THE POLITICS OF DECREMENTALISM: THE CASE OF SOVIET-JAPANESE SALMON CATCH NEGOTIATIONS, 1957–1977[1]

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Locating the Soviet-Japanese fishery negotiations of 1957–1977 in the broader perspective of emerging ocean politics, a time series model of negotiation processes and outcomes is constructed to show that the negotiations can best be characterized as the politics of decrementalism. A state space equations model allows some advantage over more conventional estimating procedures. Such a model is constructed to show the nature and characteristics of the decremental outcomes in the bilateral negotiations of 1957–1976 and takes account of the major policy intervention of 1962. The model is used to predict the 1977 negotiation outcomes on the basis of parameters recursively estimated from the 1957–1976 data set. The model, which applies to the bilateral subsystem of a supranational system, gives good predictive performance. Some conclusions and implications are drawn for conflict and its resolution in the context of Soviet-Japanese relations, as well as in the context of bilateral negotiations in the new ocean order.

KEY WORDS: negotiation, decrementalism, control theory, state space model, Soviet-Japanese fishery negotiations.

INTRODUCTION

THE THIRD United Nations Conference on the Law of the Sea, UNCLOS III, has not yet developed a comprehensive, universally acceptable treaty. There is an extraordinary array of issues involved in which consensus is hard to reach. The sharp cleavages between developed and developing countries, between maritime and coastal countries, and between geographically disadvantaged and advantaged countries, make it hard to formulate an acceptable treaty (Osgood, 1975; Miles, 1977; Keohane & Nye, 1976).

Throughout the world many countries have asserted themselves by extending control over the sea, whether it pertains to fishing, utilization of seabed resources, freedom of the seas, or prevention of pollution. The recent growth of this phenomenon confirms the thesis that the primary source of international law is unilateral action by states. When party *A* claims a 200-mile fishing limit and party *B* claims fishing rights on the basis of past record in the area, the two parties must negotiate some mutually satisfactory agreement on the amount of fish catch, the mode of fishing, the area in which fish catch is allowed and so on. The kind of negotiation which can be expected is that party *B* will be a requester and party *A* an appropriator. The relationship is similar to that in budgeting between a governmental agency's request and parliamentary appropriation (Inoguchi & Miyatake, forthcoming). The extent to

[1] Earlier versions of this paper were presented by the first author at the Conflict Resolution Seminar of Yale University, January 14, 1977, and the Annual Spring Meeting of the Japan Association of International Relations, Tokyo, May 22, 1977. The authors are grateful for the helpful comments on those and other earlier versions made by Hayward R. Alker, Jr., MIT, Mitsuo Ezaki, Kyoto University, Michael Grose, University of Tokyo, Jeffrey Hart, Princeton University, Douglas A. Hibbs, Jr., Harvard University, Kuniko Y. Inoguchi, Yale University, Jean-Christian Lambelet, IUHEI, Urs Luterbacher, IUHEI, Masatsugu Naya, Sophia University, Frederic L. Pryor, Swarthmore College, Bruce M. Russett, Yale University, Hideo Sato, Yale University, Taizo Yakushiji, Saitama University, and Yoshinobu Yamamoto, Saitama University. The revision of the paper was facilitated by a grant to the first author from The Japan Foundation to which he is grateful. Needless to say, the authors alone take responsibility for the views expressed in the paper.

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0005-7940/78/2306-0457$01.00

which the old rules can be replaced by a new set of rules will depend on the success of bilateral negotiations. Such negotiations are taking place during a resurgence of mercantilism with overt emphasis on national and subnational interests rather than on enlightened international interests.

We have chosen the annual fishery negotiations between Japan and the Soviet Union, the world's two largest fishing powers, to find insights into the likely patterns of conflict and resolution. The negotiations have been conducted by the Joint Soviet-Japanese Fishery Commission in the Northwest Pacific established by the Soviet-Japanese agreement of 1956. This paper attempts to construct a model by which the annual quota on salmon and ocean trout is sequentially predicted by state variables, or lagged endogenous variables, using the state space equations of modern control theory.

This study consists of four parts. First, we will conduct a brief historical review of the Soviet-Japanese salmon catch negotiations which survived 20 years and experienced a drastic change in 1977.

Second, we will explain how a conflict encapsulating process worked for the 1957–1976 period. The fact that potential conflict factors were more or less suppressed in the negotiations helped create a structurally stable environment in which the negotiations were conducted.

Third, on the basis of this insight into the negotiation process, we propose that the dominant characteristics of the negotiations should be classified as the politics of decrementalism. Using the state space equations of modern control theory as applied to the Japanese and Soviet initial proposals for the Japanese catch, the quota for the Japanese catch, and the Soviet catch plan from 1957–1976, we will attempt to substantiate the hypothesis.

Finally, conclusions will be drawn with implications for conflict resolution in the context of bilateral negotiations in the emerging world ocean order.

HISTORY

To understand how the annual fishery negotiations between Japan and the Soviet Union evolved, we survey the history of fishing in the Northwest Pacific (Kawakami, 1975; Borgstrom, 1964; Johnson & Langdon, 1976; Young, 1977). Japan was the first country to begin fishing in this area around the turn of this century. Given Japan's naval dominance in the area after 1905, its fishing technology and skill, and its need for fish protein, the Northwest Pacific became virtually an exclusive Japanese zone. Russia, and later the Soviet Union, was not very active in fishing in the area.

