

STOCKHOLM

A COMMUNICATION STUDY  
OF GOVERNMENT RELOCATION  
IN SWEDEN

Prel. Summary in English  
1972

Bertil Thorngren

Economic Research Institute  
Stockholm School of Economics  
Sveavägen 65, STOCKHOLM, Sweden

## AIMS AND BACKGROUND

### 1.1 Background

The possibility of quick and frequent face-to-face contacts is an often quoted reason for concentration of public agencies to the Greater-Stockholm area. This need for contacts partly refers to the mutual communications between the public agencies, partly to communications between public and other institutions, i.e. interest organizations, industry- and service functions.

### Task

The Delegation for Location of Public Activity, commissioned D. Eoon., Bertil Thornngren on the 11th of June 1971, to investigate the external contacts of 34 agencies. The task should partly be carried out in cooperation with the Committee for Analysis of Administrative Conditions for the Relocation of Agencies, at the Swedish Agency for Administrative Development.

### Aims of the study

The aim of the study was to provide the Delegation with a base for evaluation of:

1. The present situation regarding contact structure and contact frequencies between the agencies concerned and other organizations within and outside Stockholm.
2. The possibilities for these agencies to maintain these contacts in case of a relocation.
3. The conditions for clusters, i.e. groups of public agencies, which from a contact-viewpoint could also benefit by a location to the same region.

### Limitations

The study is strictly limited to communication questions. This implies that other questions of importance, in case of a relocation, e.g. staff questions, have only been dealt with exceptionally.

### 1.2 Main questions

The analysis will be presented in three steps, each of which referring to the three main purposes of the study.

The first step will focalize sizes and proportions. This description of the present situation only aims at making clear the volume of and the time spent in contact work and how large a proportion of the staff that actually was engaged in contact work, etc. Information of this kind could form a basis for general comparisons between the contact work and other conditions which have to be taken into consideration when deciding on a relocation.

In the second step attention will primarily be concentrated on differences between various forms of communication. The purpose is to distinguish between contacts that are particularly vulnerable at a possible relocation, those which could be maintained or be recreated through special actions and those which could be expected to remain intact also after a relocation. It is of special interest here to show what kind of actions are needed in order to maintain different kinds of contacts. This could for instance be accomplished by selecting appropriate new locations, by completing the possibilities of contact at new locations, and by developing the communication network or by centralizing cooperating units.

The third step aims at analysing such possibilities of "clustering" primarily of agencies and other public institutions which might be affected by a relocation but also of other organizations which have proved important from a contact-viewpoint.

In view of the three steps of analysis it is important to answer the following questions:

- a) Present situation, sizes and proportions  
 What is the volume of and time spent on contact work?  
 What proportion of the employees have external contacts?  
 What percentage of their total working hours is spent on external contacts?  
 What proportion of the contacts take place between the agencies?

- b) Contact analysis-conditions for a relocation  
 What kind of contacts are least vulnerable at a relocation?  
 What kind of contacts are most vulnerable?  
 What type of actions could be taken to maintain different kinds of contacts after a relocation?

- c) Clustering<sup>S/</sup>-conditions from a contact-viewpoint  
 What are the conditions for a joint location of agencies with particularly strong mutual connections?  
 What are the conditions for joint location with consideration taken to common contact needs with the rest of the environment?

1.3 Design and realization of the study

The study is based on experiences from a number of earlier contact studies in Sweden and Great Britain. These will be discussed more in detail together with the results of this study in section 2.2. In this subsection the scope, design and realization of the study will briefly be dealt with.

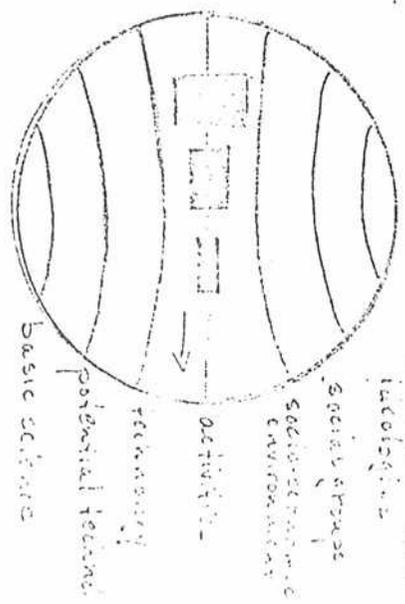
Scope

The study involved 34 Government offices and public agencies with in all 18 500 employees in the Greater-Stockholm area. As certain agencies were divided into units of work the total number of investigated units were 58. The division into units was made in cooperation with the Delegation and the agencies involved. The names of the 34 agencies and units within these could be found in appendix A.

The purpose was to engage all personnel within the mentioned agencies in the study. Only sections within the agencies, which were judged to have special tasks without any connection to contact activities, were excluded. As the exceptions were few 16 775 employees participated in the study.

Theoretical background

The study is based on the theory which has been described in Thomsgren 1970. This implies <sup>that</sup> heavy emphasis has been put up on the distinction of contact networks which link a studied unit to different parts of the environment. A more complete account of the details will follow in section 2.2, where also the results of earlier studies will be presented.



Design of the study

The investigation was based on the use of special contact-diaries for consecutive registration of all external face-to-face and telephone contacts. External contacts refer to all contacts with persons employed outside the respondent's own agency or unit of agency.

Time-table

The project was initiated in June 1971 and was completed in November 1971. The collection of data mainly took place during two 3-day-periods, September 13-15 and September 29 to October 1.

Figure 1. The Basic Model

For its survival every activity requires access to information regarding knowledge and values in its environment. The diagram of the so-called "development space" describes how the sources of this information can be located. The upper part contains value oriented; the lower part knowledge oriented; information which directly or indirectly could be used for the consecutive activity of the body in question. The activities, i.e. the utilization of physical resources, have here been placed in the middle section of the development space. Certain activities could presumably get all information from the close segments while others get more information from the peripheral segments of the development space.

The design of the contact-diary

The contact-diary, in its complete form, is presented in appendix B. Suffice it to note here that the demands upon time, reliability, validity etc, resulted in a contact-diary, which to a large extent was connected to earlier studies. These, as well as the results of certain preliminary comparisons, will be discussed in section 2.2.

The contact-diary contained 3 groups of questions: one main group intended to form the basis for the contact analysis, one "address" group intended to make clear who participated in contact exchange and, finally, one group of questions about journeys. The connection between the three groups is shown below (Fig. 2).

