized in 1979, some of which was non-cultivated miri land (as per the Ottoman Land Law, it could be seized by the state after three years without cultivation).⁸¹

The presently pending Palestinian Draft Land Rights Law proposes to encourage better land registration as well as consolidate the existing five categories of land classifications into three, as they interpret mewat ("dead land") and matruka (public community land) to be outdated.⁸² This process would need to be undertaken carefully in order to preserve legal rights for landowners of mewat and miri land especially.83 In the meantime, Israel can leverage the outdated and incomplete Palestinian land registry system to its advantage in what it deems to be state land, permitting settlement expansion and demolitions to take place in Area C's state land. From 1997 to 2009, for instance, 2450 Palestinian-owned structures were demolished in this land due to lack of permit.84

In addition to Israel's land laws sanctioning the seizure of state land in the West Bank, there are also numerous accounts of Israeli settlers illegally seizing land within Area B. One of the more famous outposts to grow into Area B, the outpost of Amona expanded a road beyond Area C and was encroaching on private Palestinian land as of 2012.85 Another outpost near Itamar, in the northern West Bank, developed a 23-acre piece of land that was part of the Palestinian village of Yanun⁸⁶. Around the same number of acres of agricultural land in Area B were taken over by settlers near the outposts of Esh Kodesh and Mitzpeh Ahiya, east of Shiloh⁸⁷. Additional restrictions in Area B also occur, like limiting Palestinian access to parts of the village of Awarta and Einabus due to their close proximity to the settlement of Yitzhar.88 Some of the incursions into Palestinian land in Area B is handled by the Israeli Civil Administration. Amona, for instance, was recently evacuated by the Israeli police

87 Eldar, "West Bank Outposts Spreading Into Area B."

⁷³ Etkes and Ofran, "Breaking the Law in the West Bank," 11.

⁷⁴ Cohen, The Politics of Planting, 104.

⁷⁵ Husseini, "Legal Report Palestinian National Authority Land Administration Project," 2.

⁷⁶ Husseini, "Legal Report Palestinian National Authority Land Administration Project," 13.

⁷⁷ Husseini, "Legal Report Palestinian National Authority Land Administration Project," 13.

⁷⁸ Husseini, "Legal Report Palestinian National Authority Land Administration Project," 15.

⁷⁹ Suzanne Harris-Brandts, Contesting Limits, M. Arch thesis (Waterloo, ON: University of Waterloo, 2012), 137.

⁸⁰ Harris-Brandts, Contesting Limits, 137.

⁸¹ Harris-Brandts, Contesting Limits, 137.

⁸² Husseini, "Legal Report Palestinian National Authority Land Administration Project," 28.

⁸³ Husseini, "Legal Report Palestinian National Authority Land Administration Project," 51.

^{84 &}quot;Restricting Space: Planning Regime Applied by Israel in Area C of the West Bank," OCHA, December 2009. 85 Akiva Eldar, "West Bank Outposts Spreading Into Area B, in Violation of Oslo Accords," Haaretz, 18 February 2012, http://www.haaretz.com/west-bank-outposts-spreading-into-area-b-in-violation-of-oslo-accords-1.413390.

⁸⁶ Eldar, "West Bank Outposts Spreading Into Area B."

⁸⁸ Eldar, "West Bank Outposts Spreading Into Area B."

ANALYSIS

after a long dispute resulting in massive settler protests in the outpost.⁸⁹ The Israeli Civil Administration says it is lacking personnel to handle all settler encroachments.⁹⁰ Overall, the risk of demolition of houses, restrictions to access and resources, and possible settler incursion have left Palestinians feeling insecure not only about their land in Area C, but also in Area B.91

Terrain vague:

Ascribing the label of "non-place" to land is a mechanism employed in the urban theory of Spanish architect Ignasi de Sola-Morales. According to de Sola-Morales, "terrain vague"⁹² is space, typically in an urban context, which is absent, obsolete, or unproductive in its abandonment. The term "terrain" was employed because it signifies a lack of spatial limits, while "vague" refers to both a sea swell, or the nature of being unengaged.⁹³ This land can be interpreted as "un-inhabited, unsafe, [and] un-productive," inasmuch as it also constitutes a "void, absence, yet also promise, the space of the possible, of expectation,"94 and of potential. It is expectation and possibility that "prepare surfaces for future appropriation."95

⁹² Ignasi de Solà-Morales, "Terrain Vague," in Terrain Vague: Interstices at the Edge of the Pale, edited by Patrick Barron and Manuela Mariani (Florence, KY, USA: Routledge, 2013), 26.

⁹³ de Solà-Morales, "Terrain Vague," 26.

⁹⁴ de Solà-Morales, "Terrain Vague," 26.

⁹⁵ Corner, "Terra Fluxus," 31.

⁸⁹ Eldar, "West Bank Outposts Spreading Into Area B." 90 Eldar, "West Bank Outposts Spreading Into Area B."

⁹¹ Eldar, "West Bank Outposts Spreading Into Area B."

2.6 LAND.WATER, AND POTENTIAL IN THE KIDRON / WADI AN-NAR

All West Bank land between Israel and the PA is claimed under land law by respective land owners or government. No land is completely "free" or "open" in the sense that it is readily available to develop. But it can be perceived as such when not examined fully. As previously outlined, Israel considers any land that is not registered as private Palestinian land to be either Israeli state land, survey land (in dispute), or Jewish-owned land. Area C's state and survey land therefore hold potential as possible sites to claim for housing, military use, agriculture, or infrastructure (roads, water network, etc.). From the Palestinian perspective, *mewat* and unregistered or non-cultivated *miri* land in Areas A, B, and C also hold potential for much-needed housing, agriculture, and infrastructure given the lack of available space in Areas A and B. Israel's perceiving Palestinian land as lacking agricultural productivity or official land claim could make it vulnerable to state claim in the future. It can also be threatened by settler expansion, as seen with outpost growth into Area B in the vicinity of the outposts/settlements of Amona, Shiloh, and Itamar, to name a few.⁹⁶

Just as *terrain vague* and *jarda* are terms conveying the perception of a space as being open and undeveloped, I have coined the term, "*terra praeter*," to describe *mewat* or non-cultivated *miri* land in and around Palestinian villages which is temporarily used and therefore vulnerable to future claim conflict. Upon closer observation, this land is used informally and temporarily, primarily for recreation and livestock-keeping. The land is still within municipal bounds, adjacent to registered *miri, mulk, or waqf* land in Areas A, B, or C. For instance, between the monastery (*waqf* land) in the West Bank village of al-Ubeidiye and the olive farms cultivated below (*miri* or *mulk* land), the rest of the village hillside in the Kidron/Wadi an-Nar is uncultivated. Shepherds use the hillside, however, for their livestock to graze on with permission from the village council.⁹⁷ Bedouin families sometimes occupy a part of the valley in uncultivated land, on agreement with local village farmers, and plant a two or three

year crop and raise livestock, before moving to another site.⁹⁸ This land is the "open" space in between established and productive nodes and makes up the majority of the Kidron/Wadi an-Nar hillside. This habitual temporary usage establishes a semiclaim to the land. But temporary usage does not guarantee land will be protected from ecological degradation or Israeli development. While al-Ubeidiye may currently be far less susceptible to Israeli land claims because it falls under Areas A and B and does not have a settlement in immediate proximity, future settlement development or peace negotiations leave unregistered *miri* and *mewat* land vulnerable. Preventative planting and landscape remediation can establish longer-term claims to land by leveraging law, while also better maintaining the ecological well-being of a site. Harkening back to the 1858 Ottoman Land Code, if one can prove the continuous cultivation of a tree for over three years, the tree cannot be removed except under court order.⁹⁹ Legal rights can therefore be obtained over vulnerable land.

Understanding the term etymologically, *terra* signifies earth in Latin, while the preposition *praeter* conveys the notion of existing beside, past, apart from, or in spite of something else. The word, praeter, is employed to describe the quality of a site as being in a state of flux, where people use land for circulation, livestock grazing, or very short-term agriculture in a temporary manner without officially owning it. Established as a bi-product of the conflict, *terra praeter* offers a platform to function just past the limits of both Israeli and Palestinian formal water infrastructure, harnessing it from currently underutilized sources (the Kidron Stream and urban runoff). This thesis situates its proposed design interventions in such land, accommodating independent water treatment to sustain long-term cultivated planting, while solidifying local agency over land.

⁹⁶ Eldar, "West Bank Outposts Spreading Into Area B."

⁹⁷ H. Ikhmais, Personal interview, 22 May 2016.

⁹⁸ H. Ikhmais, Personal interview, 22 May 2016.

⁹⁹ Cohen, *The Politics of Planting*, 37.

Three sites located in terra praeter are the focus of the thesis's design interventions. They were chosen based on their different land and water conditions in the Kidron/Wadi an-Nar Valley, as well the adjacent communities's needs for social space and improved water conditions. The first is Jerusalem's Hinnom Valley/ Wadi a-Rababa, a kilometre-long valley bridging West and East Jerusalem, at the head of the Kidron/Wadi an-Nar. Although not located in occupied territory, the site connects Israel proper with the annexed East Jerusalem, and is therefore unique from the other two sites. Being annexed land outside of the West Bank, the Area A, B, and C governance is not applicable here, nor is the categorization of land as miri, mulk, or waqf. However, similar social conditions are present at a condensed urban scale. At the Hinnom/a-Rababa site, the design focuses on landscaping for urban runoff retention to accommodate the significant floods that occur during the fall and spring, while a recreational pool and orchard serve the mixed Israeli and Palestinian demographic from surrounding neighbourhoods. The second site is a hillside in the West Bank farming village of al-Ubeidiye, eight kilometres downstream from Jerusalem. Claiming Kidron/Wadi an-Nar hillside through preventative planting, a landscape intervention is sustained by water filtration units which collect and treat pumped black water from the Kidron. The irrigation water generated from the system is used by villagers to irrigate the orchard in the stepped terraces, which serve a recreational function for locals and tourists who visit the nearby monastery. The third installation is a path network and floodwater retention basin at the West Bank Mar Saba Monastery, seven kilometres east from al-Ubeidiye, where the Kidron/Wadi an-Nar enters the desert. The cliffs surrounding the monastery have hosted centuries of Christian hermits, with the cliff face being sculpted over time by air and water. Women and other visitors who are excluded from entering the male-only monastery can engage with the path for spiritual reflection or recreation.



3.0 PRAXIS

3.1 METHOD OF DESIGN AND GOVERNANCE

- 3.2 INFORMING THE DESIGN: PRECEDENTS
- 3.3 HINNOM VALLEY / WADI A-RABABA (JERUSALEM)
- 3.4 AL-UBEIDIYE
- 3.5 MAR SABA
- 3.6 BAPTISMAL SITE AND THE "UN-PEACE" PARK

PRAXIS

✓ Fig. 3.01 Water tank of Bedouin family near the village of al-Ubeidiye

3.1 METHOD OF DESIGN AND GOVERNANCE

The Kidron/Wadi an-Nar Master Plan steering committee has worked for years to establish an action plan to tackle the Kidron/Wadi an-Nar watershed's environmental problems. The group of Israeli and Palestinian disciplinary experts developed targets for ecological remediation and water treatment (in the form of a sewage treatment plant), financing, social awareness, tourism, and cultural/heritage value preservation. But when the proposed collaborative integrated basin management scheme involving Israeli-Palestinian administration reached the government for policy approval, it was shut down due to disapproval from both governments. Distrust between nations will continue to ensure large-scale coodinated efforts like these fail. Where they can succeed, however, is at the small scale.

Following the group's action plan, many individual sites within the watershed have seen success. The al-Ubeidiye dump site on the road to Mar Saba, for instance was successfully cleaned up, as per the management group's proposal, because it was more manageable to obtain local permission for such a smaller scale project. In addition, the Centre for Transboundary Water Management's (Arava Institute) domestic sewage disposal units also deal with water pollution at a small scale.

It is therefore more realistic and appropriate to consider design for water at the scale of a community and not at the scale of a territory. At this scale, community members may benefit from social and ecological program as inspired by existing Ecoparks in the region which give primacy to the basic human need for clean water. *Terra praeter* locates these interventions in political space, acknowledging that although water infrastructure under occupation is inherently political, establishing independent methods of sourcing, treating, and distributing a shared resource gives agency to the user.





Projects for Impleme مشاريع للتنفيذ 2013–2017



ark " " park of negotiation "

Projects for Implementation פרויקטים ליישום



Fig. 3.03 EcoPeace (formerly FoEME) transboundary water project

Having located sites requiring water intervention, how can these communities benefit from constructing ecological remediation components like landscape biofiltres and floodwater retention ponds while also creating much-needed outdoor social space? The water issues on site are coupled with a lack of social awareness and communication between stakeholders, both of which require an independent network that advocates open dialogue. Accordingly, the intention is that community members access the respective sites to partake in things like classes to learn about domestic black water filtration, how to collect agricultural runoff, as well as sitespecific cultural exchanges.

Key stakeholders include Palestinians and Israelis living in the Kidron Valley watershed. Secondary stakeholders include some non-locals: international tourists who come to tour the region's heritage sites and participate in biking/hiking the wadis. Put into effect, the parks of negotiation would require consultation with the primary stakeholders. Inspired by the management model that EcoPeace employs, architecture and landscape installations would be constructed and maintained jointly by local trades, under the guidance of a local representative. The local representative is also part of the NGO steering committee of Israeli and Palestinian experts who implement projects for the ecological and social benefit of the watershed and not just individual communities, while respecting local communities' agency over land and water.



PRAXIS

Fig. 3.04 Partial Israeli– Palestinian water network diagram

3.2 INFORMING THE DESIGN: PRECEDENTS

Fig. 3.05 Suzanne Dellal Centre for Dance and Theatre Square – Shlomo Aronson, Tel Aviv ≫

Fig. 3.06 Kreitman Plaza – Shlomo Aronson Architects, Tel Aviv

Fig. 3.07 Manger Square, Bethlehem

Fig. 3.08 Gutter in Old City of Jerusalem street

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MODULARIZED CONSTRUCTION

Fig. 3.09 Mount of Olives, Jerusalem

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Fig. 3.10 Wolfson Park – Dani Karavan, Tel Aviv

Fig. 3.11 Umayyad Palace Archeological Park – Plesner Architects, Jerusalem



Fig. 3.12 Limanim/water retention ponds (see Glossary page 271) -Shlomo Aronson, various Israeli desert locations

Fig. 3.13 Hebron Road sabil at its founding in 1901 (top) and nowadays (bottom), Jerusalem

Fig. 3.14 Preventative planting

Fig. 3.15 Sabil at the Ahmad Ibn Tulun Mosque, Cairo ≫≫







LANDSCAPED HABITATS



Fig. 3.16 Lavoir, Antigua ≪

Fig. 3.17 Zimbabwe Bush Pump (B Type)



Fig. 3.18 Lavoir, Martinvelle



Fig. 3.19 Lavoir de Concise, Savoie Mont Blanc ≪

Fig. 3.20 Livestock nose pump


3.3 HINNOM / A-RABABA VALLEY (JERUSALEM)

IN STREET



Population and Climate

Population:

18 143 (from the adjacent neighbourhoods of Talbiya, Yemin Moshe, Har Zion, Abu Tor, Wadi Hilweh, and Silwan)

Altitude: 810 m above sea level

Annual Rainfall: 590 mm

Average Temperature: 27°C

Land and Access:

The Hinnom Valley is located directly south of the Old City of Jerusalem. It is bounded in the west by the neighbourhoods of Talbiya and Hutzot Hayotzer, to the south by the neighbourhood of Abu Tor, and to the east by the neighbourhood of Silwan. The "Green" Line (1949 Armistice Line), agreed upon by Israel and Jordan at the end of the 1949 War, runs through the centre of the Hinnom/a-Rababa Valley, and marks the separation between West and East Jerusalem. Jerusalem land east of the Armistice Line was annexed by Israel at the end of the 1967 War and is under different social and military governance than the occupied territory of the West Bank. A main road runs through the bottom of the valley, connecting west and east: Gey Ben Hinnom Street. The valley is also accessed on foot by residents of the adjacent neighbourhoods, typically for recreational purposes. Israel maintains a significant portion of the valley as a park, irrigating the upper West Jerusalem section, while the northern Mount Zion hill is less well-maintained. The Akeldama monastery is located on the southern slopes of the valley, at the edge of the neigbourhoods of Abu Tor and Silwan.