Japan's naval and fishery dominance came to a sudden halt in 1945. The Allied Occupation Forces forbade Japanese merchant ships and fishing boats from going beyond the so-called MacArthur Line. To counteract the expected and actual fishery expansion after Japan regained independence in 1952, the neighboring countries including the Soviet Union, South Korea, China and the US, drew lines to prevent Japanese fishing boats from operating within certain zones.

Two consequences resulted from these restrictive measures by the neighboring countries. One was that Japan went far beyond what was considered to be its traditional fishing areas to establish a dominant position in world fishing. The other was that bilateral or regional arrangements were made to minimize conflicts arising from the fishing ban areas.

One of these arrangements was the Joint Soviet-Japanese Fishery Commission in the Northwest Pacific in 1956. The Commission, endowed with the power to revise the 1956 agreement without referring to the respective home governments, has been holding annual negotiation sessions since 1957.

The agreement prescribed an initial fixed ten-year period in which neither party could abrogate it and that thereafter either of the two parties could abrogate if one-year advance notice had been given. The agreement applied to the whole area of the Northwest Pacific and regulates anadromous species like salmon and ocean trout, demersal species like pollack and surface feeding species like herring.

Besides the 1956 agreement, two differ-

ent agreements exist between Japan and the Soviet Union to regulate fishing for shellfish, called *tsubu* in Japan, and crabs in the Northwest Pacific. There is also a nongovernmental agreement to regulate Japanese seaweed catch around the disputed Southern Kurile Islands.

The Commission meets in spring for negotiations to determine the modes of fishing in the area before the season begins. When accord is difficult to reach, negotiations are prolonged into the fishing season itself. The stated goal of this agreement is to achieve the "maximum sustainable productivity" in the Japanese text or the "maximum sustainable fish catch" in the Russian text for the joint preservation and exploitation of the fisheries in the area. In this sense the 1956 agreement differs from the kind of agreements which have been recently concluded in the wave of 200-mile exclusive economic or fishing zones. However, fishing ban areas and fishing holiday areas have been increased. Various regulations, such as a decrease in the number of factory ships and fishing boats and a decrease in the number of fishing days, have been introduced. Most of the Okhotsk Sea became a banned area by the mid-1960s.

Late in 1976, after the stampede of the developed countries, the US, Canada and the EEC, to set up unilateral claims to 200-mile fishing zones, the Soviet Union decided to defend its self-interests. Japan established its 200-mile boundaries in the spring of 1977. Shortly thereafter, the Soviet Union gave a one-year advance notice to Japan that the Soviet Union would abrogate the 1956 agreement. New fishery agreements were negotiated between them in 1977.

Most of the Northwest Pacific has fallen under the Soviet 200-mile exclusive economic zones in which the Soviet Union can wield its power far more freely than before. However, the Soviet Union continued to accommodate Japanese salmon fishing in the area even though stricter regulations were imposed. It should be pointed out that both the Soviet Union and Japan were two of the few countries which adamantly opposed the introduction of the 200-mile limits in the UNCLOS before 1974 and before 1977, respectively. Being maritime powers, they both benefited most from the status quo in ocean order. Faute de mieux, however, they reversed their positions on ocean order in 1976–1977.

POLITICS OF DECREMENTALISM

We are now in a position to delineate the basic structural factors which shaped and then enabled the Soviet-Japanese salmon catch negotiations to develop stably throughout the 1957–1976 period. The basic feature of those negotiations was the politics of decrementalism. By incrementalism we mean that in organizational decision making such as budgeting, adding an increment to the budget of the previous year is the basis of the budget for the subsequent year. Decrementalism is just the opposite of incrementalism (Wildavsky, 1964).

Decrementalism applies to those phenomena in which a quota or a budget generally decreases fairly steadily by a small amount. We will examine the five basic components of the Soviet-Japanese salmon catch negotiations in an attempt to identify the basic conditions which give rise to the politics of decrementalism (Hellman, 1969; Kim, 1974).

First, there exists a strong desire on the part of the Soviet Union that the Northwest Pacific be under its control and surveillance. The Soviet Union gradually established its naval and aeronautical hegemony over the area since 1945 and behaves as if it were the final arbiter in the area. In other words, the Soviet Union manifests the commitment to its control over the area and its resources far more strongly than Japan does.

Second, there has been a depletion of salmon stock in the area since the peak during the early postwar years. Aggressive Japanese fishing is largely responsible for this steady depletion (Borgstrom, 1964; Nihon Keizai Shimbun, 1976).

Third, there is the bilateral commitment to the principle of maximum sustainable yield as stipulated in the Soviet-Japanese fishery agreement of 1956. Japanese commitment to the principle of maximum sustainable yield in salmon catch forced Japan to abandon the largely unregulated salmon

policy in the Northwest Pacific that was practiced from 1952–1955 and in pre-1943 years (Kawakami, 1975). Put differently, Japan and the Soviet Union have committed themselves to behave with self-restraint in conformity with the maximum sustainable yield principle.