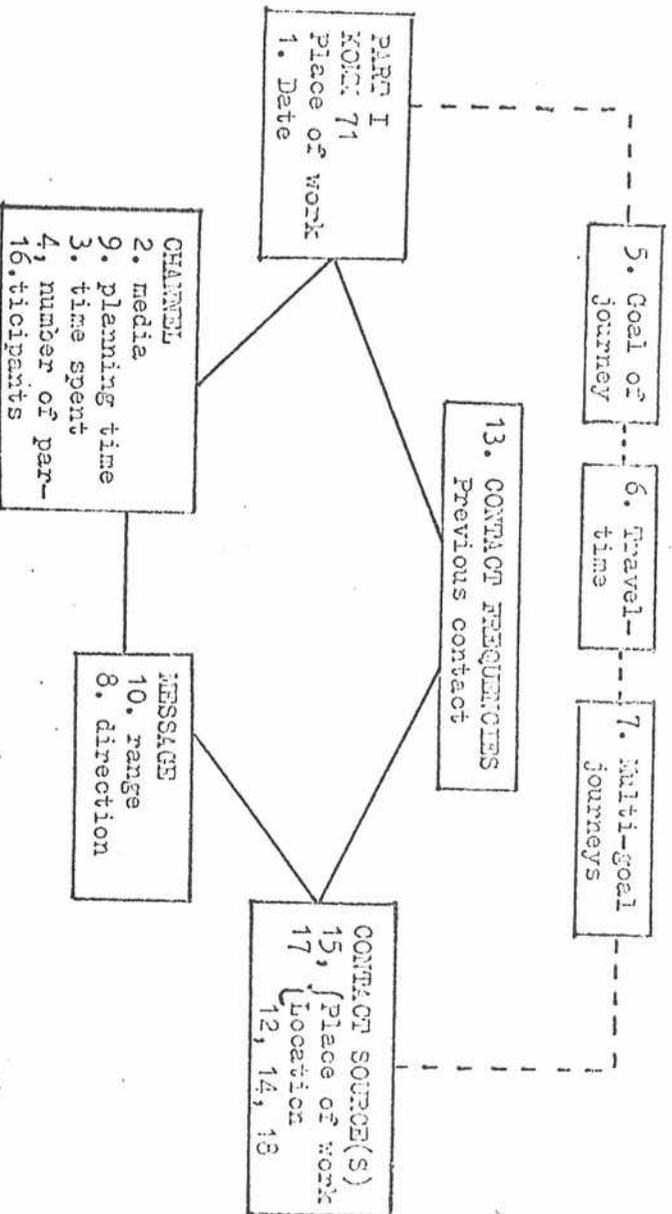


Figure 2

The main group contains questions about the form (channel) and content (message) of the exchange of contacts. Form of transmission (media), planning time, time spent and number of participants belong to this group, i.e. questions number 2, 9, 3, 4 and 16. Questions concerning contact frequencies, i.e. number 13 and 19 differ from the above mentioned as they aim at measuring previous contacts with each of the participants in each meeting. Questions about the range of the message, 10, and mutuality, 8, were formulated with the intention to make clear what type of contact exchange had taken place.

The main questions about the contact source, question number 15 and 17, with information on name and location were coded separately. Questions 14, 18 and 12 were mainly aimed at giving necessary complement and guidance at the coding. The question about journeys intended to measure choice of location, 5, and time for travel, 6. Particular stress was put upon the distinction of "multi-goal-journeys", i.e. business trips involving several locations or several meetings at the same place.

The sheets of the contact-diary were distributed and collected in a specially designed cover, which also contained information on how to fill in the form, and a journal for current notes (appendix C. )

#### 1.4 Control of the reliability of the material

A large number of controls were applied to the material to ensure discovery of systematic errors. Here only a few examples will be given.

1. The number of reported contacts with other KOM 71 agencies have been added for each participating agency. This number has then been compared to the number of contacts that all other KOM 71-agencies have reported to have had with each agency, to check that no omissions or over-estimations of contacts have been made. In table 1.1 contacts reported by each agency are given in column 1 and 3 and corresponding contacts stated by all other agencies in column 2 and 4. With few exceptions these two sums are quite compatible. This implies that the

registration of contacts has been made with great precision regarding both the number of contacts and the contact source.

2. The proportion of unanswered questions and of incongruous answers have been added for each particular question in the diary. With the exception of question 11 this proportion of errors is constantly low.

3. A particular form was also distributed to all participants to check the reports on absence due to illness, military service, etc (appendix D.). Non-explained absence or non-reported information on participation has been classified as drop-out. Drop-out due to illness, etc has reduced the number of actual effective "participant-days" with 10-20 % compared to the theoretically possible number of days. The conception of "participant days" refers to days when participants, according to given information, have declared their possibility to participate.

The easily influenced drop-out, i.e. the real drop-out, is throughout very low, between 0-2 % of all participants.

A complete account of the participants at the different agencies is shown in table 1.2, where drop-out is registered in column 5.

Table 1.1. Reported number of contact events between KOWI 71 agencies

	Tele-contacts		Face-to-face contacts	
	Col.1	Col.2	Col.3	Col.4
1. The Post Office Administration	489	473	109	103
2. The Swedish State Railways	467	467	100	168
3. The State Power Board	192	226	69	87
4. The National Road Administration	147	141	56	78
5. The National Telecommunications Administration	3199	3196	833	830
6. The National Labour Market Board	210	330	72	72
7. The Bank Inspection Board	16	15	2	4
8. The National Housing Board	33	46	8	16
9. The National Board of Public Building	146	226	75	135
10. The Civil Defence Board (2 units of work)	251	224	146	125
11. The Royal Fortifications Administration	105	66	60	51
12. The Civil Administration of the Armed Forces	96	132	43	39
13. The National Private Insurance Supervisory Service	8	11	0	0
14. The Board of Customs	132	117	131	35
15. The National Institute for Corporate Development	45	66	25	20
16. The National Environment Protection Board	217	204	169	121
17. The National Patent and Registration Office (3)	316	293	561	538
18. The Central Office of National Antiquities	189	203	217	214
19. The National Police Board (3)	741	694	302	293
20. The National Tax Board (3)	571	558	765	765
21. The National Audit Bureau (2)	436	358	355	311
22. The National Bacteriological Laboratory (3)	555	563	601	642
23. The National Board of Health and Welfare (3)	432	405	152	138
24. The National Board of Urban Planning	68	50	40	30
25. The Swedish Agency for Administrative Development	856	728	566	469
26. The National Agricultural Marketing Board	40	44	13	16
27. The National Price and Cartel Office	33	33	19	24
28. The National Institute of Radiation Protection	8	16	11	26
29. The National Road Safety Office	167	166	36	27
30. The Board of Technical Development	34	45	6	20
31. The National Board of Education (3)	1188	1161	1245	1279
32. The Transport Commission	9	27	8	20
33. The Equipment Board for Swedish Universities	18	46	18	25
34. The National Board of Economic Defence	76	111	21	35
	11.490	11.441	6.834	6.305

Table 1.2 Complete account of participants in %

Agency/ place of work	1 Days of invest- igation	2 Days of illness in % of 1	3 On leave in % of 1	4 Other absence in % of 1	5 Drop-out in % of 1	6 Participa- tion in % of 1
The Post Office Adm.	7 020	6	9	2	2	81
The National Road Adm.	4 260	3	13	2	0	81
The Nat. Telecomm. Adm.	16 440	6	11	3	0	80
The Tele-school	420	5	6	4	0	84
The Data Central	960	11	10	2	0	77
The District Office -E.s.	540	4	8	1	2	86
The Building division	1 104	11	12	3	0	74
The Nat. Labour Market B.	3 924	4	9	5	0	81
The Bank Inspection B.	336	5	5	1	0	83
The Nat. Housing Board	894	6	11	1	0	82
The Civil Def. B., Educ. d.	354	5	7	2	0	86
"-"-"-", Other d.	1 014	5	13	11	0	71
The Civ. Adm. of Areas Forests	440	2	4	3	0	90
The Insurance Sup. Service	264	13	6	1	0	80
The Board of Customs	1 212	3	12	0	1	84
The Inst. for Corp. Developm.	1 074	7	7	6	0	80
The Nat. Environm. Prot. B.	894	5	7	2	0	86
The Administrative div.	252	2	5	3	2	93
The Laboratory at Lovön	234	3	6	4	5	82
The Uppsala division	132	2	7	5	0	87
The Pat. and Reg. Office, 1	444	6	11	3	1	79
The Pat. + Library Services	1 428	6	11	3	1	79
"-", Other divisions	522	3	9	4	0	84
The Off. of Nat. Acquitt.	876	5	12	3	0	80
The Nat. Police B., Reg. B.	2 034	4	5	9	2	81
The Data division	276	2	8	2	0	88
Other divisions	1 620	4	9	2	0	84
The National Tax B., Tech. d.	594	6	10	4	1	80
The Tax division	506	8	10	2	0	80
Other divisions	1 290	5	12	5	0	73