Demographic:

The West Jerusalem neighbourhoods of Talbiya and Hutzot Hayotzer are primarily Jewish, while Abu Tor is mixed Jewish and Arab. The East Jerusalem neighbourhood of Silwan is primarily Arab.



Fig. 3.22 Hinnom/Wadi a-Rababa site within Kidron/Wadi an-Nar

HISTORY

Intersecting the Kidron/Wadi an-Nar from the west, the Hinnom Valley/Wadi a-Rababa, plays a crucial role in how the Kidron/Wadi an-Nar has been targeted for future development by Israel. The Hinnom/a-Rababa is unique in that it is the largest parkland connection from West to East Jerusalem and is accessible to pedestrians and cars. As such, it has been maintained by various Israeli bodies to serve several functions over the years, with numerous development schemes being proposed for the sake of cultural preservation and tourism, recreation, and a tool to prevent growth from East Jerusalem.¹ Zurich Park, at the upper portion of the valley near Hebron Road, was once the site of a neighbourhood called Shama'a. Founded in 1900, the neighbourhood hosted a Kurdish Jewish population,² followed by Arabs, until the war of 1948.³ The valley was a key military location during the 1948 war, with its buildings falling into disrepair after they were abandonned.⁴ Middle Eastern Jewish families moved into Shama'a shortly thereafter, squatting in the abandoned houses until their eviction in 1967.⁵ At the end of the 1948 war, an armistice map was drawn at the scale of 1:20 000 in green ink, bisecting the Hinnom/a-Rababa.⁶ Its relative ambiguity at such a large scale was translated into an armistice zone of varying thickness, separating Israeli-controlled West Jerusalem from the Jordaniancontrolled West Bank. Jordan and Israel erected three different fences in this zone until 1967, attempting to redefine their boundary across the four hundred metre wide no-man's land.⁷

During the 1970s, Mayor Teddy Kollek proposed incorporating the Hinnom/ a-Rababa into a national park called the "Cultural Mile," which would stretch from

3 Liana Bresler, Embedded Boundaries, M. Arch thesis (Waterloo: University of Waterloo, 2010), 19.

FIG. 3.23 JERUSALEM SITE PLAN 1:20000



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¹ Cohen, The Politics of Planting, 111.

² Reuven Gafni, "Shchunot Ha-Emek Ha-Ne'elamot," Etmol 187 (Hebrew) (2006), 41-43.

⁴ David Kroyanker, "Heart and Soul of Jerusalem," *Haaretz*, 4 January 2007, http://www.haaretz.com/israel-news/ heart-and-soul-of-jerusalem-1.209190?=&ts=_1484373559526.

⁵ Bresler, Embedded Boundaries, 23.

⁶ David Newman, "The Renaissance of a Border That Never Died," in Borderlines and Borderlands, edited by

Alexander C. Diener and Joshua Hagen (Plymouth, UK: Rowman & Littlefield Publishers, Inc., 2010), 90.

⁷ Liana Bresler, Embedded Boundaries, 19.





CITY OF DAVID/HILWEH

EMEK YEHOSHAFAT / WADI AL-JOZ (KIDRON/AN-NAR)

GAN HAMELECH/

Akeldama Monastery

SILWAN

IRRIGATION AND MAINTENANCE IN WEST JERUSALEM

The visible water infrastructure around West Jerusalem's parks is more wellmaintained than that found in East Jerusalem. Stormwater drains are generally clean, and significant landscaping projects have a tubed feed of water, which results in high water conservation rates.



Fig. 3.25 Hebron Road sabil







Fig. 3.26 Stormwater drain in West Jerusalem

Zurich Garden at top of Hinnom/Wadi a-Rababa

Fig. 3.27 Irrigation in

Fig. 3.28 Sultan's Pool with Israeli stage and seating

DISCONTINUITY OF THE ISRAELI WATER NETWORK AND LACK OF MAINTENANCE IN EAST JERUSALEM

Al-Bustan's stormwater drains are not maintained. Given the lack of solid waste collection, garbage is often disposed of or burned by the roadside. Clogged stormwater drains and impermeable surface at the bottom of the valley lead to heavy flooding during the fall and spring.



Fig. 3.29 Al-Bustan looking east into Silwan







Fig. 3.30 Blocked stormwater drain in al-Bustan

Fig. 3.31 East–West Jerusalem area marker surrounded by solid waste, with a solitary Israeli standpipe adjacent

Fig. 3.32 Al-Bustan Palestinian social advocacy centre in state of disrepair

the Khan Theatre in the south up to Jaffa Gate at the Old City.⁸ This strip now encompasses fifteen historic buldings that have been restored for the public.⁹ At the upper end of the Hinnom/Wadi a-Rababa in West Jerusalem, the Sultan's Pool, an old Ottoman period reservoir, serves as a temporary public events space, filled with stand seating for performances. Carrying on past Hebron Road, the Hinnom/Wadi a-Rababa continues to descend between Mount Zion to the north and the Abu Tor/ Givat Hananya hill to the south. To the west of it lies the predominantly Jewish West Jerusalem. To the east, the urbanized Arab villages of East Jerusalem exist in a state of limbo.

Granted Israeli permanent resident status after 1967, East Jerusalemites who leave to study or work for too long outside of East Jerusalem are not guaranteed reentry back to East Jerusalem. In addition, although most East Jerusalem residents pay Israeli municipal taxes and receive healthcare and insurance benefits, they receive lackluster school services and do not receive Israeli municipal trash collection.¹⁰ This has prompted many East Jerusalem Arabs to become naturalized Israeli citizens, a contentious act to other Palestinians.¹¹ Jewish West Jerusalemites rarely enter the east, unless passing through by car.

The Hinnom/Wadi a-Rababa intersects the Kidron/Wadi an-Nar at a community known as Gan Hamelech ("The King's Garden" in Hebrew), or Al-Bustan ("the vegetable garden" in Arabic). This community in the heart of Silwan contains about 90 homes which were constructed without building permits,¹² as are many buildings in East Jerusalem and the occupied territories. In 2005, the Jerusalem

FIG. 3.33 EAST JERUSALEM NEIGHBOURHOODS BY MAJORITY DEMOGRAPHIC - ARAB AND JEWISH 1:40 000



Fig. 3.34 Gan Hamelech / Al-Bustan, at the bottom of the Hinnom/a-Rababa Vallev

⁸ Kroyanker, "Heart and Soul of Jerusalem."

⁹ Kroyanker, "Heart and Soul of Jerusalem."

¹⁰ Maayan Lubell, "Breaking Taboo, East Jerusalem Palestinians Seek Israeli Citizenship," Haaretz, 5 August

^{2015,} http://www.haaretz.com/israel-news/1.669643.

¹¹ Lubell, "Breaking Taboo."

¹² Nir Hasson, "Israeli Researchers: Jerusalem's Trendiest Street Built Over Biblical Site," Haaretz, 23 October

^{2011,} http://www.haaretz.com/israeli-researchers-jerusalem-s-trendiest-street-built-over-biblical-site-1.391423.

AL-BUSTAN INTERSECTION LOOKING WEST UP HINNOM / WADI A-RABABA

At the intersection of Gey Ben Hinnom and Ma'alot Ir David Street in East Jerusalem, a stand-pipe and a neighbourhood marker indicate the road leading to West Jerusalem



Fig. 3.35 Looking up Hinnom/Wadi a-Rababa from Gan Hamelech / Al-Bustan

Municipality proposed developing a national park in this neighbourhood, called "The King's Garden."¹³ Archeology experts have debated the historic significance of the site, as it has never been excavated before, unlike the adjacent City of David. In addition, another site in Jerusalem has been identified by researchers as being the more probable location of the King's Garden.¹⁴ The plan, later taken up by Jerusalem mayor, Nir Barkat, proposed displacing residents from twenty-two homes¹⁵ temporarily to put them back in along the park's edge after.¹⁶ This would allow him to get rid of both the Palestinian and Jewish settler housing (Beit Yehonatan) which had slowly been built in the valley without permits over the past years. It would also expand on the Israeli park system, linking the historic Akeldama tombs in the upper Kidron to the Hinnom/a-Rababa Valley and West Jerusalem, effectively creating a partial ring around the Old City of Jerusalem. Up to this point, there has been talk of the impending demolition of houses in the al-Bustan area, signifying that the plan may proceed, much to the dismay of Palestinian residents.¹⁷

In addition to municipal-level planning initiatives like the Gan Hamelech/ al-Bustan park, Ir David/Elad, the private archeology and residential development company previously mentioned in this thesis's chapter entitled "Political Boundaries," has strengthened their claim over the Hinnom/Wadi a-Rababa as well. In 2008, the group erected a temporary 120 metre-long rope bridge over the valley just west of the Armistice Line, charging 10 shekel to cross.¹⁸ Possibly inspired by such precedent, in 2014 the Israel Land Authority announced its investment of 6 million ILS (Israeli shekels), approximately 1.6 million USD, to erect a similar suspension

- 16 Abe Selig, "Gan Hamelech Residents Wary of Barkat's Redevelopment Plan," *The Jerusalem Post*, 16 February 2010, http://www.jpost.com/lsrael/Gan-Hamelech-residents-wary-of-Barkats-redevelopment-plan.
- 17 Y. Zohar, Personal interview, 18 May 2016.



PRAXIS

Fig. 3.36 Temporary tourist bridge over the Gan Hamelech/al-Bustan park

Fig. 3.37 Emek Shaveh's diagram of the Israeli– desired archeological park connecting the Kidron, Gan Hamelech/ al-Bustan, Hinnom/Wadi a-Rababa, and Mitchell Gardens in a continuous strip

^{13 &}quot;East Jerusalem," Emek Shaveh, http://alt-arch.org/en/national-parks-in-east-jerusalem-update-2014/#anc13.

^{14 &}quot;East Jerusalem."

¹⁵ Hasson, "Israeli Researchers."

^{18 &}quot;Travel to Ancient Jerusalem – Sukkot 2008," City Mouse, http://www.mouse.co.il/CM.shows_item_show,680,208,13604,.aspx.

bridge, with additional work being done to make the area appear safer to Israelis and tourists: the addition of cameras, a fence, and the repair of a neighbouring cemetery and pedestrian paths accommodating such a change.¹⁹ The city has also recently brought in an architecture firm, Plesner Architects, to conduct a master plan. The implementation included conducting minor repairs to the walls of ruined houses, landscaping, removing 1000 truckloads of waste, and creating hiking paths with "tree shaded vistas" to better view the burial caves.²⁰ Emek Shaveh, an Israeli NGO working to prevent the politicization of archeology in the context of the conflict, has also speculated that a tunnel originating in Silwan, started in 2013 by the IAA and funded by Elad, could dig under the City of David/Wadi Hilweh community, emerging on Mount Zion as another tourist route.²¹

Now situated across the Armistice Line, stradling Israel proper into East Jerusalem, the park is a planned buffer, implemented to separate West Jerusalem Jewish neighbourhoods from East Jerusalem Arab ones, as well as to allow for future cultural/archeological expansion on behalf of Israel. Given the clean-up of the valley preserves the appearance of ruined foundations while not engaging many locals into the park, it seems as though it is intended as a backdrop to the Old City. While bridges and tunnels form around it, the encirclement and potential future development of the valley makes it that much more critical as a site of design intervention.





PRAXIS

Fig. 3.38 "1944 Open Space Plan" (Kendall) including Hinnom Valley, as found in "Embedded Boundaries" by L. Bresler (page 34)

Fig. 3.39 Plesner Architects' Hinnom Valley site plan

Fig. 3.40 Border between irrigated and nonirrigated landscaping

^{19 &}quot;Israeli Lands Authority will Invest \$6 Million for the Hinnom Valley Park in Jerusalem," Israel Land Authority, http://www.land.gov.il/HodaotmmiInt/show_h.asp?key=1528&CodeMaarecet=1.

^{20 &}quot;Gey-Ben-Hinom National Park, Jerusalem, 2005-2010," Plesner Architects, http://plesnerarchitects.com/en/ landscape/gey-ben-hinom-national-park-jerusalem/.

^{21 &}quot;East Jerusalem."

WATER Drinking water and waste removal in the communities surrounding the Hinnom/Wadi a-Rababa are sufficiently accommodated by Jerusalem's municipal water authority. While the upper portion of the Hinnom/Wadi a-Rababa in West Jerusalem still benefits from proper garbage collection as well as the irrigation of plants, a sudden transition from irrigated grass to natural scrub, especially evident during the dry summer season, marks the seemingly mundane boundary of Israeli control of the land. Aerial photos attest to the sudden transition. The valley also serves as a conduit for a significant amount of rainwater during the fall and spring. There is therefore significant flooding at al-Bustan/Gan Hamelech and the rest of Silwan's valley each year during these seasons, resulting in the flooding of houses and cars. The lack of garbage collection means that garbage accumulates on street corners and abandoned lots, possibly to be burned at a later date. Garbage also plugs stormwater drains, encouraging the flooding. In addition, since social spaces like the al-Bustan Palestinian activism square have been vandalised, space for local Palestinians is in need. A swimming pool, for instance, has been mentioned as being much wanted, especially for children's recreation.²²



Fig. 3.41 Blocked stormwater drain in Silwan, East Jerusalem

²² Anonymous resident, Personal interview, 18 May 2016.

IRRIGATION

The upper portion of the valley is called Zurich Garden. It is used by both Arab and Jewish families from East and West Jerusalem as a recreational/picnic spot. Wihle well-maintained bushes, trees, and grass are found in this western part of the Hinnom/Wadi a-Rababa, the line of green grass abruptly terminates just south of the Alpert School. While this falls just west of the Armistice Line, this change in landscape is a cue indicating one is entering East Jerusalem. Due to the greenery, Arab farmers sometimes bring goats up from East Jerusalem to graze.







Fig. 3.42 Aerial map of Zurich Garden



Fig. 3.43 Top of valley – Zurich Garden

Fig. 3.44 Zurich Garden where landscape transitions



Fig. 3.45 Zurich Garden looking south-east, down Hinnom/Wadi a-Rababa

LAND

The Hinnom/Wadi a-Rababa is used by local residents through various means that counter or test Israel's plan for the valley as a buffer zone. The first example is the use of the irrigated landscape at the top of the Hinnom/a-Rababa Valley by Palestinian shepherds and their flocks. Coming up from East Jerusalem, the goats graze on grass and low-hanging fruit while shepherds socialize under the shady trees. This makes use of Israeli irrigation in a way most likely unintended by the Israeli park system, as it makes use of a resource while others are withheld from their communities in East Jerusalem.

