

PATTERNS OF ACCESS TO THE WORLD OF FISHERMEN

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ABSTRACT

Both accesses to and mobility within the world of fisheries depend on two conflicting forces. On the one hand, one becomes fisherman and one moves ahead in the occupation because one is born in a coastal village, one originates from a fisherman's family and one has learned the trade from within. On the other hand, one becomes fisherman because the skills acquired at school prepare to face the various uncertainties associated with fishing activities. The data collected here suggest that a) the first force explain the professional trajectories of skippers, b) the second one accounts for the careers of mechanics (*motoris*) and c) the two opposite forces illuminate the social diversity of unskilled sailors. With the current innovations that affect the fleet of purse seiners and with the accentuated disparities in the growth rates of Javanese economic and demographic structures, the contrasts opposing the patterns of mobility experienced by skippers and their *motoris* should decline. Further, fishermen communities should lose progressively their specificity and their identity, fisheries becoming just another type of economic sector.

KEYWORDS : formal schooling, parental background, skill level.

ABSTRAK

Akses ke dalam maupun mobilitas di dalam dunia perikanan tergantung pada dua kekuatan yang saling berbenturan. Di satu sisi, seseorang menjadi nelayan dan lainnya melangkah maju dalam kegiatannya, sebab seorang dilahirkan di sebuah desa pantai, seorang yang berasal dari suatu keluarga nelayan dan seorang lainnya telah mempelajari perdagangan perikanan. Di sisi lain, seseorang menjadi nelayan sebab berbagai keterampilan yang diperoleh di sekolah siap untuk menghadapi berbagai ketidak-pastian yang berkaitan dengan aktivitas-aktivitas penangkapan. Data yang terkumpul menunjukkan bahwa : a) kekuatan yang pertama menjelaskan perjalanan profesionalisme nahkoda; b) kekuatan yang kedua berkaitan dengan karir teknisi mesin; dan c) kedua kekuatan yang berlawanan tersebut menjelaskan keragaman sosial dari pelaut yang tidak terampil. Dengan adanya inovasi baru yang mempengaruhi armada pukat cincin, dan dengan penekanan yang berbeda dalam laju pertumbuhan ekonomi di Pulau Jawa dan struktur demografi, maka diharapkan pola kontras yang berlawanan dari mobilitas yang dialami oleh nahkoda dan teknisi mesinnya dapat dikurangi. Selanjutnya, bila masyarakat nelayan secara berangsur-angsur melepaskan spesifikasi dan identitasnya, maka perikanan hanya akan merupakan salah satu bentuk dari sektor ekonomi.

KATA KUNCI : pendidikan formal, latar belakang keluarga, tingkat keterampilan.

Managing the uncertainties generated by participation in fisheries involves two distinct strategies. The first strategy is based on the “tacit knowledge” acquired over the years by the occupational community, and hence, on the body of practices that are supposed to guarantee successful trips and reassure fishermen as to the validity of their endeavours. Correspondingly, managing the uncertainties attached to the work of fishermen should privilege tradition and the ensuing forms of on-the-job training. As a result, individuals who reach the apex of the fishermen’s hierarchy should be originated from a fisherman’s family and/or have been living long enough in a sea related environment to learn vicariously the skills required from successful skippers. Indeed occupational success depends on the technical and social recipes transferred across generations. The lower the pace of changes in fisheries and the more endogenous these changes, the more heavily communities of fishermen should rely on tradition and on various types of/on the job training in their modes of adaptation. The more likely it is, then, that occupational success will be monopolised by the sons of fishermen and/or those individuals who have spent all their lives on the shoreline.

Alternatively, success at sea may be a function to the extent which fishermen adapt to unexpected situations. As both formal schooling and occupational mobility stretch farther the boundaries of imaginary worlds and provide individuals with a sense of their relativity, they should facilitate the acquisition of a broader and more differentiated repertoire of responses to the challenges met at sea. Hence, those individuals reaching the apex of the hierarchy should be those with the highest levels of educational attainment and the greatest diversity of prior occupational experiences.

The steeper the slope of the changes that affect both means of production and the distribution of the catch, the more these communities will be induced to seek exogenous solutions to the ensuing problems met. The more likely it is, then, that the most successful crewmen will be those who have climbed the highest rungs of the academic ladder and have acquired the greatest diversity of occupational experiences.