Agency/ place of work	1 Days of invest- igation	2 Days of illness in % of 1	3 On leave in % av 1	4 Other absence in % of 1	5 Drop-out in % of 1	6 Participa- tion in of 1
The Nat. Audit B., Other div.	711	3	4	3	0	90
The Nat. Bacteriol. Lab.	240	5	3	0	0	92
The Chem. + Techn. + Econ. div.	558	3	9	1	1	88
Other divisions	798	5	8	3	0	84
The Nat. B. of Health & Welf.	684	7	15	6	2	70
Bureau PB4-5	354	6	6	5	1	83
Other bureaus	3 300	6	12	8	1	74
The Agr. for Adm. Dev., Inv. u.	750	4	6	5	0	85
Stocks & Bond Bureau	246	2	10	7	0	81
Other bureaus	546	5	8	6	0	80
The Agr. Marketing Board	810	6	12	2	2	77
The Nat. Price & Control Off.	990	5	10	5	1	80
The Nat. Inst. of Radiation P.	444	6	3	1	3	87
The Nat. Road Safety Office	618	7	9	8	0	76
The B. for Technical Dev.	540	6	10	3	0	82
The Nat. B. of Educ., U.S. DEPT	912	2	7	2	0	89
-"-, Unit L	816	3	7	3	1	86
Other units	2 046	4	10	3	2	81
The Transport Commission	90	7	0	3	0	90
The Equipm. B. for S. Officers.	222	3	3	0	0	94
The Nat. B. of Econ. Defense	606	3	7	1	0	89

## SUMMARY OF THE MAIN FINDINGS

2.1 PRESENT SITUATION - KOREA 71 AGENCIES

As was earlier pointed out, a first aim of the investigation was to give a picture of present contact patterns.

To illustrate these findings a few tables will first be shown as a basis for further analysis. They are based on the registered contact work during the two 3-day-periods of investigation. The introductory table (2.1.1) shows the total range of the contact work divided between the agencies. As certain agencies have been separated into subunits of work the reported number of investigated units are 58.

The following table (2.1.2) illustrates the external contact work divided according to number of employees, participants and actors within the 58 units. For explanation of the notations in the tables, see appendix E.

Analysis of the tables

Table 2.1.1 gives some rough estimates of the proportion of the contact work in the total time for work. In all, 20 243 external face-to-face and 98 743 telephone contacts have been registered. The reported time spent is 45 954 and 14 056 hours respectively. The number of participants in the investigation were 16 775. Their total working-hours could be estimated at 775 000 during the six days of investigation. This figure refers to normal time for work (7,5 hours/day). According to this comparison face-to-face and tele-contacts would require 6 and 2 % respectively of the normal time for work. Time for travel presently takes 2 % of the time, if divided between all employees. The number of actors, i.e. participants with face-to-face contacts, were 6 077. They devoted 13 % of their normal working-hours to external face-to-face contacts and 5 % of their time to trips. Preparation time and follow-ups within the own agency must of course also be taken into consideration.

Table 2.1.1 Total volume of external face-to-face and tele-contacts, number of trips and travel time, number of contact events and time spent for participating agencies.

Agency/ Place of work	Contact events Face-to-face/tele	Time spent (hours/min) Face-to-face/tele	Number of trips	Travel time (hours/min)		
The Post Office Administration, The Board of the Post Office Administration	1295	7527	2151, 22	938, 20	462	399, 32
The Swedish State Railways:	2040	12705	4941, 42	1644, 22	941	2667, 01
The State Power Board	1637	8120	5444, 35	1312, 00	780	1631, 37
The National Road Adm.	898	4126	2771, 43	570, 41	438	758, 24
The National Telecommunications Administration						
The Central Organization	2355	9736	7104, 46	1567, 04	1169	1691, 20
The Tele-school	50	231	56, 25	24, 54	23	18, 05
The Data Central	53	611	37, 51	67, 11	5	1, 50
The District Office-East sect.	214	977	820, 17	156, 22	130	169, 59
The Eastern Radio-division	159	460	477, 36	76, 23	131	106, 49
The Building division	115	1068	368, 19	172, 12	90	234, 05
The National Labour Market Board	786	6690	2038, 09	946, 41	428	615, 58
The Bank Inspection Board	160	331	501, 29	70, 47	86	91, 57
The National Housing Board	168	995	439, 07	143, 02	78	128, 35
The National Board of Public Building	754	2871	1400, 23	445, 24	351	345, 18
The Civil Defence Board	60	264	76, 45	30, 28	18	19, 50
The Educational division of the Civil Defence Board	123	496	359, 56	80, 03	68	120, 44
Other divisions of the C D B	730	2443	1480, 04	369, 03	307	508, 28
The Royal Fortifications Adm.	211	1569	417, 42	206, 23	93	76, 47
The Civil Administration of the Armed Forces	31	191	148, 17	31, 59	13	8, 58
The National Private Insur- ance Supervisory Service	296	2647	469, 20	298, 30	103	126, 22
The Board of Customs	298	1418	703, 20	254, 03	154	164, 11
The National Institute for Corporate Development						

Agency/ place of work	Contact events Face-to-face/tele	Time spent (hours/min) Face-to-face/tele	Number of trips	Travel time (hours/min)
The National Environment Protection Board				
The Administrative division The Laboratory division at Lövön	350 75	1460 163	188 48	316,40 109,47
The Environment-Hygienic div. The Uppsala division	82 76	149 85	25 14	33,05 10,18
The National Patent and Registration Office				
The Corporate division The Patent+Library divisions Other divisions	53 156 342	610 473 635	0 18 11	0,00 8,37 3,09
The Central Office of National Antiquities	662	989	244	239,41
The National Police Board				
The Regional bureau The Data division Other divisions	167 162 465	1785 77 2938	40 28 208	12,46 47,47 162,28
The National Tax Board				
The Technical division The Tax division Other divisions	89 70 162	533 1072 1207	39 24 79	34,42 42,49 90,54
The National Audit Bureau Division 1+2+Audit Bureau Other divisions	116 166	466 423	37 45	14,41 103,04
The National Bacteriological Laboratory	78	131	13	3,04
The Chemical+Technical+ Economic division Other divisions	201 229	683 714	68 69	20,22 63,03
The National Board of Health and Welfare				
The Medicine Bureau Bureau PB 4-5	92 73	474 284	35 43	40,06 43,36
Other bureaus	399	4299	139	121,12

Agency/ Place of works	Contact events Face-to-face/tele	Time spent (hours/min) Face-to-face/tele	Number of trips	Travel time (hours/min)		
The National Board of Urban Planning	146	889	287,37	180,43	55	60,59
The Swedish Agency for Ad- ministrative Development	483	747	813,19	127,00	186	129,33
The Investigation Unit	36	463	26,13	55,00	13	3,28
The Stocks- and Bonds Bureau	192	466	487,41	78,30	71	116,05
Other bureaus	194	760	475,22	108,29	58	71,28
The National Agricultural Marketing Board	132	1132	186,19	150,40	53	26,18
The National Price and Cereal Office	224	301	361,30	43,17	62	49,06
The National Institute of Radiation Protection	149	873	315,39	159,38	60	109,03
The National Road Safety Office	187	650	386,09	91,50	73	61,05
The Board for Technical Development						
The National Board of Education	750	1394	1251,12	224,05	431	414,59
Unit U+UJ	291	1110	562,11	134,51	90	110,40
Unit I	436	3312	743,04	413,54	123	173,27
Other units	46	179	65,34	27,35	9	4,17
The Transport Commission	118	653	206,59	90,14	38	24,26
The Equipment Board for Swedish Universities						
The National Board of Economic Defence	161	690	467,18	108,47	81	126,16
TOTAL	20.243	98.743	45.954,09	14.056,30	8.686	12.898,19

Table 2.1.2 Number of external contact events, time spent per employee and actors  
 within participating offices/agencies, face-to-face contacts