Also located at the cusp of the Armistice Line, there is a Jerusalem Foundation-funded music school, called the Alpert Music Centre, which attracts both West and East Jerusalemites, whether Christian, Muslim, or Jewish, to come and learn together.²³ Mixed learning environments like the Alpert Music Centre are rare, but offer an important social space for diverse communities of Israeli Jews, Muslims, and Christians to interact. The Hand In Hand alternative schools pursue such endeavours, stating that their mission is "to create a strong, inclusive, shared society in Israel through a network of Jewish-Arab integrated bilingual schools and organized communities."24 They aim to have ten to fifteen schools over the next ten years, complemented with community activities and a network impacting more than twenty thousand Jewish and Arab Israeli citizens.²⁵ While political polarization prevents peace negotiations from proceeding, there is increasing grassroots interest in establishing mixed community and learning spaces in Jerusalem. The group's Jerusalem school offers community programs which respond to racism and violence in the city, creating dialogue for new members, and support local recreational sports teams.²⁶ Due to its location, the Hinnom/Wadi a-Rababa is ideally situated

to host transgression of the social boundaries found in distinctly Jewish or Arab neighbourhoods elsewhere in Jerusalem. Aside from the music school, West Jerusalem and East Jerusalem families commonly picnic together in the valley, making use of one of the only significant green areas around.

^{23 &}quot;The Louis and Tillie Alpert Music Center," http://www.jerusalemfoundation.org/media/29386/Alpert-Music-Center-2007-2008.pdf.

^{24 &}quot;Our Mission," Hand In Hand, https://www.handinhandk12.org/inform/why-we-exist.

^{25 &}quot;Our Mission."

^{26 &}quot;Jerusalem," Hand In Hand, https://www.handinhandk12.org/inform/why-we-exist.

DESIGN

The lower valley would engage local villagers from the al-Bustan neighbourhood who could be involved with planting trees and digging water retention ponds around existing walls up into the valley from East Jerusalem. Preventative planting establishes a Palestinian presence on the land while also preventing landscape erosion from the exposed hillsides. The tree species selected (olive, tamarind, eucalyptus, and pistachio) have been used in Israeli wadi dams and are amenable to the region's hot, dry climate.²⁷ The trees may also be harvested by residents of al-Bustan. The swimming pool is a larger project which exceeds the capacity of community construction. The pool, administrative building/changerooms, and surrounding walkway would require the involvement of various specialists including construction and pool installation companies. Adjoining the pool architecture, both West and East Jerusalemites would install pavers connecting the mixed neighbourhood of Abu Tor to the joint Jewish and Arab music school. This design implementation encourages social space for both Israelis and Arab East Jerusalemites in the middle of the valley, which is land which they both currently use for recreation. It also creates more productive land for East Jerusalem Arabs who have been disenfranchised from a properly functioning water network, while also lacking recreational and green spaces.

Water systems

In terms of landscape interventions, urban runoff is collected from the hill on the north side of the valley in a channel. It is piped up to a tiered sequence of grass filters bordering the pool, serving as a barrier between the public realm and the recreational space of the pool. Water retention ponds dug along the basin of the valley can be managed by East Jerusalemites, reducing some of the seasonal flooding to Silwan. Sabils and livestock pumps satisfy drinking water requirements of visitors. Both the swimming pool and drinking water are supplied by water tanker. The pool's filtre backwash will be discharged weekly, at a rate of up to four gallons, or fifteen litres, per bather per day. The majority of this water will enter a dechlorination pool, where it is exposed to sunlight and exposure for a duration of seven to ten days. Once the chlorine level has been reduced to 0.5 parts per million, the water is then safe to use for irrigating trees further downhill.

^{27 &}quot;Erosion Control Through 'Limanim' (Bays) and Ravines," Shlomo Aronson Architects, http://www.s-aronson. co.il/project/marks-in-the-landscape-project1/.

FIG. 3.46 OVERALL SITE - EXISTING PATHS OF TRAVEL, POLITICAL ZONING, AND KEY POINTS

- --- common path of East Jerusalem shepherds
- East Jerusalem resident common path
- West Jerusalem resident common path
- ------ common tourist route
- Image: Image:



FIG. 3.47 PLANTING STRATEGY

Water retention tree species





Tamarind A useful ornamental tree whose fruit can be used for food or medicinal purposes (Morton, Fruits of Warm Climates, 119).



Eucalyptus Excellent at water retention, the careful placement of this tree can help sequester water in low-lying land, preventing flooding further downhill. They also attract polinators midsummer (Zohary, "Plant Life of Palestine," 216).



Pistachio Producing a nutritionally-rich seed popular in Middle Eastern (pistacia atlantica) cuisine, the pistachio tree can still grow successfully in dry conditions (Zohary, "Plant Life of Palestine," 218).

Filtration system phytoremediation



Long brake Attractive in appearance, it



is used in gardens as well as phytoremediation schemes to remove arsenic from water ("Pteris vittata," 2016).

Reed canary grass

A tall, perennial bunchgrass that grows well in wet, open areas, it is a bioaccumulator of cadmium, cesium, nitrogen, strontium, zinc, ammonium nitrate, and ammonium chloride (Ansari et al, Phytoremediation: Management of Environmental Contaminants, 11).

BIORETENTION LANDSCAPING

The north hill, below Sovev Homot Yerushalayim Park, is largely exposed with little to no groundcover. As such, it is susceptible to erosion and does nothing to mitigate downhill flooding. The hillside is also a potential zone for Ir David's archeological expansion.

Four species of trees have been used in the region to retain water in arid landscapes. Tamarind, olive, eucaluptus, and pistachio are planted in rings with deeply dug beds. While the olive and eucalptus trees may be harvested at different times of the year for oil, tamarind, pistachio, and olive produce fruit used in local cuisine.

> Fig. 3.48a Bioretention landscaping on north hill (Mount Zion): orchard with tamarind forming border

Fig. 3.48b Dechlorinated pool water and urban runoff are both used to feed grass planters and trees further down the valley

URBAN RUNOFF FILTRATION SYSTEM

Urban runoff is collected through a channel on the north hill of the site, below Sovev Homot Yerushalayim Park. Pumped to the stormwater interceptor, solid particulate and contaminants are removed. The water is then pumped to a series of grass planters which sequester common chemicals ound in urban/industrial runoff. The planters use a vertical septage system, with water feeding down through the planters. Excess water is released around the trees below the planters. The system can store water for use during dry periods.

DECHLORINATION POOL

The urban runoff on-site would not be suitable for treatment to generate potable water. Therefore, the swimming pool , ivestock pump, and sabils are supplied by water tanker. The bool's filtre backwash will be discharged weekly, at a rate of up to four gallons (15 L) per bather per day. The majority of this water will enter settling pools for a duration of 7–10 days until the chlorine level has been reduced to 0.5 parts per million through dissipation via sunlight and exposure. The water can then be used to irrigate the orchard. This generates up to 134 400 gallons, or 509 mcm, of greywater per year.







PRAXIS



Fig. 3.48d Greywater filtration system: grass planters

Fig. 3.48e Hinnom /Wadi a- Rababa section through stormwater ponds looking north-west

FIG. 3.49 OVERALL SITE - LANDSCAPE DESIGN INTERVENTIONS



FIG. 3.50 CLOSE-UP - ARCHITECTURE AND LANDSCAPE DESIGN INTERVENTIONS





Fig. 3.51 Perspective from Alpert Music Centre looking south-east



Fig. 3.52 Pool perspective looking north-west towards Alpert Music Centre



Fig. 3.53 Perspective descending from Abu Tor – children on their way to pool/music school

3.4 AL-UBEIDIYE





Fig. 3.55 Al-Ubeidiye site within Kidron/Wadi an-Nar

HISTORY

The village of al-Ubeidiye contains a significant heritage site: the Monastery of St. Theodosius, also called Deir Dosi or Deir Ibn Ubeid in Arabic. The monastery was established in the 5th century AD, on the site of St. Theodosius the Cenobiarch's burial. It is also credited by Christians as being the site where the Three Magi rested after delivering gifts to the newborn Baby Jesus.²⁸ The monastery was operated under the monastic system of Basil the Great, meaning that it embraced a culture of monks' involvement in the lay community, performing charitable acts.²⁹ At holidays, the monastery accommodated up to a hundred tables of food in its courtyard, and clothes were given to the poor.³⁰ By the mid-6th century, the monastery had a community of four hundred monks, which Cyril of Scythopolis described as "a great and populous coenobium [(monastery)]... which surpassed all the others and presides over the coenobia all over Palestine."³¹ It is currently run under the administration of the Greek Orthodox Church. Throughout the West Bank, the Orthodox movement has been controlled by Greek administration since 1543.32 This has meant that there is sometimes a disconnect between the wants of local Palestinian Orthodox Christians and their clergy, and the Greek Orthodox administration which manages their churches and sites of religious importance. In 2009, it was revealed that the Greek Orthodox patriarch, Theophilos III, had leased 16 acres of land belonging to the Saint Elias Monastery south of Jerusalem to an Israeli company.³³ There are fears that this land may now be susceptible to settlement expansion.³⁴ There is therefore a need to bolster local support for Orthodox churches and Christian sites, whose land could become compromised in the future.

30 Patrich, Sabas, Leader of Palestinian Monasticism, 295.







Fig. 3.56 Monastery of St. Theodosius from east

Fig. 3.57 Monastery of St. Theodosius winter aerial view

Fig. 3.58 Al–Ubeidiye inner valley with solid waste accumulation

H. Ikhmais, Personal interview, 22 May 2016.

²⁹ Joseph Patrich, Sabas, Leader of Palestinian Monasticism: A Comparative Study in Eastern Monasticism, Fourth to Seventh Centuries (Washington, D.C.: Dumbarton Oaks, 1995), 295.

³¹ Patrich, Sabas, Leader of Palestinian Monasticism, 295.

³² Ahmad Melhem, "Palestinians push to end Greek 'occupation' of patriarchate," *Al-Monitor*, translated by Kamal Fayad, 20 January 2015, http://www.al-monitor.com/pulse/originals/2015/01/arab-orthodox-accuse-patriarchselling-church-land-israel.html.

³³ Melhem, "Palestinians push to end Greek 'occupation' of patriarchate."

³⁴ Melhem, "Palestinians push to end Greek 'occupation' of patriarchate."

PRAXIS

FIG. 3.59 AL-UBEIDIYE SITE PLAN 1 : 5 000



WATER Al-Ubeidiye's water issues are centred around a lack of water delivery, a lack of wastewater removal, and the contaminated state of the Kidron/Wadi an-Nar Stream. The village of al-Ubeidiye has listed several water develoent priorities as being strongly needed: rehabilitating the old water network, extending the water network, rehabilitating springs, constructing new wells, reservoirs, and a sewage disposal network.³⁵

The village is also looking to improve on several agricultural needs, which include rehabilitating agricultural land, building rainwater cisterns, and obtaining new field crop seeds.³⁶ Bedouin sometimes occupy the lower valley in temporary housing or trailers, farming a crop of wheat or barley for two to three years while grazing flock of goats. The mayor does not allow farmers access the Stream to use its water, due to the high level of contamination.³⁷ Most agriculture is rain-fed, consisting primarily of olive trees and wheat on the large slopes of the Kidron/Wadi an-Nar, with small irrigated fields of vegetable and fruit growing on the smaller inner slopes of the village.³⁸ Farmers in the valley haul large water tanks on tractors up the hill to get water for their camp. The hillsides leading down from the village to the stream attract hundreds of migratory birds each year.



Fig. 3.60 Al-Ubeidiye farmland (in gray), adjacent to open hillside 1:10 000

^{35 &}quot;Al 'Ubeidiya Town Profile."

^{36 &}quot;Al 'Ubeidiya Town Profile."

³⁷ S. A. Al-Assa, Personal interview, 19 May 2016.

^{38 &}quot;Al 'Ubeidiya Town Profile."



Fig. 3.61 Statue emphasizing the importance of water in al-Ubeidiye



Fig. 3.62 Agriculture in the inner valleys of the village



Fig. 3.63 Water tank of Bedouin family below village

Fig. 3.64 Migratory storks in valley DESIGN Sewage is piped into the Kidron/Wadi an-Nar Stream just below the village, further adding to the volume of contaminated water. Countering this action, the thesis's design for landscape architecture involves multi-phase black water filtration, ultimately pumping the treated water up the hill to irrigate an olive orchard at a bioretentive terrace. The filtration system is made up of the following components:

1. A black water interceptor which separates water, grease/immiscible liquids, and solid waste

2. An anaerobic digestor which generates stabilized biosolid and bio-gas for local use

3. A series of vertical flow septage reed beds (VFSRB) located downhill with below soil infiltration of stabilized biosolid. Filtering the biosolid, the VFSRBs pump the resultant water to the VFSRBs with above soil infiltration further uphill. The plants are maintained periodically.

4. A series of vertical flow septage reed beds located uphill, with above soil infiltration of water and plants amenable to livestock. The water at this stage is adequately treated to pass on far fewer chemical contaminants and microbiota to plants which livestock may graze on.

The downhill VFSRBs sustain bioaccumulator plants which are not intended for goats to eat, typically passing this portion of the hill as they graze. The uphill VFSRBs grow plants that livestock may eat. At the top of the hill, the treated black water is tested before entering the orchard through channels. This intervention makes use of something local Palestinian villagers have very little agency over: recycling wastewater. Fresh potable water is delivered by water



ACTION OF WATER: PUMPING/PIPING

Fig. 3.65 Effluent entering Kidron / Wadi an-Nar Stream beneath the road at al-Ubeidiye tanker and stored in tanks in the sabils, livestock pump, and cistern. Given the lack of water for the village's household gardens and farms, recuperating water for the use of a small agriculture is worthwhile. The landscape installation would be conducted by villagers. Starting at the bottom and top of the hill, pipe would be laid in the ground. Solar water pumps and prefabricated pump enclosures would be placed every ten metres in elevation ascending the hill.

At the top of the hill, the public space and water amenities are located at the crossing of several key stakeholder paths which intersect at this point on the hillside. The installation can therefore serve as an armature for future recreational/ social space for nearby schoolchildren and women, which is lacking in the village. The outlook can also draw more visitors to the monastery site, helping the Christian Palestinian population which has been diminishing significantly in recent years.³⁹ Local involvement would also be incorporated in the landscape terracing at the top of the hill, preceding the installation of pavers and an erosion control layer. The sabils and livestock water pumps would need to be delivered to site, through coordination with the steering committee.

The mayor of al-Ubeidiye has had a long-standing relationship with the Kidron Valley/Wadi an-Nar Action Plan steering committee to suggest improvements for the municipality's water and solid waste problems. He has also worked with the Applied Research Institute – Jerusalem (ARIJ) to bring in blackwater filtration stations to see if they could be used in villagers' households.⁴⁰ These filtration stations failed due to a lack of maintenance and ease of use, but he has indicated that a similar project with continued maintenance could be considered. In addition, the mayor wants a third party to pressure Israeli politicians to work and complete joint ventures.⁴¹





Fig. 3.66 Concept diagram - water recuperation in "terra praeter"

Fig. 3.67 Bottom of the valley at Stream

³⁹ Robert Nicholson, "Why are Palestinian Christians Fleeing?" Providence, 1 March 2016, https://provi-

dencemag.com/2016/03/why-are-palestinian-christians-fleeing/.