Our purpose is to explore how the significant innovations which have affected the world of purse seiners operating in the Java Sea since the last decade modify the balance that individuals and communities establish between the two strategies of adaptation. Larger boats require more sizeable crews, but also parallel shifts in the modes of division of labour operating aboard the new production units. In short, larger boats mean also new rules. Further, these heavier investments require the rapid adoption of innovations facilitating trips that last longer and are more profitable. In other words, boat owners must seek a labour force willing and able to adapt easily to an ever changing environment. Thus, the issue is to ascertain the processes by which owners and their wage earners retain pre-existing strategies when facing a new situation, adopt new solutions to fit new technical and social problems, or mix old and new patterns of responses to the risks met.

A first evaluation of the dynamics at work consists in comparing the social trajectories of individual fishermen in function of their current position in the occupational hierarchy. Thus, we contrast the social, educational and occupational background of unskilled deck hands (*ABK*) with the corresponding characteristics of their more qualified counterparts (*juru aru*, *juru lampu*, *motoris*) all the way up to those of skippers (*nakhoda*).

METHODOLOGY

Our assessment of the relative stress placed on the two strategies used to cope with the uncertainties of fisheries involves two sets of data. The first set concerns educational, residential and social information collected from fishermen living in three villages located close to Tegal, Pekalongan, and Juwana, the three major harbours of the Java northern coastline. The second set pertains to the equivalent information collected from the crews of 21 large purse seiners whose home port is Juwana. Convergence in the results obtained through these two surveys are particularly convincing since the sampling and interviewing techniques used in both cases differ.

Insofar as the attainment of fishermen reflects, at least in part, their accumulation of tacit knowledge, individuals who are locally born, originate from the shore and above all, belong to a fisherman's family should enjoy more chances than their counterparts coming from other social environment to reach the top of the hierarchical ladder.

As far as the crews of the 21 boats operating from Juwana are concerned, not less than 55 per cent of the skippers were born in Bendar, a village near the harbour, against 38 per cent of their assistants, 32 per cent of their *motoris* and 5 per cent of the deck hands. In short, the pressures exerted on the labour market induce a growing number of "outsiders" to seek employment in a sector such as fisheries. The same trends are confirmed in the three-village survey. The lack of mobility between places of birth and current residence characterises over two thirds of the skipper but three fourths of the unskilled deck hands. In other words, a local origin does not guarantee automatic success in the world of fisheries. Further, as far as this particular population is concerned, the "cosmopolitan" orientations generated by geographic mobility prevail among *motoris*. Not less than 59 per cent of the chief *motoris* have moved at least once during their life as opposed to only 25 per cent of the *ABK*. The "cosmopolitan" orientations of *motoris* can easily be accounted. *Motoris* working on purse seiners learn their trade in distinct environments, and they transfer their skills across differing types of motors (notably, those of various types of trucks refurbished to fit the requirements of local fishing boats).

The significance of the tacit knowledge informally transferred as a prerequisite to the occupational success of fishermen is confirmed by the large number of skippers who are sons of fishermen themselves (Tab. 1). Regardless to the sample considered, skippers are significantly more likely than the remainder of the fishermen's population to have learned their trade from their fathers. Further, since skippers have more brothers and sisters than unskilled deck hands (4.95 against 3.86), they probably originate from wealthier families than the latter.¹

Table 1 : Paternal occupation of purse seiners' crewmen by current status

(results of two independent surveys)

Jabatan yang bersifat turun-temurun dari bapak ke anak laki-laki dari anak buah kapal menurut status yang ada sekarang

(hasil dari dua survey yang berbeda dan saling tidak terikat)

Percent fishermen's sons	<i>ABK</i>	<i>Juru</i>	<i>Wakil motoris</i>	<i>Motoris</i>	<i>Wakil nahkoda</i>	<i>Nahkoda</i>
1) three villages	51.6	45.9	-	47.1	92.3	89.4
2) 21 purse seiners	35.6	32.0	43.5	54.6	52.4	70.0
N1 (fishermen)	64	37	4	17	17	19
N2 (fishermen)	104	50	23	22	22	20

Of course, the additional chances of reaching the top of the hierarchy that result from growing up in a family of fishermen contribute also to explain the higher incomes of individuals originating from such particular circumstances. Those fishermen who are born of a father with the same occupational status earn almost twice as much as their colleagues less immediately familiar with the sea. Yet, the very fact that the higher mean of their earnings is accompanied by a higher standard deviation of the corresponding distribution suggests that the influence of relevant paternal experiences is a necessary but insufficient condition for reaping appropriate economic rewards. Indeed, these experiences also accentuate the gap between gifted and talentless individuals (Tab. 2).