Fourth, both powers have found it useful to keep the Soviet-Japanese fishery negotiations largely isolated from other bilateral problems like the potentially volatile territorial and security issues. The Japanese government has been able to demonstrate to the Japanese people that its policies have been relatively successful despite the Soviets' unreasonable salmon fishing demands (Naya, 1977). Also, the Soviet government has been able to use the negotiations discretely to force Japan not to raise other issues for fear of a possible Soviet imposed termination of fishing in the Northwest Pacific. Thus, the Soviet-Japanese fishery negotiations and the two Sino-Japanese trade negotiations of 1962–1973, i.e., the Liao-Takasaki and Memorandum Trade negotiations, are rather different. The basic difference is that, despite their common function as a means of international economic management, the fishery negotiations have been less susceptible to political manipulation than were the trade negotiations.

Fifth, Japanese fishery interests extensively permeate the government bureaucracy: the Ministry of Agriculture, Forestry and Fishing, especially the subordinate Fishery Agency whose primary aim is to protect its constituency in an era of rapidly decreasing fishery population. Thus Japanese fisheries policy has tended to be guided by rather narrow subnational interest groups. A captive of the fishery interest groups, the Fishery Agency has tended to opt for the short-term status quo in terms of catch quota. It has succumbed to the Soviet demand for other kinds of regulation, such as setting fishing ban areas and a decrease in the number of fishing boats. All of these work against the status quo in the long run in terms of catch quota.

These characteristics of the Soviet-Japanese salmon catch negotiations have been enumerated to show that these negotiations can be fruitfully understood within the framework of the politics of decrementalism. We proceed to demonstrate the case empirically. On the basis of the validity of the model, we will attempt to predict the outcome of the 1977 negotiations.

EMPIRICAL ANALYSIS

Before going into empirical analysis, a brief description of the state space equations model is in order.

State space equations model

A state space equations model is useful for predictive purposes in a time series analysis (Zadeh & Desoer, 1963; Athans & Falb, 1966; Aoki, 1967; Kalman, Falb & Arbib, 1969; Aoki & Yue, 1970). For economic and other applications, see Dorfman (1969), Intriligator (1971), Vishwakarma (1973), Pitchford and Turnovsky (1977), Gillespie, Zinnes, Tahin, Schrodt, and Rubison(1977), and Baugh (1977). We consider the following model of one input-output discrete linear dynamic system.

$$(1) \qquad Y_t = A(z^{-1})\,U_t + b_0 U_t + B(z^{-1})\xi_t$$

where:

Y_t is an outcome variable;

z^{-1} is a shift operator, e.g., $z^{-i}U_t = U_{t-i}$;

U_t is a dummy variable denoting occurrence before or after policy intervention;

$A(z^{-1})$ is a transfer function of a lag term of the form: $A(z^{-1}) = (b_1 z^{-1} + \cdots + b_n z^{-n})/(1 + a_1 z^{-1} + \cdots + a_n z^{-n})$

$B(z^{-1})$ is a transfer function of an error term of the form: $B(z^{-1}) = z^{-1}/(1 + c_1 z^{-1} + \cdots + c_m z^{-m})$;

ξ_t is an independent Gaussian error process of the form: $E(\xi_t) = 0$, $E(\xi_t \xi_s) = \sigma^2 \delta_{ts}$ where δ_{ts} is Kronecker's delta.

This transfer function model can also be expressed as a state space model consisting of two equations: One is the state transition equation for the input variable Eq. (2) and the other the output Eq. (3) (Kalman, Falb, & Arbib, 1969).

$$(2) \qquad X_t = AX_{t-1} + BU_{t-1} + F\xi_{t-1}$$

$$(3) \qquad Y_t = CX_t + DU_t$$

where:

X_t is a p-dimensional state variable;
U_t is a one-dimensional input variable of policy intervention;
Y_t is a one-dimensional output variable;
ξ_t is an independent Gaussian error term; and
A, B, F, C, and D are all coefficient matrices.

The basic idea of a state space equations model in control engineering and in economics is to conceive the state variable of time point t as determined by three terms. These are the state transition term of time point $t-1$ or the weighted one-period-prior value of itself, AX_{t-1}; the lagged impact of prior policy intervention, BU_{t-1}; and a random error term, $F\xi_{t-1}$. The observed output variable of time point t, Y_t, is formulated as determined by the observed state variable of time point t, CX_t, and the direct impact on input variable(s) or policy intervention(s), DU_t.

In our model, the state variable in each of the four equations is one of the following: the Japanese initial proposal for the Japanese catch, JIP, the Soviet initial proposal for the Japanese catch, SIP, the agreed quota for the Japanese catch, AQJC, and the Soviet catch plan, SP.

In all of the equations, the policy input variable is the policy intervention of 1962 which caused the drastic expansion of the regulated areas in the Northwest Pacific. Regulation was extended to the area south of 50°N, the B area, in which the Japanese salmon catch was not strictly controlled until 1961 in addition to the area north of 50°N, the A area.

The policy intervention of 1962 was precipitated by Japanese overfishing in 1961 and, to a lesser degree, by overfishing prior to 1961 in the area south of 50°N. If we express our model in the transfer function form in which our results are shown (see Table 1), then it is as follows:

$$(4)\quad \text{state variable} = [bz^{-1}/(1+az^{-1})]U_t + b_0U_t + [z^{-1}/(1+cz^{-1})]\xi_t.$$

In the case of the JIP equation, parameter c is zero because the error term in the JIP equation does not contain the kind of regularity as is shown by the autoregressive error process, $\epsilon_t = [z^{-1}/1 + cz^{-1})]\xi_t$. In other words, the error term for the JIP equation is almost time independent.