⁴⁰ S. A. Al-Assa, Personal interview, 19 May 2016.

⁴¹ S. A. Al-Assa, Personal interview, 19 May 2016.

FIG. 3.68 OVERALL SITE – EXISTING PATHS OF TRAVEL, AGRICULTURAL LAND, POLITICAL ZONING, AND KEY POINTS



FIG. 3.69 PLANTING STRATEGY

103).

Bioretention crops



rsetail notgrass



flowers from March to December, with some medicinal value to local Bedouin (Zohary, Plant Life of Palestine, 215).

birds ("Millet Plant," n.d.)

A popular tree producing oil , fruit, and

wood (Zohary, "Plant Life of Palestine,"

A desert shrub producing pink-white

A grass whose dried seeds attract

spurae

erticallata

ong brake

pe grass

A flowering bush which produces erusalem nectar to attract birds and insects (Euphorbia hierosolymitana, Euphorbia thamnoides, Jerusalem Spurge, Woody Spurge," n. d.).

Filtration system phytoremediation



A pond water plant and an abundant source of biomass, it is also a bio-accumulator of mercury, cadmium, chromium, and lead (Phukan et al, "Heavy metal uptake capacity of Hydrilla verticillata: A commonly available Aquatic Plant")



Attractive in appearance, it is used in gardens as well as phytoremediation schemes to remove arsenic from water ("Pteris vittata," 2016).

A bio-accumulator of cadmium, the aquatic grass is

(Zohary, Plant Life of Palestine, 59).

typically found in the Hula Valley and coastal plains



Water hyacinth A bio-accumulator of uranium, strontium, cadmium, chromium, copper, mercury, lead, zinc, and various pesticide compounds ("Sanmuga Priya et al, "Water hyacinth – An efficient and economic adsorbent for textile effluent treatment – A review," 2014)



Reed canary A tall, perennial bunchgrass that grows well in wet, open areas, it is a bio-accumulator of cadmium, cesium, nitrogen, strontium, zinc, ammonium nitrate, and ammonium chloride (Ansari et al, Phytoremediation: Management of Environmental Contaminants, 11).

BIORETENTION LANDSCAPING

Terraced planters help sequester water which would otherwise be lost as runoff, sustaining a small orchard at the top of the hill. The soil is resurfaced to accommodate an anti-erosion control layer hosting various species of plants amenable to migratory birds and pollinators. All plant species are native to the region. The terracing also includes an orchard sustaining olive trees which are harvested by villagers.

The terraced planters are fed with treated black water (acceptable as irrigation water) from the filtration system along drainage canals.

> Fig. 3.70a Bioretention landscaping: terracing with gabion baskets, anti-erosion control layer, and plantings

Fig. 3.70b Water filtration system part **d)** vertical flow septage reed bed (above soil entry), located further uphill, with plants for livestock

BLACK WATER FILTRATION SYSTEM

The multi-stage filtration system takes contaminated water from the Kidron/an-Nar Stream, filtering blackwater until it can reach adequate standards for irrigation using filtration tanks and phytoremediation. The filtration system is comprised of several components:

a) a black water interceptor which separates water, grease/immiscible liquids, and solid waste

b) an anaerobic digestor which generates stabilized biosolid and biogas for local use

c) septage vertical flow reed beds located downhill, with below soil infiltration of stabilized biosolid. Filtering the biosolid, they sustain bioaccumulator plants which can be maintained separately from plants that livestock eat

d) a series of septage vertical flow plant beds located further uphill with above soil infiltration of water, with plants amenable to livestock uphill





FIG. 3.70d WATER SYSTEM DESIGN



PRAXIS



Fig. 3.70e Water filtration system part **c)** one of the septage vertical flow reed beds (below soil entry)

Fig. 3.70f Water filtration system part **a)** solid black water interceptor and **b)** biogas reactor

Fig. 3.71 Inspired by existing sabils found at roadsides around Jerusalem, this sabil is a hollow structure with an operable panel, allowing water tanks to be replaced or refilled





Fig. 3.72 Lavoirs satisfy local need for washing water, while also creating a social space



Fig. 3.73 Already used in North America, the livestock nose-pump is activated by goats and sheep, minimizing spillage and human involvement

Fig. 3.74 Gabion basket retaining walls and plants further downhill catch urban runoff, while also hosting migratory birds passing through the valley at this spot

FIG. 3.75 OVERALL SITE – LANDSCAPE DESIGN INTERVENTIONS





black water filtration system a) a black water interceptor which separates water, grease/ immiscible liquids, and solid waste

b) an anaerobic digestor which generates stabilized biosolid and bio-gas for local use

NAHAL KIDRON / WADI AN-NAR





Fig. 3.77 Perspective from vertical flow septage reed bed (above soil entry) looking west towards terraces



Fig. 3.78 Perspective on steps looking towards lavoir


PRAXIS

Fig. 3.79 Uphill perspective from Kidron/Wadi an-Nar Stream with solid black water interceptor, anaerobic digestor, and biosolid tank in foreground at the edge of existing farmer's olive grove

3.5 MAR SABA



Population and Climate

Altitude: 0 m above sea level

Annual Rainfall: ~100 mm

Average Temperature: 22°C

Population: ~ 20



Halfway between the Old City of Jerusalem and the Dead Sea, Mar Saba monastery is located in the West Bank, within the municipality of al-Ubeidiye, in Area C. It can be accessed by car from al-Ubeidiye, with secondary dirt roads adjoining from other points.

Economic Activity:

None. The Greek Orthodox Church and other organizations provide funds to help restore the buildings and services when needed*.

Demographic:

There are around twenty monks living in the monastery, with visiting monks accommodated on occasion. Only males may enter the monastery proper, while women may wait outside or view the monastery from a women's tower. Bedouin camps and small farms are found a few kilometres away.



*H. Ikhmais, Personal interview, 19 May 2016.

Fig. 3.81 Mar Saba site within Kidron/Wadi an-Nar

HISTORY

Mar Saba Monastery is a monastic community founded in 483 CE in the cliffs of the Kidron/Wadi an-Nar, at the edge of the Judean Desert. It is named after its founding monk, Saint Saba, whose tomb lies in the monastery.⁴² Most Sabaite monasteries were located on the slopes of the highest peak in the Judean desert: Jebel Muntar.43 Sabas built five monasteries, also called coenobia, and four laurae, which are monastic cells dug into the rock face of cliffs.⁴⁴ In addition, he created hostels for his monks in Jerusalem and Jericho.⁴⁵ Mar Saba Monastery is centrally located within a cluster of Sabaite monasteries, with old paths connecting them throughout the desert plains and running alongside the Kidron/Wadi an-Nar Stream. Paths followed the natural topography, with steeper sections retained by a terrace wall.⁴⁶ The desert around the monastery provides sufficient vegetation during the winter for livestock to graze, tended to by Bedouin in the past.⁴⁷ The community seeks to exist independent of the political situation for the past 1500 years. They've been attacked numerous times and suffered casualties and damage to their building.⁴⁸ Tourists come to pay homage and pray at the site. Men enter, but women take a moment to jot down prayers on paper, handing them to the priest at the door to take. Women are excluded from entering the male-only monastery, but typically walk on some of the paths on the surrounding cliffs. This path takes them about a kilometre south from the tower and back, following the flow of the Kidron/Wadi an-Nar. Palestinians often use the site as well for hiking with family or a while on a date.



^{42 &}quot;Mar Saba," See the Holy Land, http://www.seetheholyland.net/mar-saba/.

⁴³ Patrich, Sabas, Leader of Palestinian Monasticism, 51.

⁴⁴ Patrich, Sabas, Leader of Palestinian Monasticism, 55.

⁴⁵ Patrich, Sabas, Leader of Palestinian Monasticism, 55.

⁴⁶ Patrich, Sabas, Leader of Palestinian Monasticism, 54.

⁴⁷ Patrich, Sabas, Leader of Palestinian Monasticism, 54.

^{48 &}quot;Mar Saba."

MAR SABA MONASTERY AND LAURA

Mar Saba Monastery is built into the cliff of the Kidron/Wadi an-Nar. The porous rock forms natural caverns, which generations of hermit monks expanded on to form their dwellings, called "laura." Local Palestinian workers are laying down stone on the path from the monastery, improving conditions for visitors.



Fig. 3.83 Lookout spot







Fig. 3.85	Laura	(hermetic
cell)		

Fig. 3.86 View south-east from top of hill

WATER

The stream in this part of the Kidron/Wadi an-Nar is highly polluted and gives off a very bad odour. Accordingly, water cannot be used from the stream, given the arid nature of the site. The monks had developed channels for rainwater that have been carved behind the monastery's retaining walls, allowing water to flow down to the stream instead of washing away the hillside. Hermits living in the cliff dwellings collected rainwater using a water collecting system and water cisterns in the rock face,⁴⁹ while the monastery building has fourteen large cisterns built around the monastery complex, supplied by two ancient aqueducts that are still functioning.⁵⁰ Due to work being done to improve the path system, Palestinian workers have accessed some of the old cisterns from the hermetic dwellings to siphon water for the donkeys used to carry materials up and down the path. For instance, a large hermetic dwelling at the bend in the stream known as the "Tower of Arcadius son of Xenophon,"⁵¹ has a hose emerging from it to supply a water bucket on the path below.



Fig. 3.87 Cave of Xenophon cliff with old laura (hermetic dwellings)

⁴⁹ Patrich, Sabas, Leader of Palestinian Monasticism, 84.

⁵⁰ Patrich, Sabas, Leader of Palestinian Monasticism, 78.

⁵¹ Patrich, Sabas, Leader of Palestinian Monasticism, 90.

DESIGN

The design on this site is a walking circuit for spiritual or recreation use, as well as water retention ponds for Palestinians and pilgrims. This design builds on the work started by local workers who have been employed by the monastery to construct a stone-paved path linking the monastery to the site of the "Cave of Xenophon,"⁵² which is one of the more visible cave dwellings on the site. It is one of the more interesting points to hike in this area of the valley, as the stratified and porous cliff face also bears marks of seasonal wadi flooding which has rounded the cliff edge. After the rare rain shower, water pouring over the cliff joins the Kidron/Wadi an-Nar a few feet below. The bioretention landscaping allows for a place of rest, shade, and contempation at the middle of the walking circuit. The main architectural feature on this site is the addition of a stair which connects the path beside the Kidron/Wadi an-Nar Stream to the upper cliff walkway. The stair ascends the cliff face through carved openings, also incorporating the language of the monastery's buttresses in its own structural members. Landings fall along key rock layers in the cliff where some hermetic niches are exposed. Either upon starting or concluding the walk, visitors can drink water from a sabil at the top of hill by the Women's Tower. The sabil sources its water from the existing aqueduct which feeds the monatery's cisterns. While the landscaping and paving can be accomodated by local workers, professional installation of the stair is required.





Fig. 3.88 Local Palestinian workers from nearby villages are already employed by the monastery to help with extending its path system and maintaining the site

⁵² Patrich, Sabas, Leader of Palestinian Monasticism, 88.

WATER IN THE DESERT

There is a lack of readily available drinking water at the monastery, given the remote and arid nature of the site. The water found in the Kidron/wadi an-Nar is highly polluted and gives off a noxious odour, in contrast to the beauty of the site.

Fig. 3.89 Stormwater channel running under stair





Fig. 3.90 Local workers tap into an ancient cistern in the Tower of Arcadius son of Xenophon



Clockwise from top:

Fig. 3.91 Kidron/Wadi an-Nar Stream

Fig. 3.92 Solid waste in Kidron/Wadi an–Nar

Fig. 3.93 Channel running behind monastery wall

PRAXIS

FIG. 3.94 OVERALL SITE - EXISTING PATHS OF TRAVEL AND KEY POINTS





FIG. 3.96a WATER SYSTEM DESIGN

FIG. 3.95 PLANTING STRATEGY

Bioretention crops

Olive



A popular tree producing oil , fruit, and wood (Zohary, "Plant Life of Palestine," 103).

Haloxylon articulatum Typically found in fluvial loess soils of wadi terraces and lowlands, this succulent dwarf shrub fares well in the desert (Zohary, Plant Life of Palestine, 135).



Horsetail knotgrass A desert shrub producing pink-white flowers from March to December, with some medicinal value to local Bedouin (Zohary, Plant Life of Palestine, 215).

Pulicaria incisa

Anabasis articulata

A flowering plant that has been used for many years in traditional medicine for the treatment of heart disease. Egyptian Bedouins consume it as an infused tea (Elmann et al, "Antioxidant and Astroprotective Effects of a Pulicaria incisa Infusion").



A flowering plant which the Bedouin allow their livestock to consume for supposed digestive benefit at the end of the spring season ("Anabasis articulata, Salsola articulata, Berry bearing glasswort, Jointed Anabis," n.d.).



BIORETENTION LANDSCAPING

Given the nature of the dry, rocky soil on the site, vegetation is sparse. The Kidron/Wadi an-Nar Stream supports indigenous weeds, like the castor-bean plant, which tolerate the polluted water. Outside the stream, one can find grasses, lichen, and a few olive trees. While the valley blooms in spring with a covering of grass, it does not remain green during the dry summer months.

The meditation garden hosts local shrub species which are tolerant of arid conditions and have local medicinal and/or aesthetic value appropriate for a space of repose. The plants sequester water in niched, shaded soil after a rain storm. Inspired by existing wadi dams in Israel's Negev Desert, the olive trees provide shade for visitors who are there for spiritual contemplation or recreation.



Fig. 3.96b Garden construction: gabion baskets and low vinyl sheet piling flood walls

PRAXIS

FIG. 3.97 OVERALL SITE - LANDSCAPE AND ARCHITECTURE DESIGN INTERVENTIONS







FROM MOUNTAIN TO MALEH





Fig. 3.99 Perspective looking south towards Women's Tower sabil and rest stop



Fig. 3.100 Perspective at water retention garden after a rainstorm



PRAXIS

Fig. 3.101 Perspective looking west towards garden and stair

3.6 BAPTISMAL SITE AND THE "UN-PEACE" PARK

The installations elaborated upon in this chapter have focused on the design of small-scale water infrastructure in three locations along a valley which is governed by both Israel and the PA. Qasr el Yahud, a culturally-significant baptismal site located up the Jordan River just north of the Kidron/Wadi an-Nar watershed, also demonstrates water problems requiring remediation. While concern from many sources about the water issues⁵³ would appear to suggest Qasr el Yahud could be ideal for a similar intervention to those previously developed in this chapter, the site's current administration, land ownership, and limitations of access prevent it from further being able to support the requirements of an equitable water network for all possible stakeholders, including Palestinians, Israelis, and foreign tourists. The baptismal park is presented here as a counter to the proposed coneptual park of negotiation, showing how both ecological and social value can be compromised for the sake of tourism and land claim.

Marking the eastern limit of the Kidron/Wadi an-Nar, the Jordan Valley is the most significant north-south valley in the region. It has been researched in depth by EcoPeace, who published an extensive report on it in 2015 with recommendations on rehabilitation measures.⁵⁴ In the West Bank, the Jordan River marks the border between Israel and Jordan, with agricultural zones, closed Israeli military zones, and settlements' regional and municipal boundaries claiming land between Palestinian communities and the Jordan River/Dead Sea. Palestinian riparian access to the Jordan River has been denied by Israel under article 40 of the Oslo II Agreement.⁵⁵ A large portion of the Jordan River is diverted upstream by Israel, Syria, and Jordan.⁵⁶ Environmental issues caused by this are

^{56 &}quot;Regional NGO Master Plan for Sustainable Development in the Jordan Valley," 10.