¹ This suggests that there is a systematic pattern of social reproduction at work in this segment of the Javanese society, since we observe that the current generation of skippers continues to have more children than their unskilled counterparts.

Insofar as formal schooling provides access to abstraction and to “thinking about thinking”, it represents a significant part of the first strategy to manage risks. In other words, it widens the repertoire of answers stocked by the relevant categories of individuals to cope with unknown and unexpected situations (Stinchcombe, 1986). Yet, as shown clearly by Table 3, to climb higher in the educational hierarchy does not constitute a guaranteed passport to climb higher in the world of fishermen. Regardless of the sample examined, skippers have a lower educational achievement than their *motoris* or than the most skilled elements of their crews. Further, In the case of the 21 Juwana based purse seiners, these skippers are less likely than *motoris* (25 per cent against 36 per cent) to have obtained good grades in mathematics. Indeed, *motoris* and their assistants have acquired from school a narrower and more focused range of skills.

Table 2 : Income distribution by paternal occupation (in thousand rupiahs)
Distribusi pendapatan menurut jabatan yang bersifat turun-temurun dari bapak ke anak laki-laki (dalam ribuan rupiah)

	Fishermen	Other sea related job	Other
Overall yearly income			
Mean	2,541	1,429	1,363
Standard Deviation	2,625	423	1,494
Income due to sharing system (per trip)			
Mean	120	61	91
Standard Deviation	62	25	35
Range (1)	173	142	138
Standard Deviation	109	89	63
Income due to incentive (per trip)			
Mean	235	26	112
Standard Deviation	281	18	209
Range (1)	262	33	99
Standard Deviation	303	28	108
Number of fishermen (2)	89	7	56

(1) Difference between best and worst individual trips.

(2) The number varies after elimination of inappropriate cases.

At the bottom of the hierarchy, a further inspection of Table 3 suggests that the influence of formal schooling is Janus-like. As we could expect, almost half of the *ABK* interviewed in the three villages have not attended primary school or at least have not completed the relevant cycle of studies.

Table 3 : Formal schooling of seiners’ crewmen by status in the three villages’ survey (%)
Pendidikan formal menurut status anak buah kapal di survai ketiga desa i (%)

	<i>ABK</i>	<i>Juru</i>	<i>Wakil motoris</i>	<i>Motoris</i>	<i>Wakil nahkoda</i>	<i>Nahkoda</i>
Less than primary	46.8	29.7	-	29.4	76.9	63.2
Primary	12.5	8.1	-	23.5	15.4	21.1
Beyond primary	39.1	62.2	-	47.1	7.7	15.7
Number of fishermen	64	37	4	17	13	19

In the 21 seiners' survey, no less than one third of the *motoris* completed the three years of junior high school against 17% of the *ABK*.

The fact is also that not less than 39 per cent of these unskilled deck hands went beyond such a cycle. This relatively high concentration of unskilled individuals with higher levels of educational attainment reflects the quasi-universal lack of fit between educational and economic developments in many contemporary societies. Young individuals with a relatively high level of schooling join the ranks of unskilled deck hands because they have not yet found better opportunities in their current places of residence. Their involvement in the fishing world reflects their hope to find more rewarding jobs in an undetermined future, either in this very branch of activity as a result of current technological innovations, or in another economic sector where the skills taught at school are more readily in demand. For this reason, the effect of formal schooling on the income of unskilled deck hands is somewhat contradictory. Among *ABK*, educational attainment tends to enhance the average incomes owed to the incentive system, at least up to the completion of the primary cycle, but it has no effect on the incomes derived from the sharing system. In short, the academic experiences of the individuals located at the bottom of the hierarchy do not automatically provide them with proportionate financial rewards, but they enable them to display more easily skills that are suited to the current requirements of the means of production typical of fisheries (Tab. 4). Correspondingly, the higher the educational level of unskilled deck hands, the larger the standard deviation of the premiums that they receive.

Table 4 : Income of unskilled crewmen (*ABK*) by levels of formal schooling in the three villages' survey (in thousand rupiahs)
Pendapatan anak buah kapal (ABK) tanpa keterampilan tertentu menurut tingkat pendidikan formal di survai ketiga desa (dalam ribuan rupiah)

	No schooling	Some primary	Primary completed	Beyond primary
Overall yearly income				
Mean	864	882	863	1,082
Standard Deviation	187	213	391	365
Income due to sharing (per trip)				
Mean	n.a.	42	91	71
Standard Deviation	n.a.	33	62	65
Income due to incentive (per trip)				
Mean	n.a.	76	69	73
Standard Deviation	n.a.	26	30	20
Number of fishermen	7	23	8	25