It is important to note some basic differences between the structural equations model and the state space equations model.

First, in structural equations models all the states are assumed to be observable, while in state space equations models only parts of states are assumed to be observable.

Second, in structural equations models, estimation is made about parameters but not about initial states. In state space equations models both parameters and initial states are estimated and, thus, perfect identification of models can be achieved (Aoki & Yue, 1970).

Furthermore, state space equations models are more suitable for predictive purposes because they do not require numerous observations for the right-hand side variables of the equations, which is generally the case with time-series structural equations models that have many lag terms. This point is not intrinsic to state space equations models. That lagged endogenous variables can be incorporated into state space equations models without altering estimation problems gives strength to the use of state space equations models for a time-series analysis (Chow, 1973).

Maximum likelihood estimation

To estimate parameters, we construct a likelihood function on observed outputs $\{Y_t\}_{t=1}^{N}$. Suppose that θ is a nominal set of system parameters for Eqs. (2) and (3) with the initial state X_0 included. Then we have the following likelihood equation (Aoki & Yue, 1970):

$$(5)\quad L(Y^N, \theta) = (1/2)|P_N|^{-1/2} \exp\left[-(1/2)\|\xi^N\|_{P_N^{-1}}\right]$$

where $Y^N = (y_1, y_2, \cdots, y_N)$ and $\xi^N = (\xi_1, \xi_2, \cdots, \xi_N)$.

Since the likelihood function is nonlinear with respect to θ, we must estimate θ by nonlinear optimization methods. The estimate is shown to be an unbiased estimate (Aoki & Yue, 1970). Our estimation has

been made for the case of $n = 1$ and $m = 1$ for two reasons. One is simplicity and the other is that even when $n > 1$ and $m > 1$, the precision of the estimate is not improved. We have chosen the Davidson-Fletcher-Powell method for our estimation (Davidson, 1959; Powell, 1964).

When Eq. (1) is used, the state space model is expressed in a similar form if $n = 1$ and $m = 1$:

$$(6)\quad \begin{pmatrix} X^1_{t+1} \\ X^2_{t+1} \end{pmatrix} = \begin{pmatrix} -a & 0 \\ 0 & -c \end{pmatrix} \begin{pmatrix} X^1_t \\ X^2_t \end{pmatrix} + \begin{pmatrix} b \\ 0 \end{pmatrix} U_t + \begin{pmatrix} 0 \\ 1 \end{pmatrix} \xi_t$$

$$(7)\quad Y_t = (1, 1) \begin{pmatrix} X^1_t \\ X^2_t \end{pmatrix} + b_0 U_t.$$

Our maximum likelihood estimate is based on Eqs. (6) and (7). Eqs. (6) and (7) are also expressed in the input-output terms

$$(8)\quad Y_t^* = -a\, Y^*_{t-1} + b\, U^*_{t-1} + b_0 U_t^* + b_0 a\, U^*_{t-1} + \zeta_{t-1}$$

where

$$(9)\quad Y_t^* = Y_t + c\, Y_{t-1}$$

$$(10)\quad U_t^* = U_t + c\, U_{t-1}$$

ζ_t means an error term.

In addition to the parameter estimation, we have predicted the observed values for 1977 by using Eq. (8) with $\zeta_{t-1} = 0$.

Results of analysis

Our data sources are both official statistics and newspaper accounts. The AQJC and SP are found in an official publication of the Japanese Fishery Agency (Suisancho, 1976) whereas the JIP and SIP are reported in the *Nihon Keizai Shimbun* (Japan Economic Newspaper), the reliability of which was confirmed by the first author's interview with a Fishery Agency official. Due to controlled leaks by the government to newspapers, the figures reported in newspapers are strikingly accurate. There are a few cases in which some small divergences are found between the figures shown to the first author but not quoted and the figures reported in the *Nihon Keizai Shimbun*—on the order of 100 to 1,000 metric tons when proposals range from 50,000 to 170,000 metric tons. We have used the latter figures. First, we were not allowed to copy or quote the former official statistics. There is an official regulation which prohibits making official documents public until three years after their printing for internal bureaucratic circulation. Second, the discrepancies are very spotty and literally minimal. Third, we have wanted to ensure the uniformity of data sources. The results are shown in Table 1.

First, the high value of the correlation coefficient between the estimated and observed outputs, R, indicates the overall validity of the model.

Second, all the values for the incremental or decremental factor a are less than 1. This means that the state values gradually decrease.

Third, parameter b_0, which indicates the impact of the 1962 policy intervention on the state variable, manifests a great variety.

Fourth, of all the values for b, which indicates the lagged impact of the policy intervention on the output variables, only b for the SIP equation has a negative value. This means that the policy intervention of 1962 has continously decreased the SIP since 1962 despite the one-shot positive impact of the 1962 intervention, as is revealed by the large positive value for b_0 in the SIP equation.

