

Pieter van der Zaag

Chicanery at the Canal

Changing Practice in Irrigation
Management in Western Mexico



Table of contents

Preface	(xi)
1 Irrigation and interaction: an introduction	1
1.1 Irrigation and its social dimension	2
1.2 The El Operado irrigation system	7
1.3 The research methodology	10
1.4 The structure of the thesis	14
2 Crops and commerce, water and works: the valley's agricultural development, 1850-1985	16
2.1 From <i>hacienda</i> to <i>ejido</i> (1850-1940)	17
2.2 New opportunities: the 1940-1968 period	26
2.3 Bonanza: the rise of export agriculture (1968-1980)	35
2.4 The reaction: the spread of sugar cane (1975-1985)	40
2.5 Peasants, entrepreneurs and the state: a conclusion	48
3 El Operado: characterising the irrigation system	51
3.1 Access to land: the use of El Operado	51
3.2 The design of the canal system	56
3.3 Access to water: operating the system	62
3.4 Managing El Operado	71
4 Tender the waters: a case study of the <i>canalero</i>	76
4.1 The <i>canalero</i> 's routine	77
4.2 Interacting with farmers	85
4.3 The <i>canaleros</i> in the District office	88
4.4 The <i>canalero</i> shaping the outcome of his work	90
4.5 Different work styles	94
4.6 Working at the frontline: a conclusion	99
5 Cleaning canals and making up our minds: managing maintenance and farmer response	104
5.1 Farmers cleaning their canal	106
5.2 The District managing maintenance	115
5.3 An emerging canal organisation	127
5.4 Canal maintenance and farmer cooperation: a conclusion	133

6	The making of the irrigation plan: an institutional chronology of decision-making	135
6.1	Manufacturing the irrigation plan	138
6.2	Presenting the plan: the engineers and the Water Users' Commission	149
6.3	Some observations on the analysis of an irrigation institution	155
7	Irrigation and intervention: the case of the Water Users' Association	159
7.1	Creating the Water Users' Commission: intervention by local actors	159
7.2	Founding the Association: intervention by regional actors	163
7.3	Modernising rural Mexico and the backlash	170
7.4	Irrigation and intervention: a conclusion	177
8	Decentralising irrigation management, farmer participation and changing practice	180
8.1	The Water Users' Commission operating at the intermediate level	181
8.2	The formal institution of the Water Users' Association	188
8.3	Changing practice through creating effective linkages	191
8.4	Decentralising irrigation: intervention and the practice of change	199
9	Irrigation, intervention and change: a conclusion	202
9.1	Outline of the El Operado case	202
9.2	Organising processes and the canal system	204
9.3	Power effects in El Operado	207
9.4	Diagnosing irrigation management and an intervention strategy	211
	Appendices	215
1.	Some data on climate, soils and crops of El Operado	215
2.	Discharge fluctuations in the main and secondary canals	218
3.	The working routine of a water guard: one day in the life of Miguel	221
4.	Two documents of the Water Users' Association	226
5.	Translations during the creation of the Water Users' Commission in 1980	228
6.	Rapid irrigation practice identification	230
7.	Glossary of frequently used Spanish words	233
	Summary / Samenvatting / Resumen	235
	Notes	247
	References	261
	Curriculum Vitae	268

Tables

2.1	19th century irrigation systems in the valley of Autlán-El Grullo	19
2.2	Projected costs of rehabilitation and expansion project, as per 1978	47
3.1	Renting practices in El Operado: 1983/84 irrigation season	53
3.2	Fluctuation of discharge in the main system: January 1 - June 18, 1988	64
3.3	Flows in right main canal, before and after <i>cambio</i> of January 4, 1988	67
3.4	Correlation between distance to head works and water use; and between water use and soil quality; 1987/88 irrigation season	68
4.1	Consequences of slightly lowering a gate at Km.5 in right main canal	84
5.1	The water users (landowners and cultivators) of El Limoncito, 1987	109
5.2	Requested maintenance budget and allocated budget for 1987	120
5.3	Planned and realised canal maintenance for 1988	121
6.1	Summary of the irrigation plan for El Operado, 1987/88 season	142
6.2	Evaluation of irrigation season 1987/88, as per 1 July 1988	144
6.3	Relative water fees, water use and crop value, 1987/88 season	147
7.1	Important encounters in three interventions in the water users organisation	178
8.1	Verbal interventions during part of the September 1987 meeting of the Water Users' Commission	184
8.2	Board members of the Water Users' Association, their assets and administrative experience	191
A.1	Estimated crop water use; 1984-1988	217