To conclude, the impact of the social origin of fishermen on their occupational trajectory is far from being unequivocal. At one end of the continuum, most skippers seem to owe their success on the particular knowledge of the sea they have acquired through relatives and neighbours. On the other hand, *motoris* capitalise both the diversity of their residential experiences and their formal schooling to move ahead in the profession. In short, there are two distinct roads leading toward claiming competence, even though none constitutes a sufficient condition in this regard. Further, this “snapshot” should not mask the conflicting nature of the dynamics at work. On the one hand, as the increased size of boats requires them to operate more systematically for longer periods of time, boat owners attach a growing importance to the technical skills of their crews and it is most likely that these skills are acquired at school. On the other hand, despite the high rate of change prevailing among Javanese fisheries, their dynamics remain independent of the pace of educational development. Correspondingly, educational achievement is neither a necessary nor a sufficient condition for moving ahead in the hierarchy. The difficulties faced by younger cohorts of school graduates obliges them to enter any branch of activity, regardless of their aspirations.

As the particular and universal roads toward success tend to be mutually exclusive, one must seek to ascertain whether their effects cancel one another or, should they be positive, whether they take additive or multiplicative forms. The impact of residential, educational and familial experiences is mitigated through the number and the diversity of past occupational experiences. To have stuck to the same job during one's entire life is most often a characteristic of fishermen at the bottom of the hierarchy. Given the young age of many of the unskilled deck hands, this was to be expected (Tab. 5).

Table 5 : Mobility of crewmen by current status (%) in the three villages survey and twenty one purse seiners survey
Mobilitas anak buah kapal menurut status mereka saat itu (%) di survai ketiga desa dan dua puluh satu kapal purse seine

Less than four jobs	ABK	Juru	Wakil motoris	Motoris	Wakil nahkoda	Nahkoda
1 = 21 boats	86.5	66	52.2	40.9	33.3	25.0
2 = 3 villages	90.6	92	ε	58.8	69.2	52.6
N1	104	50	23	22	21	20
N2	64	37	4	17	13	19

Even when one controls for age, skippers and *motoris* have still held a greater number of jobs than their unskilled counterparts. This indicator of prior occupational experiences, however, is not sufficient, since it is difficult to distinguish the degree to which additional jobs are considered as symbols of a greater reliability or alternatively, of a greater psychological instability. To assess the role of the two strategies used to cope with risks, we must identify the nature of the jobs successively performed.

The data collected from the crew of the 21 Juwana seiners suggest that as one moves down the occupational ladder, individuals with a history of professional mobility have taken a chance on a greater variety of fields. Skippers and *motoris* have spent most of their life in activities concerned directly or indirectly with the sea. Alternatively, specialists and unskilled deck hands have had some experience in agriculture or in various forms of industrial life. A comparative analysis of the jobs held initially by the respondents of the three villages who have had several experiences in this regard when they entered the labour market yields analogous results (Tab. 6). Those individuals whose first job involved working aboard seiners are more likely to be currently skippers than to have remained at the bottom of the hierarchy. Half of the *nahkoda* (skippers) with more than one preceding job have started their career on a seiner as opposed to only 8% of the *ABK*. Alternatively, almost two thirds of the same *ABK* with a comparable occupational history worked initially in a sector other than fishing, an experience which characterises as well half of the *motoris* but only 6% of the *nahkoda* with the same occupational record.

Table 6 : Nature of previous types of employment by current status in the three villages survey
Keadaan dari berbagai jenis mata pencaharian sebelumnya dibandingkan dengan status saat ini di survai ketiga desa

	ABK	Juru	Wakil motoris	Motoris	Wakil nahkoda	Nahkoda
% first jobs on purse seiners	8.1	37.5	0.0	33.3	25.0	50.0
N(1)	37	24	4	12	12	18
% second jobs on purse seiners	31.6	40.0	66.7	81.8	33.3	62.5
N(2)	19	10	3	11	9	16

N(1) = included fishermen with at least two occupations

N(2) = included fishermen with at least two occupations

Insofar as this analysis shows the advantages attached to an early access to the world of fishermen, we have compared the nature of the second jobs held by our respondents with more than two preceding occupations. This analysis confirms the findings derived from the first one (Tab. 6). Chief *motoris* and *nahkoda* have joined the world of purse seiners earlier than their counterparts with lower qualifications.