Fifth, the relatively small value of R for the SP equation indicates that SP has been

TABLE 1

ESTIMATED COEFFICIENTS OF THE STATE SPACE EQUATIONS MODEL FOR THE JAPANESE INITIAL PROPOSAL FOR THE JAPANESE CATCH, JIP, THE SOVIET INITIAL PROPOSAL FOR THE JAPANESE CATCH, SIP, THE AGREED QUOTA FOR THE JAPANESE CATCH, AQJC, AND THE SOVIET PLAN FOR THE SOVIET CATCH, SP.*

	JIP,	SIP,	AQJC,	SP,
$-a$	.853	.827	.850	.830
b	5.291	−1.736	2.054	5.812
b_0	52.65	80.74	68.48	21.21
c	.00	−.31	.63	−.87
R	.87	.92	.94	.82
R^2	.76	.85	.88	.67

* State variable = $[bz^{-1}/(1 + az^{-1})]U_t + b_0 U_t + [z^{-1}/(1 + cz^{-1})]\xi_t$ where state variable is JIP, SIP, AQJC or SP.

less constrained by the structure of bilateral conflict resolution processes. SP is more strongly constrained by the economic and political imperatives of the Soviet Union.

Sixth, the values of parameter a for the JIP, AQJC and JIP equations are ranked in that order. Despite the policy intervention of 1962, JIP continued to be the highest and SIP the lowest with AQJC standing in the middle. The same observation is made about the rank order of parameter b for the JIP, AQJC and SIP equations.

Figs. 1–4 illustrate the similarities and differences between the observed and estimated outputs.

First, there is the basic fit of the estimated outputs to the observed outputs. The estimated outputs follow the observed outputs fairly closely.

Second, the piston-like movement of the observed outputs due to the two-year harvest cycle, which is derived from the two-year biological cycle of ocean trout, is closely followed by the estimated outputs in the AQJC and SP equations, but not closely followed in the JIP and SIP equations. The main reason for the failure of the piston-like movement in the latter two equations is that the observed outputs themselves manifest irregularities more often in the latter two equations than in the former two.

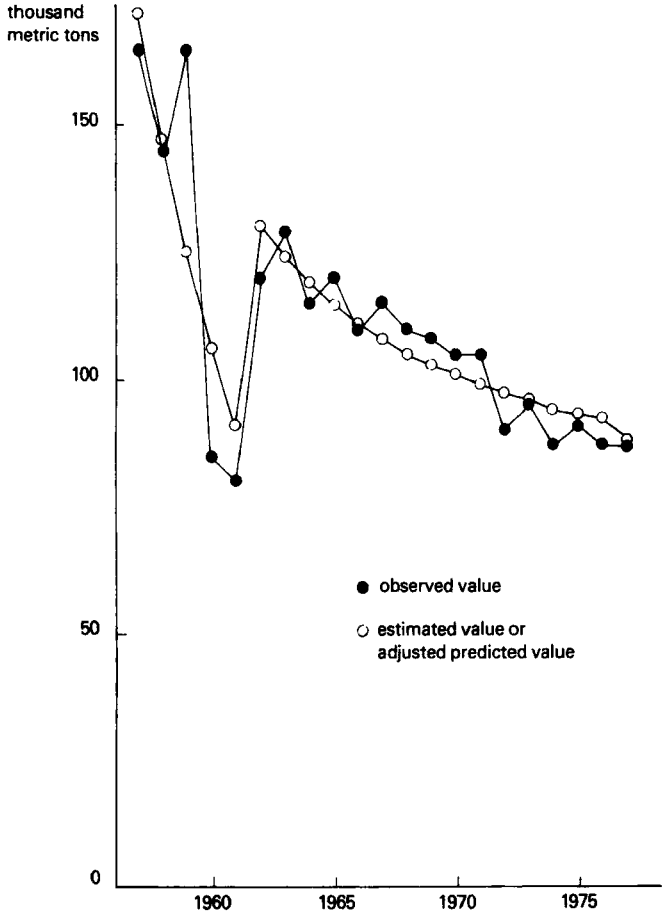

FIG. 1. The observed (1957–1977), estimated (1957–1976) and adjusted predicted (1977) values for the Japanese initial proposals for the Japanese catch, JIP. There is a two-year cycle in the observed values due to the two-year life cycle of ocean trout. In 1962 the jump is due to the drastic expansion of the regulated areas in the Northwest Pacific.