Agency	Number of employees (even terms)	Of which participated (even terms)	Of which were actors:	Contact event/employed	Time/emp-lovee	Contact event/actor	Sum actors
The Post Office Adm. The Board of the Post Office Administration	1530	1170	350	0,8	84	3,7	309
The Swedish State Railways	1820	1820	603	1,1	163	3,4	492
The State Power Board	1840	1840	626	0,9	178	2,6	522
The National Road Adm.	710	710	279	1,3	234	3,2	596
The National Telecom-munications Adm.							
The Central Organisation	2790	2740	875	0,8	153	2,7	487
The Tele-school	70	70	27	0,7	48	1,9	125
The Data Central	160	160	18	0,3	14	2,9	126
The District Office-East section	140	140	69	1,5	352	3,1	713
The Eastern Radio-div.	90	90	45	1,8	318	3,5	637
The Building division	230	190	46	0,5	96	2,5	480
The National Labour Market Board	660	660	232	1,2	185	3,4	527
The Bank Inspection Board	60	60	38	2,7	501	4,2	792
The National Housing Board	150	150	60	1,1	176	2,8	439
The National Board of Public Building	610	480	210	1,2	138	3,6	400
The Civil Defence Board							
The Educational Division of the Civil Def. Board	110	110	18	0,5	42	3,3	255
Other divisions of C D B	170	170	61	0,7	127	2,0	354
The Royal Fortifications Administration	820	770	239	0,9	108	3,1	372
The Civil Administration of the Armed Forces	270	260	80	0,8	93	2,6	313
The National Private Insurance Supervisory Service	50	50	10	0,6	178	3,1	690
The Board of Customs	200	200	94	1,1	101	3,1	300
The National Institute for Corporate Development	240	180	86	1,2	176	3,5	491

Agency	Number of employees (even tens)	Of which participated (even tens)	Of which were actors	Contact event/employee	Time/employee	Contact event actor	Time actor
The National Environment Protection Board							
The Adm division	150	150	92	2,3	390	3,8	636
The Lab. div. at Lovön	40	40	22	1,9	218	3,4	397
The Environment-Hygienic division	50	40	25	1,6	169	3,3	337
The Upsala division	40	20	18	1,9	103	4,2	223
The National Patent and Registration Office							
The Corporate div.	120	70	22	0,4	10	2,4	53
The Patent-Library div.	330	240	79	0,5	24	2,0	102
Other divisions	140	80	51	2,4	49	6,7	135
The Central Office of National Antiquities	220	150	99	3,0	187	6,7	414
The National Police Board							
The Regional bureau	220	210	58	0,8	71	2,9	269
The Data division	50	50	26	3,2	260	6,2	499
Other divisions	430	360	120	1,1	104	3,9	372
The National Tax Board							
The Technical division	100	100	30	0,9	110	3,0	366
The Tax division	100	100	31	0,7	63	2,3	202
Other divisions	300	220	57	0,5	103	2,8	542
The National Audit Bureau							
Division 1+2-Audit Bureau	100	100	41	1,2	180	2,8	439
Other divisions	120	120	47	1,4	261	3,5	667
The National Bacteriological Laboratory	100	40	23	0,8	34	3,4	150
The Chemical-Technical+ Economic division	230	90	44	0,9	40	4,6	211
Other divisions	230	130	62	1,0	132	3,7	489
The National Board of Health and Welfare							
The Medicine Bureau	120	110	31	0,8	109	3,0	422
Bureau P3 4-5	80	80	29	0,9	162	2,5	443
Other bureaus	520	520	143	0,8	96	2,8	349

Agency	Number of employees even tens	Of which participated (even tens)	Of which were actors	Contact event/employee	Time/employee	Contact event actor	Time actor
The National Board of Urban Planning	110	110	53	1,3	157	2,2	325
The Swedish Agency for Adm. Development							
The Investigation Unit	130	130	97	3,7	375	5,0	503
The Stocks- and Bond Bureau	50	40	12	0,7	31	3,0	131
Other bureaus	140	90	56	1,4	209	3,4	523
The National Agricultural Marketing Board	160	140	51	1,2	178	3,8	559
The National Price and Control Office	180	180	52	0,7	62	2,5	215
The National Institute of Radiation Protection	80	80	34	2,8	271	6,6	638
The National Road Safety Office	110	110	43	1,4	172	3,5	440
The Board for Technical Development	90	90	46	2,1	257	4,1	504
The National Board of Education							
Unit U+UY	200	150	125	3,8	375	6,0	601
Unit L	140	140	81	2,1	241	3,6	416
Other units	350	330	125	1,2	127	3,5	357
The Transport Commission	15	15	13	3,1	262	3,5	303
The Equipment Board for Swedish Universities	35	30	23	3,4	355	5,1	540
The National Board of Economic Defence	110	100	50	1,5	255	3,2	561
TOTAL	18.490	16.775	6.077	1,1	149	3,3	454

Translated into volume the external contact work thus contains, on the average, more than 1/5 of the normal time for work per more than 1/3 of the employees in the investigated agencies. The other 2/3 however, have presently no external face-to-face contacts.

Those figures, however, provide little information on the character of the contacts. Some of these could soon be re-established with new contact sources after a re-location, while others could be maintained by trips or by tele-communication. Others again could be dropped. The value of these "interrupted" contacts could be both lower and higher than the salary per hour of the participants. Some of these contacts could just be a result of the fact that an agency presently happens to be situated close to a certain contact source. In other cases the mere drop-out of a few contacts could jeopardize the development of a whole agency.

As could be seen from table 2.1.2 the contact work varies strongly not only between the agencies but also within these. In some cases the contacts are evenly distributed between most of the employees, in other cases a limited number of persons are responsible for all contacts. The proportion of actors, which is intended to measure this phenomenon, stretches from 10% to almost 90% of the employees in the 58 units.

This difference in the distribution of the work is reflected in the number of contact-events per actor. At the evaluation of this measure the proportion of actors must also be taken into consideration.

The study has revealed some common traits for the investigated 58 units. The connection between the agencies in KOMM 71 constitutes in most cases a very limited share of the total contact exchange. The average value is 10%, which could be compared to the fact that the agencies together employ approximately 20 000 persons, i.e. less than 10% of the total employment in the Greater-Stockholm area and less than 1% of the employment in the country as a whole. The contacts between the

different places of work belonging to the same agency are of course, counted at a percentage, more important but have not been included here.

The communication with the agencies in stage 1, i.e. agencies which are to be relocated beyond the metropolitan area, according to an Act of Parliament in spring 1971, is on the average only 3 %. This value could be regarded as low, even considering the fact that these agencies have less people employed, viz 6 000.

These resemblances, as well as the differences, between the investigated units, will be analysed in greater detail in connection with the discussion of clusters in section 2.3.

## 2.2 CONTACT ANALYSIS - CONDITIONS FOR CHANGING CONTACT NETWORKS

In the first step of the analysis the main purpose was to describe the scope of the contact work and its distribution among present employees, sectors and regions. Such an evaluation of contact volumes is necessary but not sufficient. Cost calculations will give grossly deceptive results if based exclusively on the present situation. Earlier experiences show that a relocated unit only could be expected to maintain some parts of its "old" contact network, after a relocation, while other parts disappear and new ones are developed.

On the basis of these earlier studies and after special adaptations of the material derived from KOMM 71 the differences between various contact networks will here be analysed. The section begins with some remarks from a study of the contact system of the Swedish National Industries Corporation before and after the relocation of the head-office to Eskilstuna in 1965. After a brief discussion of methods applied on the contact networks will follow, which were established in studies of Swedish and British commercial and industrial firms respectively (referred to as the industry studies).