Prior occupational experiences do not yield automatic rewards. The world of fisheries being marginal, the lessons learned from irrelevant geographic or professional environments are not easily transferable. Yet, this conclusion does not apply to *motoris* whose trajectories differ significantly from those followed by skippers. Since *motoris* are entitled to become skippers and since the dynamics operating require skippers to have successively performed the tasks that constitute each of the positions aboard, the population of such skippers may be expected to become increasingly heterogeneous. The older birth-cohorts rely on tradition to exert their authority, the younger ones being more dependent on their skill and hence, on the “modern” components of their imagination.

THE EFFECT OF AGE

In the world of fishing as in other communities, ageing represents a Janus-like force. It is synonymous with acquiring seniority and gaining additional opportunities for climbing higher rungs of the hierarchy. Ageing means also getting more easily tired and adapting less easily to techniques that evolve constantly.

The first face of ageing is evident here in the fact that 42% of the skippers included in the three-villages' survey and 35% of those serving on the Juwana 21 fishing boats are above 40 years of age. This first aspect of ageing is confirmed a contrario by the high incidence of unskilled sailors (*ABK*) who are less than 25 years old. Thus, one third of the deck hands of the 21 Juwana boats are under 20 years of age. The second aspect of ageing is also evident in the fact that a third of the *ABK* interviewed in the three villages are over 40 years of age and have been “selected out” to remain at the bottom of the same hierarchy. Indeed, the selection functions of age are confirmed by the relative concentration of skilled crew (*juru*) in the birth cohort under 25 year of age. Half of the *juru* interviewed in the three villages are under 25 years old and in the boats studied in Juwana, the corresponding percentage climbs to 58%.

Ageing is a necessary but insufficient condition for moving ahead in the hierarchy. This ambiguous effect of age is confirmed once measured success in monetary terms. The additional income earned by fishermen as a result of sharing of the boat's catch or of the premiums increases when one moves away from the lower rungs of the age hierarchy, but levels off for those forties who reach forty years. Passed this point, occupational seniority ceases to pay off automatically (Tab. 7). Correspondingly, the dispersion of the income distribution tends to increase proportionately.

Table 7 : Income distribution by age for the three villages survey (thousand rupiahs)
Distribusi pendapatan menurut umur dari ketiga desa survey (ribuan rupiah)

	Less than 25	Between 25 and 39	40 and above
Overall yearly income			
Mean	1,055	2,755	2,218
Standard Deviation	405	2,602	2,604
Income due to sharing (per trip)			
Mean	85	126	105
Standard Deviation	29	61	60
Income due to incentive (per trip)			
Mean	104	211	184
Standard Deviation	105	271	271
Number of fishermen	49	57	46

CONCLUSION

The analysis highlights the impact of the various aspects of the rapid transition undergone by the fleet of seiners in the Java Sea. Thus, patterns of mobility within the profession differ between skippers and *motoris*, the former getting more often their promotion as a result of the experience acquired in the "traditional" milieu, the latter obtaining more frequently their credentials through a combination of formal schooling and vocation training acquired in a more universalistic context. As boats get larger and as their productivity requires longer trips, the status of *motoris* is likely to be enhanced accordingly, which in turn should affect the homogeneity of skippers, an increasing number of them learning parts or the totality of their trade as *motoris*. The transition evoked here reflects primarily significant changes in the tools of production, these changes affecting both overall patterns of mobility within the profession at large and the differentiation of production units themselves. From early on the transition highlights the increasingly diverse nature of the human capital requested from fishermen and hence, the increasingly distinct segmentation processes operating in the corresponding labour market.

The main issue is to determine whether more traditional patterns of fishing will disappear altogether or whether this particular milieu will be ultimately characterised by the coexistence of distinct types of boats and gears as well as of "traditional" and modern or fast evolving fishing techniques.

However, this scenario is also affected by the changes that affect the educational scene and its interrelation with the labour market. As the individuals enrolled in post primary institutions become more numerous, the impact of formal schooling on the occupational world becomes more differentiated. Competition for entering the labour market as a whole is such that a larger number of school graduates are obliged to accept whatever job they may find and to enter the lowest rungs of the hierarchy. Further, the higher level of schooling of rank and fries can not but change prevailing rules for getting ahead in the profession. Again, we witness the growing segmentation of specific labour markets. Indeed, the changes that affect various institutional areas are rarely synchronised. As a result, there are divergence in the rewards that members of successive birth-cohorts are entitled to claim as a result of their educational or occupational experiences. Not only this, but these rewards also differ also among the members of a same cohort, since they are not able to respond uniformly to the challenges of technological innovations. This is because their respective employers do not adopt uniformly new tools or new techniques.

REFERENCE

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