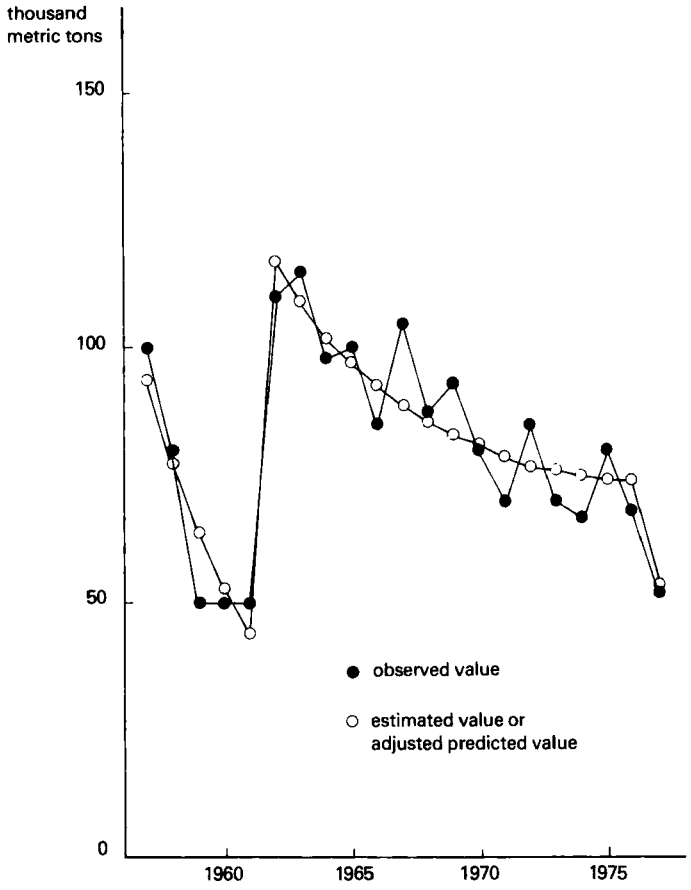

FIG. 2. The observed (1957–1977), estimated (1957–1976) and adjusted predicted (1977) values for the Soviet initial proposals for the Japanese catch, SIP. There is a two-year cycle in the observed values due to the two-year life cycle of ocean trout. The jump in 1962 is due to the drastic expansion of the regulated areas in the Northwest Pacific.

For example, the JIP outputs of 1961 and 1969 and the SIP outputs of 1959, 1961, 1971, 1972 and 1973 show a move contrary to the two-year regular harvest cycle. The estimated JIP and SIP outputs, disturbed by these irregularities, did not follow closely the observed outputs at each time point however closely the estimated outputs as a whole follow the observed outputs.

Despite the partial failure, it must be stressed that the overall performance of the model is basically sound. The difference between the observed and estimated outputs does not exceed 10,000 metric tons, which is between ten and 20 percent of the total, in any one of the above pointed anomalies.

Prediction of the 1977 negotiation outcomes

On the basis of the model for the 1957–1976 negotiations we have attempted to predict the negotiation outcomes of 1977 (see Table 2 and Figs. 1–4). An attempt has been made to see the extent of the structural transformation of the Soviet-Japanese fishery negotiations caused by the exogenous change called the "landslide of unilateral claims for 200-mile jurisdiction." In other words, we would like to see whether the Soviet-Japanese fishery negotiations have been qualitatively transformed by the partial changes in the five structural components of the negotiations. If the predicted

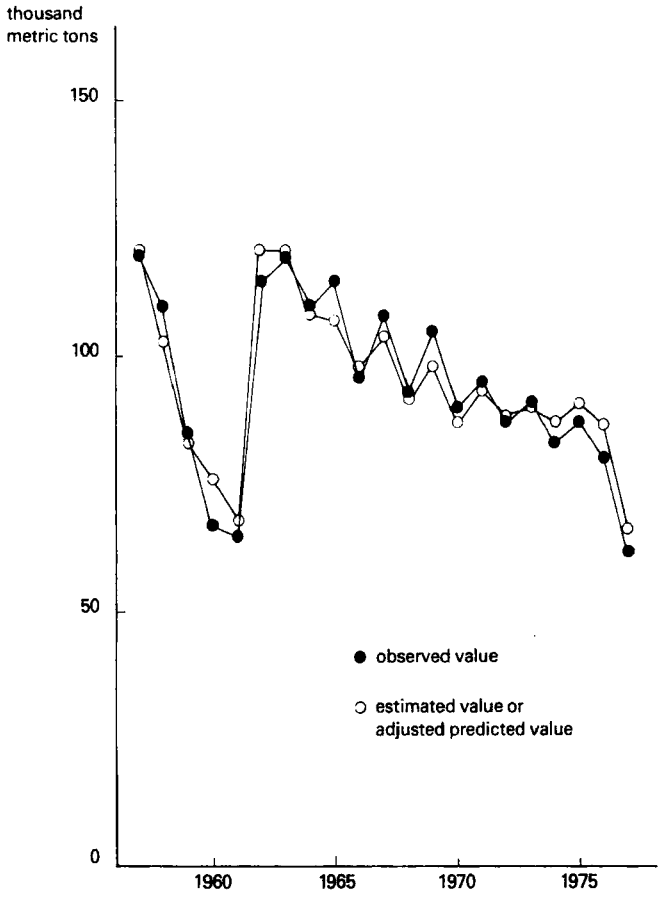

FIG. 3. The observed (1957–1977), estimated (1957–1976) and adjusted predicted (1977) values for the agreed quota for the Japanese catch, AQJC. There is a two-year cycle in the observed values due to the two-year life cycle of ocean trout. The jump in 1962 is due to the drastic expansion of the regulated areas in the Northwest Pacific.

outcome is significantly similar to or different from the actual outcomes, then it can be concluded that there has been no or some fundamental change in the conflict resolution process which was practiced during the 20-year period.

Eq. (6) is substituted for Eq. (7) by cancelling out the state variable X_t to get the input-output representation. The following is obtained by disregarding the error term of Eq. (8) for the purpose of prediction:

$$(11) \quad Y_t^* = -a\,Y_{t-1}^* + b\,U_t^* + b_0 U_t^* + b_0 a U_{t-1}^*$$

where

TABLE 2

PREDICTION OF THE 1977 NEGOTIATION OUTCOMES (THOUSAND METRIC TONS).