Figures

1.1	The Autlán-El Grullo valley with El Operado	8
2.1	The irrigation system of Ayuquila (around 1940)	27
2.2	Trends in sugar cane cultivated in El Operado, 1968-1988	41
3.1	Crop distribution in El Operado, 1987/88 irrigation season	52
3.2	Distribution of irrigated land over El Operado's water users, 1982	54
3.3	Distribution of sugar cane over titleholders and enterprises, 1987/88	55
3.4	The canal system of El Operado	57
3.5	Drainage from El Operado into Río Ayuquila, April 2, 1989	60
3.6	The six zones of El Operado (schematic)	63
3.7	Daily flow fluctuations in right main canal, January 1-20, 1988	65
3.8	Gross water use in the three zones of right main canal, 1987/88 season	69
3.9	Comparing water consumption in two years, January-March 1988 & 1989	70
3.10	Organisation chart of Distrito de Desarrollo Rural No.V, El Grullo	73
4.1	The zone of Miguel (zone 4), approx.1,700 hectares	79
4.2	Irrigation turns along one sublateral serving 7 plots on 40 ha	80
4.3	The 'lateral 5' canal with the irrigated fields	82
4.4	Structure of routine encounters between Miguel and farmers	86

4.5	Sublateral 1 branching off from lateral 5	92
4.6	The position of the <i>canalero</i>	100
5.1	The Limoncito canal with its fields	108
5.2	Organisation chart of the maintenance department	118
5.3	Movements of a <i>Poclairn</i> hydraulic excavator during September-November 1987	119
5.4	Lateral 5, its canals and the <i>ejido</i> lands served	127
6.1	Contours of the operation department	136
6.2	Setting of the water users commission meeting, September 1987	150
6.3	The blackboard with the old, the proposed, and the accepted water fees	152
8.1	The Water Users' Commission in El Operado's arena with its four major domains	187
8.2	Through the <i>jefes de toma</i> , the Water Users' Association has established a strong link with the field domain	197
A.1	Pan evaporation and precipitation in El Operado, 1980-1989	215
A.2	The typical hydraulic module of an off-take in the main canal	219
A.3	Flow fluctuations in right main canal (at Km.0) and in off-taking lateral 5 (at Km.5 in main canal), April-May 1988	220

Preface

How is the social dynamic surrounding an irrigation system intertwined with its physical infrastructure? This question has intrigued me ever since I read Edmund Leach's (1961) study of Pul Eliya. The present study tries to tackle this question on the basis of empirical research conducted in a 'modern', medium-scale, government-managed irrigation system, called El Operado, in El Grullo, Western Mexico. The study sets out to assess how the infrastructural context directs the action of people, and vice versa, how the actions of people make the irrigation system work. El Operado lends itself to such a study, since it is a comparatively successful system. Hence it is not yet another 'disaster' story on irrigation. The research, of course, is critical on the subject. Wherever in the present text I point to weaknesses in irrigation organisation, it is because I think that organisation could be improved. But on the whole, the El Operado system could be an example for other irrigation systems in the world.

The present study was potentially able to address the technical, social and organisational dimensions in one irrigation system, for it formed part of a wider research project of Wageningen Agricultural University and the Colegio de Jalisco, Guadalajara, entitled 'Contrasting patterns of irrigation organisation, peasant strategies and planned intervention: comparative studies in Western Mexico', directed by Norman Long and funded by the Ford Foundation and the Netherlands Foundation for the Advancement of Tropical Research (WOTRO). The research team included six social scientists who looked at different topics in the same subregion, namely households, women's organisations, agricultural labourers, agricultural export companies, government agencies and sugar cane growers' organisations. All these investigations shed new light on different aspects of the irrigation system under study. I myself am an irrigation engineer, who received an 'on the job' training in sociology.