~~Some~~ methods have been used in the analysis of data from KOMM 71, ~~and~~ the purpose of distinguishing contact networks with different conditions in case of relocation. Finally, a short comparison between all comprehensive contact studies will be made, that is the two industry studies, KOMM 71 and a present investigation at the Civil Service in London.

~~The~~ study of the Swedish National Industries Corporation in 1965-66 ~~is~~ centralisation of the head-office of the Swedish National Industries Corporation took place in March 1965. This gave an excellent opportunity to test the methods for contact studies which were then

being developed at the Economic Research Institute. 4 months before the relocation and 8 months after two identical contact studies were therefore carried out, the purpose of which were to study changes in the contact networks in connection with the relocation. Theory, methods and results are more thoroughly described in Thorngren, 1967. Only one aspect will be dealt with here, that is the drop-out and the origin of new contact sources. In this earlier study contacts were divided into three main groups. The first group consisted of "intermain" contacts, i.e. contacts between the head-office and production plants, one of which has been located in Eskilstuna for a long time (I-group). The second group included "economically controllable" contacts, i.e. contacts concerning buying or selling (E-group). The third group consisted of "economically uncontrollable" contacts, i.e. with other sectors of society for instance with ministries, central agencies and interest organizations (O-group). As can be seen from table 2.2.1 the total volume was practically unchanged despite the relocation. Nor did any noticeable change from face-to-face to telephone contacts take place. On the other hand the choice of contact sources was heavily affected. Parties from the Stockholm area have been replaced by parties from the new location. The effect however, differs in size for different types of contacts. The internal face-to-face contacts with the production unit in E have risen from 4 to 108 in a period of six days owing to the fact that the development work increased at this previously rather isolated unit.

Table 2.2.1 Relocation of contacts at the relocation of SWIC 1965  
A comparison between March 1965 and March 1966

<u>Party location</u>	0							
	Number	%	E	I	TOT			
<u>Greeter-Stockholm</u>	25	(64)	27	(67)	16	(39)	68	(57)
<u>Eskilstuna</u>	7	(18)	0	(0)	4	(10)	11	(9)
<u>Rest of Sweden</u>	<u>7</u>	<u>(18)</u>	<u>13</u>	<u>(33)</u>	<u>21</u>	<u>(51)</u>	<u>41</u>	<u>(34)</u>
	39	(100)	40	(100)	41	(100)	120	(100)

Face-to-face contacts, before the relocation (March 1965)

<u>Party location</u>	Number	O			E			I			TOT
			%								
Greater-Stockholm	20	(45)	12	(33)	11	(9)	43	(21)			
Eskilstuna	15	(34)	13	(36)	103	(80)	131	(63)			
Rest of Sweden	<u>9</u>	<u>(21)</u>	<u>11</u>	<u>(31)</u>	<u>14</u>	<u>(11)</u>	<u>34</u>	<u>(16)</u>			
	44	(100)	36	(100)	128	(100)	208	(100)			

Face-to-face contacts, after the relocation (March 1966)

<u>Party location</u>	Number	O			E			I			TOT
			%								
Greater-Stockholm	250	(68)	173	(55)	57	(10)	480	(38)			
Eskilstuna	33	(9)	10	(3)	128	(22)	171	(14)			
Rest of Sweden	<u>85</u>	<u>(23)</u>	<u>130</u>	<u>(42)</u>	<u>389</u>	<u>(68)</u>	<u>604</u>	<u>(48)</u>			
	386	(100)	313	(100)	574	(100)	1255	(100)			

Tele-contacts, before the relocation

<u>Party location</u>	Number	O			E			I			TOT
			%								
Greater-Stockholm	194	(56)	135	(46)	55	(9)	384	(31)			
Eskilstuna	64	(18)	39	(14)	142	(24)	245	(20)			
Rest of Sweden	<u>91</u>	<u>(26)</u>	<u>118</u>	<u>(40)</u>	<u>388</u>	<u>(67)</u>	<u>597</u>	<u>(49)</u>			
	349	(100)	292	(100)	585	(100)	1226	(100)			

Tele-contacts, after the relocation

The purely commercial contacts (E-group) had also to a great extent moved from the Stockholm-area to the Eskilstuna-area, mainly as a result of the choice of new sources of supply. The contacts with other sectors of society had not been replaced to the same extent. This part of the "old" contact network had been maintained through face-to-face contacts despite travel time of 2 hours in each direction

and despite availability of telephone communication. The particular results must obviously be analysed with great cautiousness since the comparison refers to a single unit where special circumstances have intervened. A follow-up study accomplished in 1967 indicates, however, that the tendency has been stable. A definite conclusion can be drawn from this particular case-study. A realistic evaluation of the effects of a relocation on the contact work must take into consideration that dramatic changes could occur in certain parts of the contact network while other parts remain remarkably stable both in time and in space.

This is the reason why calculations purely based on the present volume of the total contact work constitute a misleading basis for predictions of the future. (As has been pointed out, certain parts of the contact pattern will disappear completely after a relocation, while others remain intact and others again may increase or develop.)

What are then the possibilities of predicting such changes in the contact networks? There are several alternative ways to follow. One possibility is to study the number, size and position in space of conceivable contact sources. Certain contact sources could be classified as unique, for instance ministries, others exist in a limited number, for instance certain research institutions, while still others exist or could be established in most places, for instance various sources of supply. However, such a study does not reveal very much about the possibilities of exchanging information between different kinds of agencies. Access to specific research is necessary for certain activities while completely uninteresting to others. The need for contacts is specific. There can be a need for information from single individuals within a certain contact source, or specific combinations of contact sources in time and space. A description detailed enough to cover such conditions does not only risk to be practically unwieldy. The more details, the greater is also the risk that small changes will upset the total picture. The problem is to find a fundamental phenomenon which is universal and stable enough to be used as a common denominator for different agencies and contact sources.

The feature of the contact exchange could be said to be such a common denominator. The contacts of all agencies take place in a common environment, where technical possibilities of communication, social rules and not least accessible time are proportionately similar to all participants. Only a limited number of alternatives with externally fixed qualities are open to each individual. Is it a question of intensive exchange of information between a few actors or of seldom occurring meetings with many participants? Is it possible to plan the contacts in advance or do they occur by chance on the shortest notice? Could the exchange of information follow previously settled procedures or must it be improvised from case to case? Could each contact be regarded as a finished event or is it part of a long sequence of mutually dependent meetings, where the drop-out of one single contact or actor could ruin the exchange of earlier or later contacts.

#### Forms of cooperation between agencies and environment

To be able to evaluate the sensitivity of a contact network to a relocation it is not sufficient to know the contact sources and their present distribution. It is also necessary to take into consideration the character of the exchange of information, i.e. what type of cooperation that is going on between an agency and the contact sources in its environment. On the basis of earlier studies three different forms of cooperation will be analysed.

#### Program cooperation

A substantial part of the work of an agency is concerned with routine transactions with other agencies, organizations or individual citizens. Such a cooperation often takes place through well developed channels and involves simple questions and answers between particular employees. The framework is established. The demands on the contact network therefore are low. These networks are characterized by few participants, short planning time and short time spent. The contact mainly regards one single question and is seldom mutual. A person is asked a question and gives an answer.

### Planning cooperation

Another part of the work of an agency is concerned with changing and developing present activities within or without the agency.

This cooperation could demand more diversified and intensive contacts between several employees from different agencies and the rest of the environment. The contact network is often based on an earlier personal acquaintance between the participants. Each contact is part of a chain of contacts. The routine contact is maintained alternately by telephone and face-to-face contacts.

The demands placed on the contact exchange are great and the contact networks are more complicated. The number of participants are often more than two. Also, the contacts between two persons are placed in a relationship with each other where the sequence can be critical. As the contacts take place between a limited number of actors who meet frequently, the time requested and the planning time could be kept low, despite the fact that the exchange of information could involve several questions and demand high reciprocity.