Fig. 3.102 KKL/JNF-funded Israeli agriculture in Area C around Jericho

Fig. 3.103 Israeli baptismal site on the left and Jordanian on the right

Fig. 3.104 Qasr el Yahud and the mine warning signs

⁵³ Melanie Lidman, "Baptism by mire? In lower Jordan River, sewage mucks up Christian rite," *The Times of Israel*, 18 June 2015, http://www.timesofisrael.com/baptism-by-mire-in-jordan-river-sewage-mucks-up-christian-rite/.

^{54 &}quot;Regional NGO Master Plan for Sustainable Development in the Jordan Valley," EcoPeace, 2015, http://www. ecopeaceme.org/uploads/Regional NGO Master Plan Final.pdf.

^{55 &}quot;Jordan River Basin," Inventory of Shared Water Resources in Western Asia, https://waterinventory.org/surface water/jordan-river-basin.

compounded by the dumping of untreated wastewater and saline water into the river, resulting in significant ecological degradation.⁵⁷ The portion of the River in the Lower Jordan Valley, most of which borders the West Bank, is in need of 400-600 mcm of additional freshwater per year to be rehabilitated adequately,⁵⁸ along with implementing other ecological safeguards to help protect water quality and quantity. Qasr el Yahud has been suggested by EcoPeace as a prime location in which to increase economic development via tourism through improving the state of water in the Jordan River, ⁵⁹ which has shown high levels of pollution on occasion and could compromise the health of visiting pilgrims who get baptised at the site.⁶⁰

Qasr el Yahud is a half-hour drive north from where the Kidron/Wadi an-Nar spills into the Dead Sea. Located in Area C, Qasr el Yahud, "Castle of the Jews" in Arabic, is a portion of the shore of the Jordan River which is claimed to be where Jesus was baptised by John the Baptist, where the Israelites crossed the Jordan River, and where Elijah the Prophet ascended to heaven.⁶¹ Given its cultural significance, pilgrims flock to the site on both the west and east banks. From the east, it is about an hour's drive from Amman, while a few kilometre to the west lies the Palestinian city of Jericho. Although the baptismal site is marked by a atmosphere of spiritual cleansing and celebration, the path to the site has a dark history.

The site is currently managed by the Israel Nature and Parks Authority.⁶² Tourists are bussed or driven to the site typically via Highways 90 or 1. While





Fig. 3.105 Eritrean baptismal ceremony with music

^{57 &}quot;Regional NGO Master Plan for Sustainable Development in the Jordan Valley," 8.

^{58 &}quot;Regional NGO Master Plan for Sustainable Development in the Jordan Valley," 40.

⁵⁹ Lidman. "Baptism by mire? In lower Jordan River, sewage mucks up Christian rite."

⁶⁰ Lidman, "Baptism by mire? In lower Jordan River, sewage mucks up Christian rite."

^{61 &}quot;Bethany Beyond the Jordan," See the Holy Land, http://www.seetheholyland.net/tag/qasr-al-yehud/.

^{62 &}quot;Qasr El Yahud, the baptism site on the River Jordan, is now open seven days a week," Holy Pilgrimage: A Bridge for Peace, http://www.holyland-pilgrimage.org/qasr-el-yahud-the-baptism-site-on-the-river-jordan-is-now-open-seven-days-week.

Highway 1 connects to both settlements and Palestinian towns, Highway 90 crosses the West Bank longitudinally within Area C. In addition to the roads, Israeli agricultural land and small settlements add to the buffer Israel has created between the Palestinians and access to the two significant natural bodies of water bordering the West Bank: the Jordan River and the Dead Sea. The land around the highway has been targetted with many farming settlements.

Opening in 2011, Qasr el Yahud baptismal site receives around 300 000 Christian pilgrims a year through Israel, while the Jordanian side receives around 100 000.⁶³ The two countries have argued over which bank of the river Jesus was supposed to have been baptised on, with the east bank winning UNESCO listing in 2015, much to the enthusiasm of Jordanians.⁶⁴ Although Israel and Jordan have entered into a time of peace, the history of war between the two countries is evident along this border.

During the Six-Day War of 1967, Israel was at war with Jordan, and the border saw significant fighting and military reinforcement. As such, a large swath of land surrounding Qasr el Yahud is still heavily mined.⁶⁵ To access the baptismal site from the west, one must first drive along a three kilometre road which Israel de-mined with the help of the British de-mining charity Halo Trust.⁶⁶ Driving through a passage about twenty metres wide, the moguled, sandy hills just beyond the barbed wire fences are old blasted-out craters, still to be clear of hazards. Although several of the churches belonging to the seven Christian denominations on this site are being cleared of mines, they still bear the pock-



Fig. 3.106 Baptism in Jordan River

⁶³ Rol Kais and Itamar Eichner, "UNESCO settles Jesus baptism site controversy, says Jordan," Ynetnews, http://www.ynetnews.com/articles/0,7340,L-4676695,00.html.

⁶⁴ Kais and Eichner, "UNESCO settles Jesus baptism site controversy."

⁶⁵ Gili Cohen, "Israel to De-mine Christian Holy Site, Mostly Inaccessible Since 1967," Haaretz, 17 May 2016,

http://www.haaretz.com/israel-news/1.719937.

⁶⁶ Cohen, "Israel to De-mine Christian Holy Site."

marked evidence of past explosives and bullets.⁶⁷ The continuous fence bears a sign saying, "Danger! Mines!" marked every few metres to forewarn travellers of transgressing into the land.

The quality of water in the Jordan River at this point is extremely poor, having been contaminated upstream with agricultural runoff, untreated and partly treated sewage, saline water, and fish pond waste.⁶⁸ While the Israeli Health Ministry's standards for swimming beaches allows a fecal coliform maximum of 400 per 100 mL, Qasr el Yahud registered fecal coliform counts in 2013 of 190 per 100 mL, as well as 2300 per 100 mL,⁶⁹ therefore sometimes exceeding the limit.⁷⁰ This does not stop the hundreds of thousands of tourists from partaking in the ritual of baptism. Immersion in such water exposes not only the healthy, but also the young, old, and infirm to pathogens which can harm them. However, as with the Kidron/Wadi an-Nar, cross-boundary water management is not something Jordan, Israel, and the PA are willing to pursue or invest in at the moment.

The baptismal site hosts new buildings and landscaping features: new paving, irrigated landscaping, a souvenir shop, and a terrace accommodating pilgrims as they perform ceremonies. Although open space has been created for the baptismal site at the banks of the river, the de-mined zone is constrained, bounded by a fence to the west and the border with Jordan on the other. It would be an ideal location for a coordinated effort between Israel, Jordan, and the PA to jointly clean the river in a project similar to EcoPeace's EcoParks or peace park, but cooperation is not likely. The site finds itself at odds with its purpose and

program. A microcosm of the larger region, it holds intense spiritual significance to many people, and yet finds itself bound by the history of its past wars, the occupation of the West Bank, as well a lack of transboundary cooperation over water problems.

For millenia, ideological adherence to the religiously sacred or historically significant (in a secular sense) nature of the "Holy Land" has generated exclusive and competing claims of ownership from various people and political factions. Conflict is often generated over which of the interested groups gains ownership. While land rights and governance are fought for between Israel and the PA, water in the context of the conflict cannot be territorialized exactly like land. Nor can it be managed in exclusivity by Israelis or Palestinians alone. Access to water is a basic human need, and as such, will always be negotiated between Israel, the PA, and their neighbours. It will be a vital part of the prospective peace process.

^{67 &}quot;Jesus' baptismal site, long sealed off, to be cleared of landmines," *The Times of Israel*, 16 May 2016, http:// www.timesofisrael.com/jesuss-baptismal-site-long-sealed-off-to-be-cleared-of-landmines/.

⁶⁸ Melanie Lidman, "Baptism by mire?"

⁶⁹ Lidman, "Baptism by mire?"

This does not stop the hundreds of thousands of tourists from partaking in the ritual of baptism. Immersion in such water exposes not only the healthy, but also the young, old, and infirm to pathogens which can harm them.

4.0 CONCLUSION

4.1 ECOLOGICAL AND SOCIAL IMPERATIVE 4.2 ECOLOGICAL AND SOCIAL IMPLICATIONS OF THE DESIGN



🦪 Fig. 4.01 Sharif Waked, Jericho First 2002 (detail),

> The figures of a lion attacking a gazelle, inspired by an eigthcentury mosaic at Hisham's Palace (Jericho), blend together into a single body; a metaphor for the universal struggle between powers and the change in perspective as the image is eclipsed

4.1 ECOLOGICAL AND SOCIAL IMPERATIVE

This thesis proposes creating greater agency for Palestinians and Israelis in the Kidron/Wadi an-Nar over their water management at two scales to compensate for the existing water administration's (part of which involves the JWC) shortcomings. The proposed architecture and landscape installations operate under small-scale, community-driven management, as facilitated by local town leaders. Complementing the local water body, the proposed large governing body of a watershed steering committee arranges financing, transportation and installation of larger components and services. It also implements projects within the framework of a larger master plan for the watershed which considers social and ecological goals affecting both Palestinians and Israelis. The smaller scale proposed governance addresses needs that have not been met for social and recreational space, as well as better water supply, treatment, and distribution. It also reinforces local initiative to sustain land claim while also providing ecological improvement through landscape installations. This is a new measure not intended to supplant the JWC, but to establish supplemental water infrastructure where necessary to satisfy immediate water needs.

This thesis interprets water issues within the Kidron Valley/Wadi an-Nar first through an ecological lens, and then considers them in political space. It is implemented in this manner to recognize the ecological injustice of water pollution as much as the social injustice of Palestinian West Bank water disparity. Through the lens of ecology, two issues are thus present: a lack of water for Palestinians, and mutual contamination of Israelis' and Palestinians' shared water source. While the thesis develops its designs around these imperatives, it acknowledges that although ecological issues can be mediated through technological, architectural, and landscape solutions, amelioration of social conditions based on the success of this new infrastructure is difficult to predict.

The Kidron/Wadi an-Nar's ecological and social imperatives are as follows. The Kidron/Wadi an-Nar is the focus of this thesis because it is one of the only transboundary streams running between Israel and the West Bank without an ecological remediation plan in place. This situation provides a unique opportunity to consider how improving water conditions through small-scale intervention along the valley can affect the future of both Palestinian and Israeli water networks as separate, but co-responsible entities. Secondly, the Israeli-Palestinian Joint Water Committee (JWC) is disintegrating, leaving little voice for Palestinian water rights and equitable water infrastructure. Without obtaining the JWC's permission, large-scale Palestinian water projects are therefore rendered invalid and at risk of demolition if constructed outside of Area A. This potentially puts rural communities at risk if they or their water supply pipes are located outside these areas. However, it also creates an opportunity to explore independent, self-sustaining interventions in these communities. Thirdly, the West Bank's water network is missing regional ecological conservation bodies or authorities, part of whose job would be to manage man-made water issues as part of the environment of the regional watershed. While there are existing Israeli and Palestinian governmental groups in charge of large-scale environmental governance, like the Ministry of Environmental Affairs (now called the Palestinian Environmental Authority),¹ water quality as an environmental concern is not always addressed. Regional conservation authorities like the Dead Sea Drainage Authority have largescale application, but do not necessarily resolve the immediate need for freshwater and sustainable sewage disposal and treatment at the scale of a village or town. Ideally, a watershed-level organization would be able to take on an administrative or consultative role in the Kidron/Wadi an-Nar.

This thesis therefore proposes a supplementary small-scale water governance system and water infrastructure for towns and villages along the Kidron/Wadi an-

^{1 &}quot;Institutional Consolidation of the Palestinian Environmental Authority," http://www.esteri.it/MAE/ doc/6 40 175 v.pdf.

Nar which would operate in the gaps of existing governance and infrastructure to improve equitable water sourcing, treatment, and distribution. The proposed architecture and landscape architecture are informed in scale and self-governance by both the existing Kidron/Wadi an-Nar Action Plan sub-committees and the Centre for Transboundary Water Management. While a watershed-based approach to water governance like the one presented by the Action Plan has not been accepted by Israeli and Palestinian officials, the thesis's proposal of handling one site at a time could hopefully lead to a larger watershed approach in the future. EcoPeace's EcoParks have inspired the location and program of this thesis's design interventions, which establish an important social space for Palestinians and Israelis to engage with independent water management at culturally significant sites. Finally, preventative planting methods have inspired the thesis's landscape design and temporality, proposing landscape architecture beyond the official politicized water network while also securing its territorial claim for the community it serves. While claim through planting comes from old Ottoman laws protecting trees and the rights of farmers to cultivate them, the future implementation of such law is unknown, rendering the installations' landscaped features more pertinent in the immediate future.

The steering committee model is inspired as a modified version of the existing Kidron Action Plan steering committee which uses integrated water resource management (IWRM). It embraces a bipartisan organizational structure of tactical functional cooperation (TFC), as defined by Jeffrey Sosland in Cooperating Rivals: The Riparian Politics of the Jordan River Basin.² This thesis proposes joint Palestinian-Israeli upper-level administration and does not incorporate government control over its committee. The proposed organizational structure provides better alternatives to water management than those in place in that it creates connections with key water technocrats who help defend Palestinian water rights in times of conflict. If and when peace negotiations occur, they are vital in equitable planning of the water network for Palestinians and Israelis. Without such a presence, partisan planning results in schemes like the Menachem Cantor "red line," whereby hydrostrategy provided an imperative for locating future settlements. It also makes government alter its role in controlling decision-making, collaborating with a team of stakeholders on an even playing field rather than at the top of the hierarchy as administrator. The watershed approach to governance is also more holistic than a political boundaries approach, solving problems by considering the geological, climatic, and geographical imperative to the water cycle.

While these ecologically-driven precepts inform the scale, methodology, location, and program of proposed design, they have also been considered in the context of their cultural and political history. West Bank land has been claimed under law by both Israeli and Palestinian government and land owners in a geographically fractured way. The Oslo Accords zoned pockets of land in and around Palestinian cities and towns as being under full or partial Palestinian civil and military control. The remaining 60% of the West Bank in Area C is under Israeli civil and military control.³ This fracturing of land, combined with the outdated nature of Palestinian land law, the advantage that Israeli law gives to Israeli settlers over Palestinians, and the continued growth of West Bank settlements all heighten protectionist Israeli and Palestinian measures to secure land under legal land claim. Aside from legal appeal, one of the only means of safeguarding land is through planting. This thesis' proposed water infrastructure, as hosted on land, has been designed in tandem with preventative planting features to help in this measure. Should the Kidron/Wadi an-Nar's existing Palestinian water network improve, thereby providing adequate water supply and sewage treatment, ecological imperative for such installations may be reduced over time. But part of their function as spaces of recreation, washing, and gathering would hopefully satisfy relevant social imperative within the communities they serve.

² Sosland, Cooperating Rivals, 212.

^{3 &}quot;Area C," B'Tselem, http://www.btselem.org/area c/what is area c.