During the fieldwork in Mexico, from February 1987 to April 1989, and later during the writing up phase at the Department of Irrigation and Soil and Water Conservation, Wageningen Agricultural University, I received support from many sides.

First and foremost, I wish to express my gratitude for the hospitality with which the people of the Atlán-El Grullo valley welcomed me. I feel, and my Mexican friends surely know that I am, privileged to have had the opportunity to work in Mexico, which made it possible to become acquainted with people whom I now may call friends. A few I would like to single out here. I thank Oscar and Raquel Martínez for their generous hospitality, Don Chico Díaz and Cesareo Dueñas for teaching me farming, and the latter for many things besides, and Jesús Lomelí, Salvador Buenrostro, and Alejandro Salazár for inspiring me during fieldwork. I thank Teresa Gervacio for the meticulous work she did, and express my admiration for the way she pursues her own project. I am indebted to Everard and Gloria van Zoelen, for friendship, for the weekends in Guadalajara, but also for valuable discussions and new insights.

Then come all the farmers who agreed to be interviewed, which cost them much of their time. These talks I much enjoyed, and they thoroughly influenced my thinking. I am grateful to the farmer representatives of the *Asociación de Usuarios*, who gave me access to their meetings, and with whom I had many fruitful discussions. I wish their organisation all the best. I owe much to the personnel of the El Grullo Rural Development District, who were extremely helpful. I wish to thank Engineer Gómez Díaz and Engineer Cobian for their kind cooperation. The group of *canaleros* are a special lot. Engineers may have overlooked them, but they did not overlook me, and they plunged me into the valley's reality. I thank them for that and for their generosity, patience and wit.

The discussions in the research team were often inspiring. I thank the team members for it: Dorien Brunt, Humberto González, Elsa Guzmán, Magda Villarreal, Gabriel Torres, and Alberto Arce. This was only the core. Others, who during longer or shorter periods participated in the team effort, were Mili Figueroa, Pedro Silva, Lex Hoefsloot, Hans Heijdra, Jikke Verhulst, Horacia Fajardo, Monique Nuijten, Gregorio Rivera, and Gerard Verschoor. I experienced Ann Long's critical thinking, warmth and support as essential contributions to the project, and to my work, for which I am grateful. I furthermore enjoyed the inspiring presence of M.Sc. students who worked specifically on irrigation and shed new light: Angel Baltázar, Michael de Bont, Wilma van Esch, Michiel Kuijk, Piet Sijbrandij, and Annemieke Vos.

I thank the Netherlands Foundation for the Advancement of Tropical Research (WOTRO) for the scholarship, and Renée van Kessel-Hagesteijn for her kind support.

I am grateful to my supervisors at Wageningen Agricultural University, Professor Norman Long of the Department of Sociology of Rural Development and Professor Lucas Horst of the Department of Irrigation and Soil and Water Conservation, for their enthusiasm, their valuable suggestions and critique. I wish to thank Norman Long also for the new horizons he helped me to explore. I must admit that it was not always easy for me to effectively 'interface' with both professors, who represent two different disciplines. At times, they must have thought I was neither meat nor fish. The person who assisted me in this interdisciplinary endeavour was Jan Ubels, who stood at the conception of the project and who was also there at the birth of this thesis. He knows how much I owe to him.

I would also like to mention those five persons who, prior to the Mexican experience, have influenced my thinking on irrigation most: Jan van der Laan, Piet Jan Zijlstra, Jacques Slabbers, Jos van der Klei and Jan Douwe van der Ploeg.

Andrew Long had a tough job in editing the text. I also value the suggestions he gave for improving its content. Elias Michel and Frans van Ernst drew most of the figures.

My parents critically followed my work, for which I am grateful. They have actively contributed to the final shape of this thesis.

Without Marlou Bijlsma, the whole effort would have been fruitless. Together, we thank Pedro, Mili, Ahui and Naxi. Because of them, Mexico is always in our minds.

Wageningen, December 1991