### Orientation cooperation

This part of an agency's cooperation with the environment aims at creating a basis for future activities. This cooperation could be said to create conditions.

Formal orientation contacts can take the form of conferences, consultations or other meetings characterized by a large number of participants, long planning time and extensive contact time. The participants are often appointed representatives for an agency or institution. This could imply that many have not met before or that employees are introduced into earlier established groups.

Informal orientation contacts often are created at more formal meetings. They can concern the preparation or the following-up of more formal and planned meetings, but they frequently are connected to the time-table

of these. Both formal and informal orientation contacts are characterized by an extensive mutual exchange of information even though this exchange takes place only between a few of the participants. Several broad questions are being treated. The selection of questions as well as the number of participants are seldom restricted in advance. Certain participants could drop out while others appear in the last minute.

The possibility of creating new contact relations, which otherwise would not have come into existence, is therefore great in both cases. Some of these new contact relations could later become part of new contact sources in a more welldefined and intensive planning cooperation.

#### Contact studies in Sweden in 1968 and in Great Britain in 1969

The division into forms of cooperation is based upon the theory, which was briefly described in section 1.3. This theory has been tested against empirical data in two extensive studies. The first one was conducted at The Economic Research Institute in 1968 and included some ~~listed~~ companies in the industry and service sectors. Since the purpose was to cover different types of companies a number of firms were included from Stockholm as well as from Gothenburg, Sundsvall and Umeå. This study will from here on be referred to as KOM 68. Methods similar to those in KOM 71 were here used for the first time. The contact-diary as well as methods of revision were in their turn built on experiences from the SMO-study in 1965-66. This briefly implies that the answers to a number of questions concerning the external form and content of the contacts were analysed in a special program for so called ~~large~~ profile analysis, which offered the possibility to group all observations similar in the dimensions studied into homogenous groups of contacts. The purpose was to test whether the sub-division into orientation, planning and programcontacts, could be applied to empirical data collected from a large number of companies, different among themselves. A comparison between KOM 68, LONDON 69 and KOM 71 in this respect is shown in Fig. 3 (comp. Thorngren, 1970).

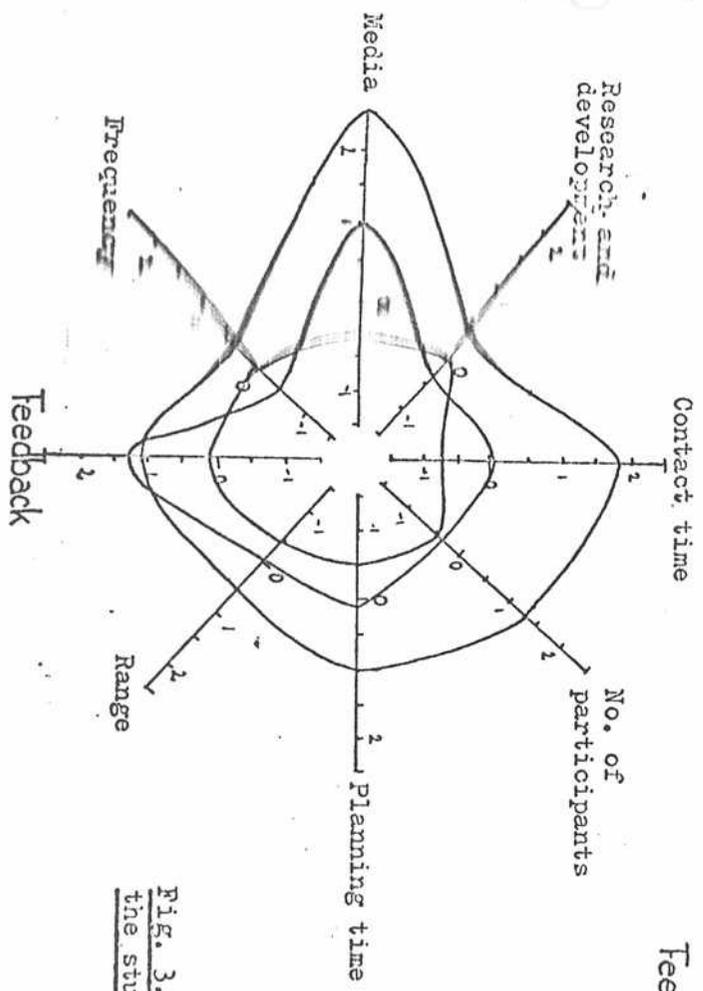
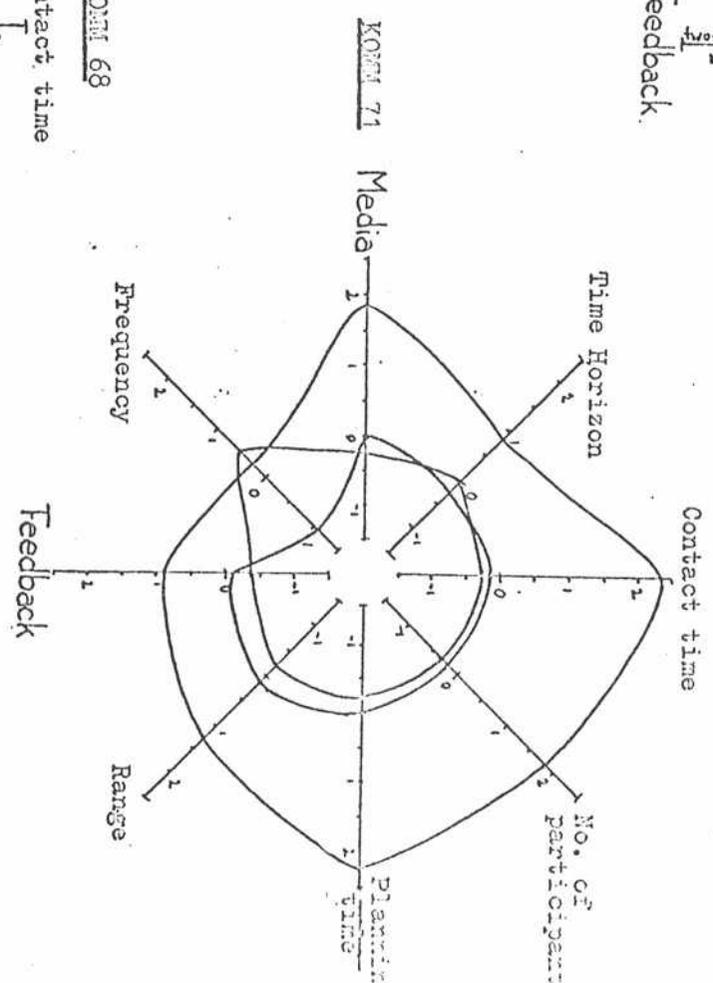
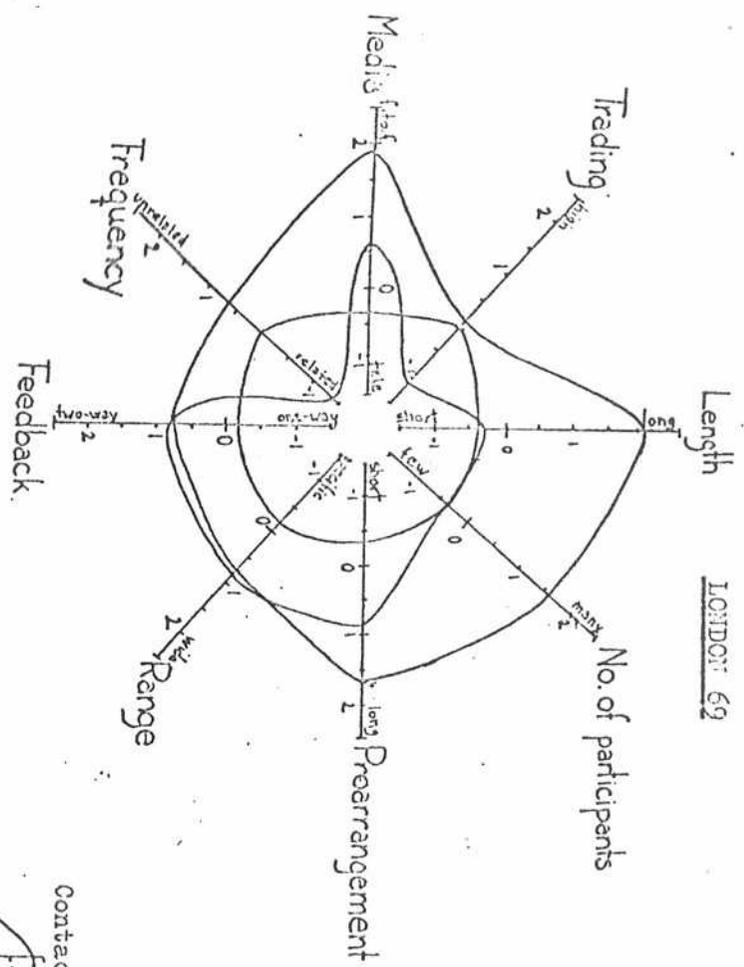