4.2 ECOLOGICAL AND SOCIAL IMPLICATIONS OF THE DESIGN

Both water governance and water infrastructure in the Kidron/Wadi an-Nar can be improved to create a more resilient and equitable water network within the political context of land ownership and use. Ideal infrastructure solutions to water pollution in the watershed, like a sewage treatment plant, involve large-scale infrastructure which is not feasible to implement at the moment. While the thesis proposes design installations at a small scale to address issues caused by the currently inadequate water network, implications of the proposed water governance and infrastructure also have an impact on future land use within the political realm.

In terms of water governance, the Joint Water Committee (JWC) has recently stopped convening, preventing important large and medium-scale water projects in the West Bank from proceeding legally with both Israeli and Palestinian vetting. The creation of the JWC came out of the interim conditions established by the Oslo Accords to ultimately allow for increased Palestinian autonomy. While the Accords granted Palestinians more self-regulation over certain portions of their land in Areas A and B, the PA's partial water autonomy and self-direction have been curtailed by the JWC. This sometimes comes at the expense of trading water to Palestinians in exchange for Palestinian approval of Israeli settlement projects.⁴ Given the nature of the West Bank occupation, there is still a need for an agency such as the JWC to coordinate projects so that Palestinian water policy and infrastructure can be developed. However, their policy and practices would ideally be reformed to create a more equitable water network for Palestinians without demanding compliance with settlements in return.

At the international scale, policy reform will be needed during times of conflict, as well as during possible future peace negotiations, so as to avoid the failures of the Oslo Accords. One possible policy reform method is for both sides to adopt a rightsbased approach. Instead of starting with overall targets, prone to become obsolete quite quickly, this approach focuses on the right to water and sanitation in postconflict settings as the prime concern of water agreements. Constitutions, legislation, peace agreements, UN treaty bodies, international criminal tribunals, regional human rights institutions, and truth commissions are all mechanisms facilitating a rightsbased approach.⁵

The West Bank is still under occupation, and as such, the PA's water issues are not entirely comparable to that of other countries which have recently emerged from conflict. This being said, equitable water agreements established in such scenarios have played a key role in guaranteeing a more peaceful transition. Such is the case with the Indus Waters Treaty, signed in 1960. Negotiated with the help of the World Bank, the treaty helped the east and west Punjab region by bringing in investors to develop respective Indian and Pakistani agrarian economies as well as water infrastructure.⁶ After Armenia, Georgia, and Azerbaijan gained independence from the Soviet Union in 1991, they worked with USAID to help with trans-boundary water resource management between their own internally-conflicting regions as well as between nations.⁷ Whether or not foreign involvement from other nations or organizations plays a significant part in future peace negotiations, trans-boundary water management will be integral in the possible Israeli-Palestinian future peace process.

Individual municipal water authorities like the WSSA of Bethlehem solicit foreign governments and companies to provide aid and expertise for water projects like sewage pipe installation and monitoring. Although such foreign-funded endeavours might come with political contingencies, they are filling in for a lack

⁴ Hass, "Israel Blocking Plan to Double Water Supply."

⁵ Erika Weinthal, Jessica Troell, and Mikiyasu Nakayama, Water and Post-Conflict Peacebuilding (New York: Earthscan, 2014), 390.

⁶ Weinthal, Troell, and Nakayama, Water and Post-Conflict Peacebuilding, 184.

⁷ Weinthal, Troell, and Nakayama, Water and Post-Conflict Peacebuilding, 303.

of adequate standard of living which needs to be addressed, as there is often no other recourse available. This thesis' proposed designs target small-scale water infrastructure without relieving Israel or the PA's duty to provide fresh water supply and sewage removal to Palestinians.

Such small-scale projects have been pursued by the Arava Institute, which partnered with Palestinian affiliates to provide off-grid Palestinian communities with black water septic tanks and greywater recycling treatment.⁸ While this thesis proposes a level of autonomy in the operation of its water infrastructure and water governance, just like the Arava Institute's domestic greywater treatment units, the success and maintenance of such projects rely on an invested community who believe in water technology and conservation.

Although not touched upon in this thesis, there can also be much future development into greywater recycling technology. There is a significant need to make water sourcing, distribution, and treatment throughout North Africa and the Middle East more efficient. Especially in rural communities in this region, which are reliant on water to sustain their crops, their way of living may change in the near future as per capita water availability is predicted to reduce by half by 2050.9 There have been studies proving water-stressed households and communities in the Middle East and North Africa are resorting to recycling their own household greywater without adequate treatment, regardless of the health risks posed by such actions.¹⁰ A greywater treatment project has been implemented in the rural Palestinian town of Qebia, near Ramallah. It has had a positive economic impact on how much water families require for small crops and greenhouses, while also changing locals'

opinions on recycling water.¹¹ While public awareness and water education can be made stronger in all Palestinian communities,¹² most villagers have come around to the new technology, trusting that it does not compromise their health or their plants' quality. In the context of this thesis, another design iteration of the water infrastructure could alternatively consider accommodating greywater to help generate irrigation water, and not just treat black water and urban runoff.

In addition to the current political framework of Israeli and Palestinian land claim, this thesis also discusses its cultural foundation. The proposed design installations are located in jarda, land which is perceived as non-space and has deep ties to Jewish and Arab cultures, shaping their perception of developed versus undeveloped land in the context of the desert environment. Place and place-making in both cultures complements the undeveloped non-place. Understanding the cultural interpretation of non-place enables this thesis to better illustrate the cultural value of el-Bariyah, the portion of the Judean/Jerusalem Desert through which the Kidron/Wadi an-Nar descends. In addition, it reflects the interpretation of mewat ("dead land") in the Ottoman Land Law (1858), while also illustrating the cultural value of Israeli settlements and Palestinian cities and towns in relation to the desert. The cultural impetus behind staging the design installation sites in *jarda* is to form a threshold between private land and currently undeveloped or temporarily occupied land which may be classified as unregistered miri/Israeli state land or Palestinian mewat land.

Such land, terra praeter, hosts the crossing of many paths. In bridging the non-place with place, the design interventions are borderless in terms of circulation, operating as nodes falling along the intersection of common routes and not as fully-

⁸ Lipchin, "Israel is first in the world in wastewater reuse, but the Palestinians are last."

⁹ Mark Redwood, "Introduction: Greywater use in the Middle East - the story so far," in Greywater Use in the Middle East: Technical, Social, Economic and Policy Issues, edited by Stephen McIlwaine and Mark Redwood (Ottawa: International Development Research Centre, 2010), 1.

¹⁰ Stephen McIlwaine, "Policy and regulatory approaches to greywater use in the Middle East," in Greywater Use in the Middle East: Technical, Social, Economic and Policy Issues, edited by Stephen McIlwaine and Mark Redwood (Ottawa: International Development Research Centre, 2010), 151.

¹¹ Jamal Burnat and Intissar Eshtayah, "On-site greywater treatment in Qebia Village, Palestine," in Greywater Use in the Middle East: Technical, Social, Economic and Policy Issues, edited by Stephen McIlwaine and Mark Redwood (Ottawa: International Development Research Centre, 2010), 17. 12 Burnat and Eshtayah, "On-site greywater treatment in Qebia Village, Palestine," 25.

contained enclosures. This type of bridging of place with non-place is important in the region because there are few territorial thresholds between different types of land in the West Bank allowing anyone, especially Palestinians, open access. The architecture and signage of checkpoints, area markers (Areas A, B, and C), and barriers and signs of varying types denoting Israeli military zones, municipal boundaries, and national parks, are exclusive in their categorization as well as denoted stakeholder usage of the land. Perhaps in the future, such installation sites can become important gateways for recreation and access due to their cultural and ecological importance, as well as their location between developed and undeveloped land.

Terra praeter hosts new water infrastructure extending claim over susceptible land through architecture and landscape installations. While this thesis has discussed it in two dimensions over the surface of land, further spatial analysis could develop the concept in three dimensions. The staging of water infrastructure claims land and exhausts its potential as a site of future Israeli incursion or Palestinian loss. In its initial occurrence, the interventions claim land in their immediate vicinity. But over time, there is the possibility of extending the planting claim by virtue of the water network through *terra praeter*. The interventions are also borderless in terms of circulation, operating as nodes falling along the intersection of common routes. This scheme allows anyone within the local vicinity to access and use the intervention, possibly making it lucrative as a site to source freshwater or harvest plants from. However, the management of the installations by local representatives would govern equitable water sourcing, scale of possible growth, and plant harvesting.

One component of land ownership that has not been discussed in as much detail is that of the volatility of private church land in Jerusalem and the West Bank. The thesis' chosen design sites are not only prime locations for water and landscape intervention, but are also adjacent to monasteries which maintain strong heritage value as Christian cultural sites. As the Palestinian Christian population continues to decrease,¹³ resulting in a decrease in the local laity, these sites become more reliant on tourism and foreign investment to sustain them. As reported to Al Monitor by Jalal Barham, a member of the Follow-up Committee of the Arab Orthodox High Council and head of the Arab Orthodox Cultural Club, the Greek Orthodox Church owns around 20% of Palestinian religious trust land, with no known figure of how much property has been rented or diverted to Israel west and east of the Armistice Line.¹⁴ Church land can be sold to Israel or private purchasers. Such is the case with the land upon which the Knesset (Israeli parliament) was built.¹⁵ Over the past two-hundred years, while the Church has tended to lease their land to investors, rather than sell, there is still the possibility that leased land west of the Armistice Line, in Israel proper, would never be fully regained as Church land. In his paper, "Shaping the Church, Shaping the City," Tufts University New Initiative for Middle East Peace's (think tank) author and contributor Dan McDermott suggests that "there is little chance the Israeli government would allow this non-Jewish body to retain or regain ownership over any of Jerusalem's prime property."¹⁶

The Church's leasing practice has become especially contentious in and around Jerusalem in the area of the Armistice Line, as well as in the West Bank city of Hebron.¹⁷ As culturally important Jewish sites, these locations are specifically targeted for settlement growth. The Greek Orthodox patriarch's recent leasing of almost eighteen acres of land south of Jerusalem to an Israeli company angered the Palestinian community who saw it as being undertaken to possibly expand settlements around Palestinian towns.¹⁸ While the Greek Orthodox Church's

¹³ Nicholson, "Why are Palestinian Christians Fleeing?"

¹⁴ Ahmad Melhem, "Israeli land grab threatens Palestinian church," Al-Monitor, translated by Pascale Menassa, 26 January 2016, http://www.al-monitor.com/pulse/originals/2016/01/israel-land-grab-west-bank-church-endowments html

¹⁵ Dan McDermott, "Shaping the Church, Shaping the City: The Greek Orthodox Church in Jerusalem," in NIMEP Insights, Volume 2, Spring 2006, 45,

¹⁶ McDermott, "Shaping the Church, Shaping the City," 45.

¹⁷ Melhem, "Israeli land grab threatens Palestinian church."

¹⁸ Melhem, "Israeli land grab threatens Palestinian church."

Jerusalem Patriarchate has faced significant efforts from Palestinians to reform and keep their land under Arab ownership or lease, Church land will be crucial in possible future peace negotiations, especially around Jerusalem.

Palestinian measures to help fund and protect West Bank Church land east of Jerusalem also suggest protectionist measures to keep such land out of Israeli control. Recently, the Judean/Jerusalem desert region east of Bethlehem known as el-Bariyah, which encompasses the monasteries of Mar Saba and St. Theodosius in al-Ubeidiye, was submitted by the Permanent Delegation of Palestine for inclusion as a UNESCO world heritage site.¹⁹ It has been placed on their tentative list. As more Palestinian sites ranging from individual churches to an entire desert are granted UNESCO listing, the fear that the land could be sold or leased is lessened. UNESCO funds the conservation and protection of its sites through sources like the World Heritage Fund and funds-in-trust.²⁰

Considering possible future application of the proposed design beyond the Kidron/Wadi an-Nar, the design sites explored in this thesis are located beside important Christian Palestinian landmarks and as such, have cultural relevance to the Palestinian Christian population as well as to international tourists. Palestinian municipalities and organizations have been trying to encourage the protection of Church land and heritage sites in order to keep them within Palestinian domain, as is the case with the nomination of el-Bariyah as a UNESCO heritage site. It is probable that the Church-owned landmarks and land further into the West Bank will continue to be owned and maintained by their current Church owners. However, Church land around Jerusalem has proven to be more susceptible to possible Israeli purchase, as in the case of the St. Elias Monastery. For all Church properties, the land directly adjacent to or on the periphery of their land is possibly susceptible, and as such, is where the proposed design installations are situated.

Throughout the West Bank, there are other culturally significant Church or Islamic wapf sites similar to the Kidron/Wadi an-Nar's which could host the proposed water infrastructure to help mediate a lack of potable water and water pollution. The designs presented in this thesis could be implemented adjacent to similar Church sites throughout the West Bank. While these sites present similar conditions of topography, water requirements, and possible land claim volatility as the sites explored in the proposed design installations, the small-scale water infrastructure (sabils, livestock pumps, etc.) established in the thesis could be installed on these sites as well. It is the social space and accompanying architecture that would need to be adapted to the specific requirements of each new site.

In the region just outside (north and south) of the Kidron/Wadi an-Nar, there are several such prominent sites. St. George's Monastery in Wadi Qelt, for instance, is a Greek Orthodox monastery in Area C with a central coenobium and laurae, similar to Mar Saba in its remote and off-grid condition. Deir al-Quruntal (Monastery of the Temptation) is another cliff monastery operated by the Greek Orthodox Church. It sits in the extremely steep and secluded cliffs overlooking Jericho, rendering any proposed design installation difficult, but possible. Jerusalem's St. Peter in Gallicantu monastery is situated on the north side of the Hinnom Valley, just east of the Armistice Line. It borders the proposed Hinnom/Wadi a-Rababa design site and could also be incorporated into a future landscape installation to connect the inhabitants of the City of David/Wadi Hilweh community to the pool and landscape installation in the valley.

Palestinian heritage sites/Church land facing more immediate Israeli settlement incursion can be found around Bethlehem. Solomon's Pools in Al-Khader (Bethlehem), are on the northern side of a hill which the settlement of Ha-Dagan encroaches on to the south. Locals have been wary in recent years of possible

^{19 &}quot;El-Bariyah: wilderness with monasteries," UNESCO, http://whc.unesco.org/en/tentativelists/5708/.

^{20 &}quot;Funding," UNESCO, http://whc.unesco.org/en/funding/.



surrounding wadis

Green Line (1949 Armistice Line)

FIG. 4.02 OTHER POSSIBLE DESIGN SITES

🕑 Muslim site

1

- $\langle X \rangle$ Jewish site
- f Christian site



future Israeli development on the hill.²¹ The Cremisan Monastery (Bethlehem area), within the Cremisan Valley, is adjacent to land which has recently been lost to the construction of the Separation Barrier in 2015.²² The valley runs along the seam line between Israel and the West Bank, with a significant portion of the land being unable to be developed by Palestinians due to the fact that it falls under Area C.²³ As a possible design installation, water retention on existing Palestinian land could be explored, as well as preventative planting. In addition, non-wadi sites like Deir Hajle Monastery, near Jericho, could benefit from water infrastructure due to their remote, off-grid locations.