1977		JIP$_t$	SIP$_t$	AQJC$_t$	SP$_t$
actual value	A	87.0	52.0	62.0	—**
predicted value	B	87.24	71.67	84.10	69.04
		(87.24)*	(68.47)*	(80.33)*	(47.80)
adjusted predicted value	C	87.24	53.67	66.10	—**
difference	C-A	.24	1.69	4.10	—**

* The estimated values in parentheses are those obtained from the model which does not incorporate autoregressive terms except for the JIP$_t$ equation in which the autoregressive terms were not introduced. This linear model without the autoregressive terms cannot distinguish between good harvest and poor harvest years, thus resulting in bad predictive performance, again except for the JIP$_t$ equation.

** SP was not revealed in the 1977 negotiations.

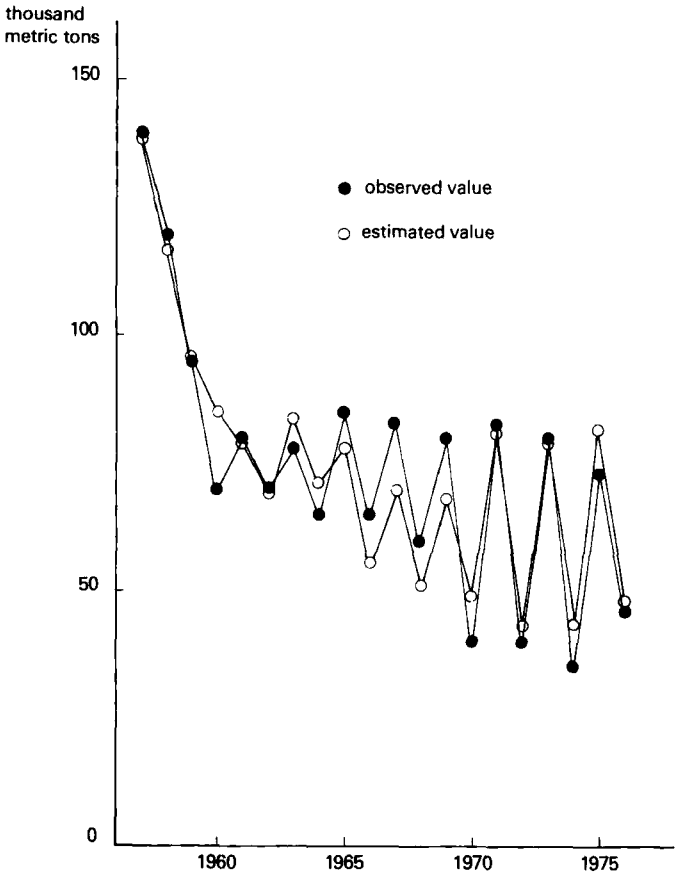

FIG. 4. The observed (1957–1976) and estimated (1957–1976) values for the Soviet plan for the Soviet catch, SP. There is a two-year cycle in the oberved values due to the two-year life cycle of ocean trout.

$$Y_t^* = Y_t + c\,Y_{t-1} \tag{12}$$

$$U_t^* = U_t + c\,U_{t-1}. \tag{13}$$

Eq. (11) can be simplified for the years after and including 1962 because $U_t = 1$. In other words, Eq. (14) is valid for 1962–1976.

$$Y_t = -(c + a)\,Y_{t-1} - ac\,Y_{t-2} + (b + b_0 + b_0 a)(1 + c). \tag{14}$$

One modification must be added to the predicted outcome. The Soviet extension of the 200-mile fishery zones and exclusion of Japan's salmon catch fishing boats and factory ships within the 200-mile zones has resulted in an increase in the banned areas, a considerable decrease in the regulated areas and, thus, a decrease in the amount of salmon catch allowed in the area. Japan's salmon catch in the Soviet 200-mile zone generally is estimated to be 18,000 metric tons. In order to take this into account, the 18,000 metric tons is subtracted from the predicted outcomes for the SIP and AQJC of 1977 (line *B* of Table 2). The subtraction yields the "adjusted predicted value" (line *C* of Table 2). Since the JIP of 1977 was presented when Japan had not yet succumbed to the Soviet demand to exclude Japan's salmon catch in the 200-mile zones, it is not necessary to subtract the 18,000 metric tons from the actual JIP of 1977.

The predictive performance of the model for the 1977 negotiation is very good. The differences (line *C*–*A* of Table 2) between the actual (line *A* of Table 2) and adjusted predicted outcomes (line *C* of Table 2) are generally very small, ranging from 240 metric tons to 4,100 metric tons. It is safe to conclude from this predictive exercise that

the Soviet-Japanese fishery negotiations, as the process for fishery conflict resolution, have not been altered significantly. This is true also in 1977 when the fishery negotiation was linked with the territorial issue and became highly politicized.

As far as the fishery outcome is concerned, nothing changed fundamentally. The conflict encapsulating process that had been developed and adhered to by the Soviet Union and Japan worked well in 1977 as well. What, then, changed? In short, high politics became salient and dominated the whole atmosphere.

The Soviet Union's reversal of its position on the existence of the territorial problem with Japan, since the Tanaka visit to Moscow in 1974, and the Japanese tenacious insistance on its irredentist claim to four Southern Kurile Islands brought about the extremely politicized and prolonged negotiations. Despite this, however, both the Soviet Union and Japan did not dare to dispense with the fishery conflict resolution process.