Fig. 3. Contact cables from the studies

The second study was carried out at the London School of Economics in 1969. The contact diary as well as the method of analysis was the same as in the Swedish study. The selection consisted of some 70 larger offices in the London area. Also in this investigation the three contact networks were proved to have reciprocally similar qualities (Goddard, 1971).

A similar study is presently carried out at the British Civil Service. It is part of a series of projects at the prospect of a decentralisation of Government works from the London area. No final results have yet been presented from this study, but some preliminary information will be reported and compared to the other studies at the end of this section.

#### Contact analysis of data from KOMM 71

Data from KOMM 71 have been analysed in the same way as in earlier studies with the purpose of distinguishing different contact networks. As can be seen from Fig. 3 it is also here possible to divide the contacts into three groups with different characteristics. The tables on page 30 and 31 show these characteristics in detail.

Time spent, number of participants and planning time differ obviously between the three groups. Orientation cooperation (OC) has throughout the investigation the highest value, and program cooperation (PRO) the lowest.

The contact frequency is also markedly different between the three groups.

Planning cooperation (PIA) represent the intensive exchange of information between persons who have frequent and regular contacts

Program cooperation (PRO) corresponds to a network of fast and short contacts, where the breadth of information exchanged is insignificant. It ~~seems~~ has a large number of constantly changing persons. Orientation cooperation (OC) also affects a large proportion of new contact sources (~~29 %~~) but have another effect on the total contact pattern because of its ~~lower~~ volume and its considerably longer contact time.

Direction and range also differ between the groups. Orientation cooperation has, as expected, a high proportion of the mutual contacts concerning General, broad information. Planning cooperation aims to a larger extent at getting information in order to create a basis for more delimited questions, while program cooperation is dominated by giving an answer to one single question at each particular contact.

The time horizon clearly distinguishes orientation cooperation from the other two groups. More than half of the contacts refer to activities beyond the present fiscal year.

The three groups are not the same size. 60 % of the contacts refer to program cooperation, 33 % to planning cooperation while 9 % refer to orientation cooperation. The proportion of face-to-face and tele-communication also differ between the groups. OC is dominated by face-to-face contacts, PRO by tele-contacts, while PLA again has a higher proportion of face-to-face contacts. Translated into volume this implies that 50 % of the face-to-face contacts involve orientation cooperation while planning and program cooperation each involves 25 % of the total number of these contacts.

Put together these differences imply that the groups from the KOM 71-material represent contact networks with different scope and contents. Much simplified, the orientation contacts is responsible for the breadth, the planning contacts for the intensity and the program-contacts for the volume, in the total contact system. The proportions given refer to the total material. The proportion of contacts within different contact networks naturally differ between various units in the study.

#### The sensitivity in case of a relocation

One reason for discussing the contact analysis in this report is that it could provide guidance at an evaluation of the possibilities to maintain different contact networks after a relocation.

THE STRUCTURE OF THE CONTACT EVENTS IN %, KOMEI 71 1)

	OC	PIA	PRO	TOTAL
<u>Media</u>				
Telecontact	3	89	94	85
Face-to-face contact	97	11	6	15

<u>Time spent</u>	OC	PIA	PRO	TOTAL
2-10 min	3	74	83	73
10-30 min	7	22	15	17
30-60 min	12	2	1	3
1-2 hours	27	1	1	3
2 hours or more	50	0	0	4

<u>No. of participants</u>	OC	PIA	PRO	TOTAL
2	24	92	93	87
3-5	43	8	6	10
6-10	23	0	0	2
More than 10	10	0	0	1

<u>Planning time</u>	OC	PIA	PRO	TOTAL
None	3	78	86	76
Same day	6	11	6	8
Day before	11	5	4	5
2-7 days	37	4	3	6
1 week or more	43	2	1	5

<u>Contact frequency, min.</u>	OC	PIA	PRO	TOTAL
Never before	29	0	29	20
One or more occasions	35	0	49	32
Once a month	24	25	22	23
Once a week	10	57	0	19
Daily	2	18	0	6

1) Total contact volume: 118.986, of which 20.243 face-to-face contacts.  
 Proportion of total contact volume: OC 9 %, PIA 31 % and PRO 60 %.  
 Proportion of face-to-face contacts: OC 50 %, PIA 25 % and PRO 25 %.

	OC	PIA	PRO	TOTAL
<u>Contact frequency, max.</u>				
Never before	15	0	29	19
One or more occasions	32	0	49	32
Once a month	29	25	22	23
Once a week	20	57	0	20
Dayly	5	18	0	6
<u>Direction</u>				
Give information	12	19	53	42
Receive information	18	32	34	32
Mutual exchange of information	70	40	13	26
<u>Range</u>				
One limited question	29	64	85	73
Several limited questions	43	33	13	22
General broad information	28	3	2	5
<u>Time horizon</u>				
Present fiscal year	49	89	88	85
1-5 years ahead	38	9	9	12
More than 5 years ahead	13	2	3	3

#### Program cooperation

makes use of the least vulnerable contact pattern. Contacts of this kind could easier than other contacts be maintained over large distances. Already in the initial position the proportion of telephone communication is high. Each contact also constitutes an isolated event. In most cases just one person and one contact source is approached at a time. Thus, the drop-out of a few contacts does not have to disturb the outcome of other contacts.

The possibilities of a gradual transfer of contacts to contact sources at a new location, as well as of the increased use of tele-communication,

therefore are greater than in other kinds of cooperation. The only thing that speaks against the use of new tele-media is the fact that the contact sources are many. A complete coverage could demand an extended and thereby expensive transmission system. The high volume could however provide the basis for the enlargement to certain in volume important contact sources, completed with the use of ordinary transmission networks at a low load.

This part of the contact system could thus be kept intact against a certain rise in costs at a temporary stage. These additional costs could be expected to decrease at the same rate as the use of alternative contact sources and transmission media increases.

Planning cooperation is carried out through a more vulnerable contact network. The particular contacts often are integral parts of a chain where the chronological order could be important. Also, the drop-out of a meeting or a participant could delay a whole "development chain". Planning contacts take place between people who meet frequently and know each other well. In the short run this could increase the possibility of "extending" the contact network in space by increased use of tele-communication completed by periodic meetings.