The three specific sites were selected first on the basis of their relationship to the Kidron/Wadi an-Nar, as they all tie into a watershed governance method based on their location along the stream. They each have a different spatial and environmental relationship to the stream and slopes, and are maintained under different land ownership. Secondly, their nature adjacent to heritage/Christian sites enables there to be a mixed usership with locals and non-locals. The Church land they sit beside is possibly susceptible to future land claim dispute if and when they experience funding problems or their status is renegotiated in future peace talks. This possible land claim dispute is not as much of an issue for land within Areas A and B, like al-Ubeidiye's St. Theodosius Monastery. It could prove more problematic for Area C or East Jerusalem properties that are in financial need or are encroached upon by settlements or military zones. The possible volatility of the land upon which the proposed installations are situated is therefore not an immediate problem. If anything, the proximity and adaptation of land beside Church land to become planted and useable could render it protected for future long-term use.

Non-heritage sites like the Haetekim Cliffs (the cliffs of the Kidron/wadi an-Nar that terminate at the Dead Sea) might be important in terms of their natural beauty, ecology, and use as lookout points. However, such places were not included as proposed design sites due to the fact that heritage sites and the land adjacent to them could undergo a more contentious change in permanent land/building ownership and stakeholder usage, rendering them more politically volatile in the future. Or in the case of currently well-funded and established Church properties, such proposed water infrastructure and landscape design could be less susceptible to demolition by becoming useable land for the community directly beside Church land, something that would be less easy to establish on non-heritage sites. Non-heritage sites would need a different set of water infrastructure and social space architecture which could perhaps be more easily erected, be temporary in its usage, incorporate a different method of dismantling/deactivation, and serve a slightly different group of stakeholders depending on the location. Soft systems like landscape architecture could also take on a larger role on such sites. Such installations could be a possible secondary phase of the project model, to be considered under further research to ascertain feasibility. Located in *mewat* or Israeli state land, such installations could much more easily face demolition and would probably not be rendered as permanent useable land by nearby Palestinian communities.

In addition, while individual off-grid villages/towns may display more extreme need for water resources and social program, the three sites were chosen as a cohesive series of communities along the Kidron/Wadi an-Nar. Aside from their connection of sharing a stream and watershed, they exist on an old pilgrimage route leading towards Jerusalem which is no longer universally accessible to Palestinians, Israelis, and tourists due to the land's breakup into Areas A, B, and C. Military monitoring has been established to try to ensure no movement into East Jerusalem

²¹ H. Ikhmais, Personal interview, 19 May 2016.

^{22 &}quot;The Last Nail in Bethlehem's Coffin," Society of St. Ives, August 2015, http://www.saintyves.org/downloads/ reports/20150902063619.pdf.

^{23 &}quot;The Last Nail in Bethlehem's Coffin."

via the wadis without passing through checkpoints. If ever the land is universally accessible, a new system of secondary and tertiary off-road hiking infrastructure could be conceivably implemented in the valley proper to create a more unified route for locals and tourists, which could render the installations as important gateways to the communities. The three chosen design sites are therefore good first practice sites as they combine ecological and social need in individual communities which could develop a possible future connection along the wadi. In addition, their adjacency to culturally-important hubs along the wadi could provide future protection against demolition, especially if such a valley obtains cultural or ecological recognition either through UNESCO or other organizations.

Land along the Kidron/Wadi an-Nar site is therefore volatile to future changes, and its status will be reviewed if and when peace talks involving water and land agreements are negotiated. In the context of the proposed design installations, one must consider their long-term susceptibility to Israeli acceptance or demolition in the future. Each site is unique and incurs varying risk in accordance with its land ownership, proximity to developed Israeli land, and proposed program. The Hinnom/a-Rababa site in Jerusalem, for instance, is possibly susceptible to future development as an archeological park, or may continue existing as an undeveloped buffer between East and West Jerusalem. The site has been claimed on either side of the Armistice Line as an Israeli public park, leaving what was once no-man's-land as a green buffer between East and West Jerusalem. This is the largest park crossing the Armistice Line in Jerusalem. If and when peace negotiations seek to redefine Israeli, Palestinian, and in particular, Jerusalem's borders, it will be an important piece of land to negotiate. The site's mixed user demographic and the presence of an Arab-Jewish music school serve as precedent to accommodate the proposed design intervention: a mixed community pool and orchard. The pool and orchard, however, would require the state's permission to construct on such a relatively sensitive site in terms of archeology and politics.

Al-Ubeidiye's installation is proposed to be staged in Area A, at the edge of an existing church property and one of the village's neighbourhoods. This site is not located adjacent to Israeli settlements where it could be susceptible to future incursion and settler land claim. However, it is on non-cultivated, non-private land, which leaves its ownership vulnerable, given an uncertain political future. Making use of Ottoman law regarding land claim via tree cultivation, the hosted infrastructure and planting secure the land for the villagers, who can adapt the terraced park and water infrastructure as they see fit. The top of the design installation site is located next to a road with most of the village's schools, allowing for it to possibly host a new playground or sports field in the future. Ubeidiye's installation is the only one which makes use of the Kidron/Wadi an-Nar's waste water. Should a future Israeli or Palestinian water treatment plant divert the stream's water before reaching the village, there would be far less water to operate on, rendering the landscaping reliant on runoff only.

Finally, Mar Saba's installation is located in Area C, within the domain of the Greek Orthodox Church.²⁴ It is highly unlikely that Israel would purchase the site from the Church, considering there is no Jewish cultural imperative to claim the site. It is also one of the most significant Palestinian monasteries in the West Bank and has been funded by foreign investment to recently undergo renovations,²⁵ therefore not rendering it susceptible to purchase for lack of funds. As of 2016, it has also been added to UNESCO's tentative list of protected sites,²⁶ an attempt by Palestinians to help fund the site while also ensuring its Palestinian Christian legacy.

²⁴ The Church owns a 5 km strip of land on the Mar Saba site (H. Ikhmais, Personal interview, 19 May 2016).

H. Ikhmais, Personal interview, 19 May 2016.

²⁶ Ahmad Melhem, "Ancient Palestinian monastery under UNESCO consideration," Al-Monitor, translated by Pascale Menassa, 9 May 2016, http://www.al-monitor.com/pulse/originals/2016/05/west-bank-palestine-old-monastery-unesco-heritage-list.html.

Choosing to embrace a tactical functional cooperative method of water governance does not forego or take away from the necessity for future Palestinian water sovereignty. But, such sovereignty will still rely, in the very least temporarily, on Israeli water supply and a continuation of international aid. To address current ecological and social issues in the Kidron/Wadi an-Nar that are generated from its failing water network, this thesis proposes a supplementary water governance method for communities to have small-scale water sourcing, distribution, and treatment infrastructure. The implementation of such infrastructure is tied intrinsically to the land it is situated on. Given the state of conflict, the future of this land is unknown, but has been considered for prospective long-term viability.

Many Israelis and Palestinians seek a peaceful resolution to decades of conflict, but recent political will has yet to support this. As a result, the process will not be starting in the immediate future. Bilateral groups like EcoPeace and the Kidron/ Wadi an-Nar steering committee work towards the future they would like to see by challenging the current Israeli occupation without compromising both groups' critical ideology: greater agency over water and land for Palestinians, and security for Israelis. Inspired by such precedents, this thesis's proposed organizational framework of water governance is not complicit with the existing inequitable claims to Palestinian water and land. While the existing Kidron Action Plan steering committee was not initially able to have the proposed transboundary basin management scheme be validated by governments on both sides, it is still the most ecologically and socially sustainable solution, proceeding with small and medium-scale projects in order to resolve immediate ecological problems. During the current period of time before peace is negotiated, the proposed architecture and landscape architecture, coupled with the new water governance strategy, can serve as a model for other transboundary wadis between Israel and the Palestinian West Bank.

FIG. 4.03 CROSS-BORDER STREAMS -**WEST BANK CONTEXT**

GΔ7Δ







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✓ Fig. 5.01 Israeli standpipe at the intersection of Gey Ben Hinom and Ma'alot Ir David Streets, Jerusalem

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GLOSSARY

✓ Fig. 6.01 Standing in cistern beneath the Old City of Jerusalem

Aquifer

"An underground layer of water-bearing rock. Waterbearing rocks are permeable, meaning that they have openings that liquids and gases can pass through. Sedimentary rock such as sandstone, as well as sand and gravel, are examples of water-bearing rock. The top of the water level in an aquifer is called the water table."1 are four main aquifers used for water There sourcing by Israel and the PA: Western Moutain. Eastern Mountain, Northern, and Coastal.

Absentee Law

An Israeli law which "defines persons who were expelled, fled, or who left the country after 29 November 1947, mainly due to the war, as well as their movable and immovable property (mainly land, houses and bank accounts etc.), as 'absentee'."2

The State of Israel assumed ownership of the properties of absentees who could not register, whether they be internally or externally displaced refugees.

Barrier (West Bank)

The West Bank Separation Barrier is a system of barrier walls erected by Israel ongoing as of 2000 along and diverting from the Green Line (1949 Armistice Line). Spurred on by an increase in suicide attacks during the Second Antifada, the Israeli government erected 180 km of the Barrier by 2003.³

Composed in different stretches of concrete walls, fences, ditches, razor wire, groomed sand paths, an electronic monitoring system, patrol roads, and a buffer zone, the 712 km long (constructed and projected as of 2013) wall runs alongside and diverts from the 1949 Armistice ("Green") Line. As of 2013, approximately 62% of the Barrier's approved route was complete, 10% was under construction, and 28% was planned but not yet constructed. Approximately 85% of the Barrier's route runs inside the West Bank, rather than along the Green Line. Nearly half of the Israeli settlements in the West Bank (71 out of 150) and over 85% of the settler population are located in the area between the Green Line and the Barrier's route. Approximately 11,000 Palestinians living in 32 communities located between the Barrier and the Green Line depend on the granting of permits or special arrangements to occupy



Fig. 6.02 Separation Barrier in Bethlehem

> ¹ Margery G. Dunn ed., *Exploring Your World: The Adventure of Geography* (Washington, D.C.: National Geographic Society, 1993).

² "Absentee's Property Law," Adalah, https://www.adalah.org/en/law/view/538.

³ "LEGAL CONSEQUENCES OF THE CONSTRUCTION OF A WALL IN THE OCCCUPIED PALESTINIAN TERRITORY, ADVISORY OPINION OF 9 JULY, 2004," International Court of Justice, 2015, http://www.icj-cij.org/docket/index.php?p1=3&p2=1&se arch=%22palestinian%20west%20bank%20barrier%202004=&case=131&code=mwp&p3=4, 170.

their homes. Approximately 150 Palestinian communities have land located behind the Barrier, forcing residents to seek special permits or 'prior coordination' to access it.4

Checkpoint

A barrier or larger security terminal building which is either permanently or periodically manned by Israeli soldiers, typically found at points of entry or exit between Israeli and Palestinian zones, controlling the passage of people. Movement is restricted at select locations to those who carry the correct identity card or obtain the correct visa. For instance, Palestinians with West Bank ID cards who are granted special permits can enter East Jerusalem through four of the fourteen Barrier checkpoints around the city.⁵ The Israeli Defence Force currently operates twenty-seven permanently-staffed internal checkpoints in the West Bank, twenty-six Green Line and Separation Barrier checkpoints (of which the Green Line checkpoints are permanently-staffed), sixteen temporarily-staffed checkpoints, and twelve permanently-staffed checkpoints in Hebron where there has been violence between settlers and Palestinians.⁶ One of the busiest checkpoints. Qalandia. sees an average of 15 000 people cross every day.7



⁴ "Humanitarian Impact of the Barrier, July 2013, Fact Sheet," United Nations Office for the Coordination of Humanitarian Affairs Occupied Palestinian Territory, 2015, https://www.ochaopt.org/reports.aspx?id=103&page=2, 1. ⁵ "Humanitarian Impact of the Barrier," 1.

⁶ "Restriction of movement," B'Tselem, http://www.btselem.org/freedom of movement/old/copy%20of%20checkpoints. ⁷ "What's the Truth Behind Checkpoints and Crossings in Judea and Samaria?" Israeli Defence Forces, https://www.idfblog. com/2013/05/06/reality-check-the-truth-behind-crossings-in-judea-and-samaria/.

⁸ "About Us," EcoPeace Middle East, http://foeme.org/www/?module=about us.

⁹ "Auja Environmental Center," EcoPeace Middle East, http://foeme.org/www/?module=projects&record_id=174.

EcoPeace Middle East

An NGO with offices in Jerusalem, Amman, and Bethlehem, their goal is to pursue ecological and social advancement for Palestinians, Israelis, and Jordanians in spite of the conflict. Cross-border environmental and peacebuilding issues are discussed between local Palestinian, Israeli, and Jordanian researchers, who develop a common vision together. They then present the vision to their respective communities for feedback.8

Eco Park

EcoPeace has successfully combined social and ecological mediation at a small scale through the establishment of what they call "EcoParks". One such initiative is located in the Palestinian West Bank farming village of Auja, just north of Jericho. The small community of 4500 accomodates tourism generated around the Auja Spring and oasis, with Palestinian children visiting from across the West Bank. EcoPeace's Environmental Education Center raises environmental awareness about the importance of preserving the integrity of the local water source and the region's cultural heritage, while locals also benefit from ecotourism and using the building's amenities.9



Fig. 6.03 L: Ramallah checkpoint

Fig. 6.04 R: Sharbabil Bin Hassneh EcoPark in lordan

The title of a 1998 book by Thomas F. Homer-Dixon and Jessica Blitt. "Ecoviolence explores links between environmental scarcities of key renewable resources such as cropland, fresh water, and forests and violent rebellions, insurgencies, and ethnic clashes in developing countries."¹⁰

Gate

There are two primary types of gates along the Separation Barrier: barrier gates and agricultural gates.

Barrier gates are IDF (Israeli Defence Force)-manned stations with a series of gated thresholds along the Barrier allowing for passage between the West Bank and Israel. According to the United Nations Office for the Coordination of Humanitarian Affairs Occupied Palestinian Territory, "In its 2004 Advisory Opinion, the International Court of Justice (ICJ) established that the which run inside sections of the Barrier the West Bank, including East Jerusalem, the associated permit together with date and under reaime. violate obligations Israel's international law. The ICJ called on Israel to

Clockwise from top left: Fig. 6.05 Agriculture gate

Fig. 6.06 Green Line for West Bank

Fig. 6.07 Barrier Gate



UK: Rowman & Littlefield Publishers, Inc., 1998), 1.

¹¹ "Humanitarian Impact of the Barrier, July 2013, Fact Sheet," 1.

¹² "Humanitarian Impact of the Barrier, July 2013, Fact Sheet," 1.

¹³ Malkit Shoshan, Atlas of the Conflict: Israel-Palestine (Rotterdam: 010 Publishers, 2010), 355.

¹⁴ Tom Cohen, "Obama calls for Israel's return to pre-1967 borders," CNN, 19 May 2011, http://www.cnn.com/2011/POLI-TICS/05/19/obama.israel.palestinians/.

cease construction of the Barrier, dismantle the sections already completed, and repeal all legislative measures related to that the Barrier."¹¹

Agricultural gates are separate thresholds through the Barrier allowing for Palestinian farmers to pass through with permit. The same UN fact sheet goes on to state that "Access to agricultural land through the Barrier is channelled through 74 gates, the majority of which (52) only open during the olive harvest (October-December)."¹²

Green Line (1949 Armistice Line)

A line drawn as part of the 1949 Armistice Agreement between Israel and the Arab countries it had been at war with during the 1948 Arab-Israeli War.¹³ The agreement sets out the borders and no man's land between Israel, the West Bank, and the Gaza Strip. Some of the *West Bank barrier* is constructed following this border. In 2011, then American President Barack Obama supported the creation of a future Palestinian state based on this border.¹⁴



Design which seeks to improve the wellness and happiness of people, possibly in a crisis or post-crisis zone.