The Soviet Union needs a friendlier Japan as well as the sardines which it catches within Japan's 12-mile territorial waters. It has to accommodate Japanese fishing in the Northwest Pacific in one way or another. The Japanese government must avoid a position which would cause substantial unemployment among fishermen and at the same time it cannot possibly abandon the claim to the Southern Kurile Islands. This would increase the possibility of the downfall of the government because of the anti-Soviet nationalistic upsurge among all the political parties, both the government and opposition alike (*Nihon Keizai Shimbun,* 1977; Naya, 1977).

Both these problems could not be left to run their course apart from policies precisely because of the political fragility of the Fukuda government which faced the imminent Upper House elections in July 1977. Thus, the Japanese government brought up the territorial issue suddenly in the midst of the fishery negotiations and posed two alternatives, territory or fish, to the Japanese people. This stance effectively silenced the discontented fishermen who were overwhelmed by nationwide anti-Soviet, nationalistic, irredentist upsurge (Naya, 1977).

Having silenced the fishermen, the Fukuda government came to what the Soviet Union has called a "pragmatic, business-like approach" to the fishery negotiations, leaving high political issues to the few fishery negotiations with the Soviet Union, which would be held later in 1977 and thereafter.

In addition to the imminent national election factor, another imminent and disturbing problem confronted the Japanese government in the negotiations. This was Kosygin's allusion to Finland as a desirable model for Japan during the negotiation. He was, in effect, urging Japan to become "friendlier and more practically oriented" toward the Soviet Union. The message seemed to be "Give up the territorial claims, and then we can make a deal on the fishery issues" (Maude, 1976).

Given the rapidly changing security environment around Japan, the weakened commitment of the US to the Far East and the growing Soviet naval power in the Pacific as well as in other parts of the world, Kosygin's allusion to Finland sounded ominous to some and led others to conclude that the ultimate Soviet intention toward Japan had been laid bare. For all the factors mentioned above, there is some uncertainty remaining for future Soviet-Japanese relations despite the continuity of the 1977 fishery negotiation outcome with those of the 1957–1976 period.

CONCLUSIONS AND IMPLICATIONS

Having located the Soviet-Japanese fishery negotiations between 1957–1976 in the broader perspective of emerging ocean politics, we have constructed a time-series model of negotiation processes and outcomes to show that the negotiations can be characterized best as the politics of decrementalism or the opposite of incrementalism.

First, we have made a brief historical overview of the Soviet-Japanese salmon catch negotiations to show how a conflict encapsulating or conflict regulating process was initially institutionalized and then reproduced for the period of 1957–1976.

Second, to show more precisely that the Soviet-Japanese salmon catch negotiations can be characterized as the politics of decrementalism, we have identified the five major structural components of the negotiations which, when combined, have helped create the politics of decrementalism.

Third, we have attempted to substantiate empirically this argument by constructing a time-series model of negotiations. A state space equations model has been constructed to show the nature and characteristics of the decremental outcomes of the negotiations between 1957–1976 with the major policy intervention of 1962 taken into account. Furthermore, the model has been used for predictive purposes as well. The outcome of the 1977 negotiations was predicted on the basis of the parameters recursively estimated from the 1957–1976 data set. The result is that the model's predictive performance is remarkably good in that its predicted values are grossly similar to the actual observed values for the negotiation outcomes.

From the predictive performance for the 1977 negotiation outcomes, some implications for conflict and its resolution in the context of Soviet-Japanese relations have been drawn. The implication for future Soviet-Japanese relations is that a fairly predictable, largely pragmatic conflict management between them will basically prevail in their bilateral relationship. The security considerations of both countries may prove to be a disturbing factor at a time in which some uncertainty remains about the US military commitment in the Far East and in which growing Soviet naval strength arouses concern among some quarters around the globe.

More specifically for the fishery conflict management between the Soviet Union and Japan, the politics of decrementalism will prevail in the foreseeable future even if the decrement increases far more than it has in the past. The basic five structural components will be partially modified by high political issues like security and international issues like the 200-mile jurisdiction (Keohane & Nye, 1976). Such issues will be intermingled and intertwined with purely bilateral, low political issues. Under the new fishery agreement, the 1978 negotiations ended with the drastic decrease of the Japanese quota, i.e., 42,500 metric tons.

The implications of this research to conflict and its resolution in the emerging ocean order are:

(1) The basic conflict management process will be more bilateral than universal or multilateral due to the prevalence of a unilateral approach to the new ocean rule making.

(2) The nature and characteristics of such bilateral arrangements will vary from case to case because a new Law of the Sea which might be concluded in the foreseeable future will not be able to provide specific and concrete guidelines for individual maritime conflicts precisely due to its universality and comprehensiveness.

(3) As far as the fishery negotiations are concerned, accommodation of fishery states by coastal states will be made insofar as similar conditions for decremental politics are encountered in other fishery/coastal bilateral situations while the politics of decrementalism will accelerate more than in the past.

The relevance of this research to general systems theory should be unambiguous. The subject this research has dealt with epitomizes the kind of phenomenon in which decremental politics is played as adjustment processes among bilateral subsystems. When a certain number of conditions are encountered, such as the depletion of resources, the common commitment to the same principle, the asymmetrical relationship in commitment to and control over resources and the institutionalized setting for decision—a decremental politics is observed. At a time of economic trouble, it should not be difficult to find cases for which the line of theorizing we have shown in this paper can be further developed.

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(Manuscript received September 23, 1977; revised June 20, 1978)