Israeli Civil Administration

Established by the Israeli government in 1981, the Israeli Civil Administration is currently the Israeli body in charge of civil control over Area C and has limited power in Area B in the West Bank, as per the Oslo Accords (Oslo Accord I, Article I). Area C has seen significant settlement growth since the 1967 War. It now maintains a population of 180 000 – 300 000 Palestinian farmers in villages as well as Bedouin, and around 325 000 Israeli settlers living in 125 settlements and 100 outposts.¹⁵

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Jewish National Fund (JNF)

The JNF (Jewish National Fund) is an NGO and parastate entity in charge of developing Israeli state land for the benefit of the Jewish people, now staging ecological remediation projects and planting forests which initially used pine as the primary species of choice. Planting occurs throughout Israel and the West Bank, but targetted areas around the greater Jerusalem area prevent Palestinian planting while



¹⁵ "Area C," B'Tselem, http://www.btselem.org/topic/area_c.
¹⁶ Irus Braverman, Planted Flags: Trees, Land, and Law in Israel/Palestine (New York: Cambridge University Press, 2009),
48.

¹⁷ Amira Hass, "Israel Blocking Plan to Double Water Supply to West Bank," Haaretz, 9 July 2016, http://www.haaretz.com/israel-news/.premium-1.729777?=&ts=_1484180304655.
 ¹⁸ "What is a Liman?" Keren Kayemeth Lelsrael Jewish National Fund, http://www.kkl.org.il/eng/water-for-israel/water-in-the-desert/limans/?itemid=%7B9DB7FDA3-27AC-4476-9DE9-3FE0D7F43A11%7D.

GLOSSARY

maintaining land reserves for new Israeli settlements.¹⁶

Joint Water Committee (JWC)

The Israeli–Palestinian Joint Water Committee (JWC) is a bilateral legislative group authorizing Israeli and Palestinian water infrastructure in the West Bank. Established in 1995 under the Oslo II Accord, the JWC is tasked with managing infrastructure pertaining to water sourcing and sewage treatment in the West Bank. New projects as well as maintenance of existing infrastructure pass through this committee. Established as an interim group intended to last five years, the JWC was still in effect until recently. An article in Haaretz from July 2016 cites it suspension.¹⁷

Liman

An Israeli wadi dam comprised of water-sequestering plants used to retain water in arid desert zones like the Negev Desert.¹⁸



Fig. 6.08 L: Fire damage to a JNF forest just outside of Jerusalem (December 2016), particularly problematic given the arid climate

Fig. 6.09 R: Limanim or wadi dams in the Negev desert are able to sequester significant water which would otherwise be lost to evaporation and runoff

Nation (Palestinian)

The use of the word, "nation," here means a group of people with a collective cultural identity, separate from, "state," which refers to a sovereign nation operating under a single political structure. Palestine is not a sovereign state as the West Bank is under occupation by Israel, while Gaza is under blockade by Israel and Egypt. As of 2014, 135 of the 193 United Nations member states and two nonmember states recognize the State of Palestine.¹⁹ However, Israel, Canada, the United States of America and 55 other UN member states do not. Many member states, including Israel, recognize the Palestine Liberation Organization (PLO) as the representative of the Palestinian people.²⁰

Oslo Accords

Emerging from a period of Palestinian civil unrest during the late 1980s - early 1990s, the Oslo Declaration of 1993 resulted in Palestinian leader Yasser Arafat and Israeli Prime Minister Yitzhak Rabin agreeing that Israel would gradually cede control of the Palestinian territories to a Palestinian

Fig. 6.10 After the first round of Oslo Accords in 1993. Yasser Arafat (leader of the PA). Shimon Peres (Minister of Foreign Affairs), and Yitzhak Rabin (Prime Minister of Israel), were awarded the Nobel Peace Prize of 1994 in recognition of their "efforts to create peace in the Middle East."("The Nobel Peace Prize 1994") The possibility of peace was short-lived, with the protracted conditions agreed upon in the Oslo II agreement of 1995 leading to further tension



control.21

Interim Self-Government within a five year interim period,

culminating in the following aims outlined during the Oslo

II (Interim Agreement) of 1995: the establishment of a

Palestinian Legislative Council for the Gaza Strip and the

West Bank, the withdrawal of the Israeli Civil Administration,

and a peace settlement (Oslo Accord I, Article I). In terms

of land, the Oslo Accords established a tiered governance

sytstem in the West Bank, separating land into three zones

of administration: Area A (full Palestinian civil and military

control), Area B (Palestinian civil and Israeli military

control) and Area C (full Israeli civil and military control).

In practice, the Interim Agreement was never concluded,

and the West Bank remained divided into Areas A, B, and

C, maintaining the legislation that in 1995 had placed

some 73 percent of West Bank land and 4 percent of West

Bank population under exclusive Israeli military and civil

¹⁹ Ishaan Tharoor, "Map: The Countries that recognize Palestine as a state," The Washington Post, 7 November 2014, https://www.washingtonpost.com/news/worldviews/wp/2014/11/07/map-the-countries-that-recognize-palestine-as-astate/?utm_term=.7e3d9ff120f1.

²⁰ Kim Murphy, "Israel and PLO, in Historic Bid for Peace, Agree to Mutual Recognition," Los Angeles Times, 10 September 1993, http://articles.latimes.com/1993-09-10/news/mn-33546_1_mutual-recognition).
 ²¹ Neve Gordon, *Israel's Occupation* (Los Angeles: University of California Press, 2008).

Ottoman Land Law (1858)

The Ottoman Land Law of 1858 sought to collect more tax from the Palestinian farmers, register them for possible conscription purposes, and established a categorization of land in five land types:²²

1) *Mulk*: Private land held primarily within cities, extending to villages and rural areas only encompassing the housing plot and immediate garden.

2) *Miri*: Land of the emir which farmers were permitted to use as private usufruct state land. The code primarily focused on this type of land as it generated the most revenue. *Miri* land made up the vast majority of agricultural land, with *mewat* as reserve. Emphasizing agricultural productivity, the Land Law stated that *miri* land left uncultivated for a period of three years was reverted to the state, at which point it would be known as *machlul* land and would be treated as escheated state land.

3) *Waqf*: Land held in a religious trust, protected from division or state seizure.

4) *Matruka:* Public usage land primarily in and around a village. It could accommodate public services like schools, courts, and administrative buildings, as well as roads, some pastures, and groves.

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5) *Mewat* ("dead land"): Undeveloped land not used for cultivation which was either too distant (at the minimum distance of about a mile and a half from the outmost extremity of a village) or too stony. Such land was sometimes used by Bedouin for small farming. *Mewat* could be converted to

²² Shaul Ephraim Cohen, The Politics of Planting: Israeli-Palestinian Competition for Control of Land in the Jerusalem Periphery (USA: The University of Chicago Press, 1993), 35.
 ²³ Neve Gordon, *Israel's Occupation* (Los Angeles: University of California Press, 2008), 177.
 ²⁴ "Introduction," Palestinian Water Authority, http://www.pwa.ps/page.aspx?id=QdCCoda1597993287aQdCCod.
 ²⁵ Erika Weinthal, Jessica Troell, and Mikiyasu Nakayama, eds., *Water and Post-Conflict Peacebuilding* (Abingdon, UK: Earthscan, 2013).

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miri land after continuous cultivation of about three years, as well as with permission from the state.

Palestinian land legislation still uses these land categories. Combined with low registration of land by Palestinians, this has proven detrimental to Palestinians securing their land from Israel, post-1967 occupation. Israel has leveraged the outdated and incomplete Palestinian land registry system to its advantage in what it deems to be state land, permitting settlement expansion and demolitions to take place in Area C's state land.

Palestinian Authority (PA)

Emerging from the Oslo Accords of the 1990s, the PA is the Palestinian interim self-government body outlined in the agreements. It governs the Gaza Strip, as well as maintaining civil control over West Bank Areas A and B, and security control over Area A.²³ The PA President as of 2005 is Mahmoud Abbas.

Palestinian Water Authority

The Palestinian Water Authority was established in 1995 and is in charge of Palestinian water management involving allocating water, issuing and charging fees for licences and permits, and assuring optimal utilisation of water resources for public Palestinian use.²⁴

Peace consolidation

A term used in *Water and Post-Conflict Peacebuilding*, which suggests the consolidation of peace can occur through efforts undertaken on the points of drinking and sanitation provision, livelihood, transboundary water, governance, public engagement, donor commitment, and emerging issues.²⁵

Post-Conflict

A term used in *Water and Post-Conflict Peacebuilding* suggesting there will be a future secession of violence between conflict-affected states for whom water infrastructure resiliency, adaptive water management, and equitable water governance are key components in the peace process.²⁶

Settlement (Israeli)

1) Settlement town/city: A Jewish town in Area C of the West Bank which the government incentivizes Israelis to live in.²⁷ There are 131 settlements in the West Bank (not including Jerusalem) accommodating 400 000. A further 200 000 Israelis live in East Jerusalem, which Israel annexed in 1967.²⁸ Such settlements are considered illegal under international law.

2) Outpost: A small or nascent settlement constructed by Jews in Area C that has not received certain permits from the Israeli government to legalizes its existence in the West Bank according to Israeli law.²⁹ Passed in Israel's Parliament as of February 2016, Israel's Regulation Bill now allows any settler who built a structure claiming to not know the building was being built on privately owned Palestinian land to keep their structure without threat of demolition, as has happened in the case of Amona and other previously established outposts.³⁰ There are around 97 outposts in the West Bank.

Spatial resistance

A term used in *Contesting Limits*, an act of social empowerment which seeks to undermine lawfare and biopower of occupying forces.³¹

Terra Praeter

I have coined the term, "terra praeter," to describe mewat or non-cultivated miri land in and around Palestinian villages which is temporarily used and therefore vulnerable to future claim conflict. The land is still within municipal bounds, adjacent to registered miri, mulk, or waqf land in Areas A, B, or C. Upon closer observation, this land is used informally and temporarily, primarily for recreation and livestock-



Fig. 6.11 Har Homa settlement in East Jerusalem

²⁶ Weinthal, Troell, and Nakayama, eds., *Water and Post-Conflict Peacebuilding.*

²⁷ "7 Things to Know About Israeli Settlements," NPR, http://www.npr.org/sections/parallels/2016/12/29/507377617/ seven-things-to-know-about-israeli-settlements.

²⁸ "Population," Peace Now, http://peacenow.org.il/en/settlements-watch/settlements-data/population.

²⁹ "Settlement or outpost? 'Bureaucratic' distinction draws Israeli and global scrutiny," Jewish News Service, http://www.jns. org/latest-articles/2016/11/7/settlement-or-outpost-bureaucratic-distinction-draws-israeli-and-global-scrutiny#.WLK5fkrKUk=.

³⁰ Raoul Wootliff, "In historic first, Israel legalizes West Bank outposts with sweeping new legislation," The Times of Israel, 6 February 2017, http://www.timesofisrael.com/in-historic-first-israel-legalizes-west-bank-outposts-with-sweeping-newlegislation/.

³¹ Suzanne Harris-Brandts, *Contesting Limits*, (Waterloo, ON: University of Waterloo, 2012).

keeping. This habitual temporary usage establishes a semiclaim to the land. But temporary usage does not guarantee land will be protected from ecological degradation or Israeli development. Established as a bi-product of the conflict, *terra praeter* offers a platform to function just past the limits of both Israeli and Palestinian formal water infrastructure, harnessing it from currently underutilized sources like the Kidron Stream and urban runoff.

TFC (tactical functional cooperation)

In cooperating on an important functional issue such as shared water resources, "the immediate objective need not be conflict resolution, as argued by the functionalist approach, but conflict management. ...Tactical functional cooperation, like informal or formal international institutions, is a set of rules between states that 'prescribes roles, constrains activities, and shapes expectations'."³²

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³² Zacharya Tagar, Tamar Keinan, and Gidon Bromberg, "A Seeping Timebomb: Pollution of the Mountain Aquifer by Sewa-ge," In Water Resources in the Middle East: Israel-Palestinian Water Issues - From Conflict to Cooperation, edited by Hillel Shuval and Hassan Dweik (New York: Springer-Verlag Berlin Heidelberg, 2007), 419.
 ³³ Sosland, *Cooperating Rivals*, 8.

275

Water war

"Mass organized violence is the method for resolving water conflicts among states, resulting in over one thousand civilian and combatant deaths. To date, water wars are a myth. ...However, water scarcity certainly has been one of many issues that led to violence, not as a deep, but as an intermediate or precipitating factor."³³

Water distribution

Water distribution refers to the infrastructure accommodating the distribution and temporary storage of water in the West Bank. This includes water delivery pipes, cisterns, reservoirs, aqueducts, and water tanker trucks.In terms of water governance, unequal distribution of water between Israeli and Palestinian communities creates an environment of disparity and tension. Israel's national water carrier company, Mekorot, supplies West Bank Palestinian communities and Israeli settlements with a large percentage of their freshwater. From this point, municipal/regional Palestinian water organizations distribute water to their



Fig. 6.12 L: Israeli water tank

Fig. 6.13 R: Solomon's Pools (reservoirs) near Bethlehem communities. Due to faulty pipes and water theft, almost a third of water delivered to Palestinian communities within the West Bank is lost.³⁴

Water sourcing

Water sourcing refers to the methods used to extract water from the West Bank and Israel. Israeli and Palestinian methods of obtaining water for domestic, industrial, or agricultural use in both Israel and the West Bank include pumping from aquifers, rainwater collection, shallow well pumping, spring water, water recycling, diverting water from the Yarmouk Valley or Lake Kinneret, as well as desalination methods (reverse osmosis and electrodialysis being two operations used by Israel).

Water treatment

Water treatment refers to all methods of treating water post-consumption throughout the region. This can include domestic, industrial, and agricultural use. The treatment of wastewater and runoff includes methods such as processing through sewage treatment facilities, industrial/agricultural runoff pond filtration, as well as cesspit disposal. While Israel and Jordan maintain adequate water treatment facilities with high levels of water recuperation, approximately 61% of rural Palestinian communities rely on unlined cesspits to dispose of domestic wastewater, ultimately polluting groundwater with 46 million cubic metres of sewage per year.

Approximately 730 tons per year of pesticide released in West Bank farms compound the problem. Nitrate infiltration in Ramallah, for instance, is estimated to take around 15 years to reach groundwater, polluting the groundwater and surface water supply for Israelis and Palestinians.³⁵

Clockwise from top left: Fig. 6.14 Dead Sea P88 pumping station

Fig. 6.15 Infiltration basin / recharge pond

Fig. 6.16 Reverse osmosis desalination station

Fig. 6.17 Sapir (Israeli national water company) pumping station at Lake Kinneret





³⁴ "Water Crisis," B'Tselem, http://www.btselem.org/water/statistics. ³⁵ Tagar, Keinan, and Bromberg, "A Seeping Timebomb: Pollution of the Mountain Aquifer by Sewage," 419.

FIG. 6.18 ISRAELI AND
PALESTINIAN WATER NETWORKS
- WEST BANK CLOSE-UP



10 25 km