The intensive exchange of information between a limited number of participants increase the practical possibilities to build up a TV-phone network which could meet the demands on mutualities in the exchange of contacts. Joint location of units in blocks is another important way of maintaining planning cooperation. This does not only apply to communication between the agencies in question, but also to contacts with the rest of the environment. A joint location widens the basis for re-establishment and expansion of common contact sources at the new location, as well as the possibility of "combination contacts", i.e. contacts involving more than one agency.

Orientation cooperation takes place via contact networks where many participate at each meeting. This might look as a much too formal description of orientation-cooperation. Meetings with many participants

and long planning time appear to many as an exaggerated bureaucracy. Such an objection could be valid if one tries to evaluate the particular meeting as an isolated event. There are of course examples of meetings, which the participants themselves would characterize as badly motivated, time-consuming and loosely attached to the problems that are to be solved. Such meetings, however, could also be regarded as part of a more extensive chain. They could create the necessary conditions for other more apparently productive activities by bringing together ideas and people, which would otherwise never meet. Evidently there is an upper limit for the amount of time that is motivated to spend on this purpose, but there is also a lower limit. Agencies which completely lack adhesion to any orientation network, could in time get trouble with the renewing and the developing of their basic conditions. They might have delimited their activities much too well.

Certain agencies could play a greater part than others as a platform for such activities. However, it is difficult to base a cluster on this. In addition to the relatively easily studied formal orientation there is one, often closely attached, informal orientation in a constantly changing pattern. It is difficult to take the orientation cooperation into consideration at a particular agency level in case of a relocation. Contrary to most other countries the ministries in Sweden also have a function which could be characterized as orientation cooperation, unlike the more limited planning cooperation that occurs within and between independent agencies. An agency's place in this total communication network as well as the possibilities of developing orientation in other ways than via the choice of location, is important. This implies that organizational changes, the development of new forms of cooperation, changes in tasks, etc, could be expected to be more effective means than a joint location when establishing orientation networks.

The means for maintaining the contact networks at a relocation thus differ between the three forms of cooperation. Briefly summarized, to program cooperation, considerations to communication technique and costs are vital; to planning cooperation, the possibility of joint location is more important; to orientation cooperation, finally, measures

outside the area of communications and location are of greater importance.

Comparison between contact studies of commercial and industrial life and public administration

The more comprehensive contact studies that have been carried out, however, as mentioned above, emanated from a common set of questions, intended to constitute the basis for comparisons.

Two of these studies, KOCI 68 and London 1969, concern the contact networks within industry in Sweden and England respectively. New studies concentrated on industry outside the London area are today in progress at the London School of Economics. The two other studies, KOCI 71 and the Location of Government Communication Study, are links in a sequence of projects at the prospect of a decentralisation of Government works from the Stockholm- and the London area, respectively. The English investigations started at the beginning of 1971, but are not yet finished. As part of a 3 year-program a few agencies are studied at a time, in contrast to the Swedish contact-studies, where a large number of agencies were investigated at the same time. Material from the English investigation is also used as a basis for a research program concerning the availability of new tele-communications, e.g. TV-phones and conference-TV.

The four studies will thus form the base for comparisons between commercial and industrial life and public administration as well as between different countries. Many questions, however, are still of a pure research nature and parts of the studies are not completed. Only a few rough comparisons could thus be made here which can give a most preliminary picture of possible conclusions.

The frequency distribution with reference to face-to-face and telephone contacts show fundamental resemblances, no matter where and when data

has been collected. The number of participants, time spent and dispersion of time are reciprocally similar in the two forms of contacts. This is reflected in the direction of the contact exchange as well as in the scope of the content of the communication. Face-to-face contacts are throughout more mutual and concern more general questions. The two English studies diverge, however, in the sense that both industry and public administration are of the opinion that more limited questions are being treated by them. Apart from this national peculiarity the comparison indicates, however, that national differences are less than the differences between industry and public administration within the two countries. This is even more prominent if we compare the regional dispersion of the contacts, time for travel and the means of transportation. Industry in Stockholm and London appear, from a "contact-view"-point, as more concentrated to the capital than the central ministries and agencies. Time for travel is also shorter in the two industry studies than in KOMM 71. Approximately 30 % of the journeys, in these studies, fall within a 10-minute limit - 80 % within a 30-minute limit. Corresponding values for KOMM 71 are 13 % and 60 % respectively.

Face-to-face contacts, in public administration, are prearranged to a larger extent, include more participants and take longer time, while the telephone-contacts are similar in industry and administration. In Fig. 3 results from the contact analysis of material from KOMM 68, London 1969 and KOMM 71 are shown. Orientation- and program processes are comparatively similar in the three investigations, while planning cooperation in KOMM 71 has a stronger element of tele-contacts and, with the contact-frequency as an important exception, is closer to program cooperation than to orientation cooperation. The corresponding analysis from English public administration is not yet available.

Briefly, the two extremes-orientation and program-appear to be more important in Swedish public administration than in Swedish industry, while planning cooperation is less pronounced.

Space, as well as the present state of research, does not permit a more detailed analysis. A preliminary conclusion, however, is that the more formal, and regionally more dispersed, structure of public administration is reflected in the structure of the contact system.

This would imply that public administration at present is more geographically mobile than equivalent institutions within industry. The possibilities to influence the cooperation between the agencies and between these and the environment by clustering, will be discussed in the next section.

### 2.3 POSSIBILITIES OF CLUSTERING

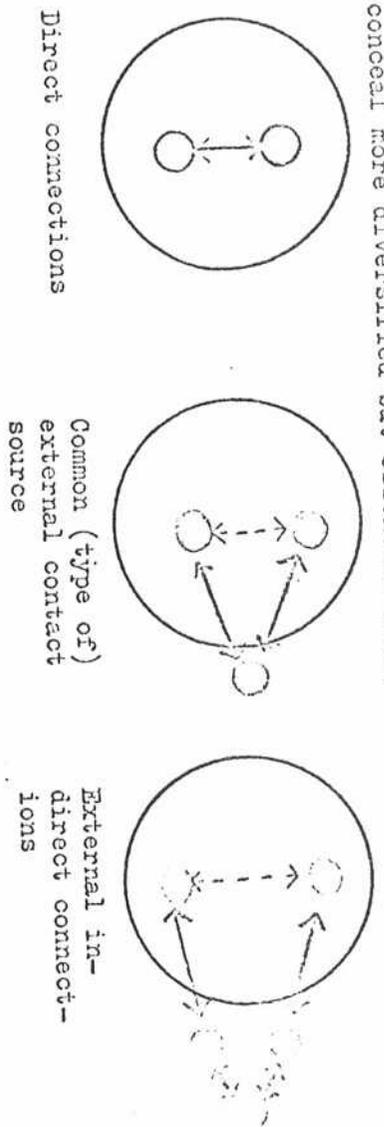
There are other advantages to gain by clustering than those purely induced by an easy access to information. A joint location of agencies could for instance increase the basis for common service. Other factors than those referring to contacts will however not be discussed here. From a contact-viewpoint joint location could be motivated on two, principally, different grounds.

Agencies with particularly strong direct contacts could have obvious, but limited, advantages of a joint location. Thereby the possibilities of keeping and increasing these specific contacts could be secured.

However, contacts with the rest of the environment have not been taken into consideration. Considerably greater benefits, though more difficult to evaluate, could be gained by observing which agencies have common or similar contact needs in relation to the total environment.

The fact that agencies have similar contacts or maybe the same contact sources does not necessarily imply that they also have direct contacts with each other. The external contact source, e.g. a research institution could be the only link between two agencies. Still more complex connections where two agencies are interlinked in two or more steps are of course possible. The contact sources of two agencies could in their turn have a common contact source etc. This creates problems when analysing the

possibilities for clusters. Simple and obvious connections easily conceal more diversified but essential ones.



Closed clusters

Open clusters

Groupings

Fig. 4

The figure is designed to illustrate the structure of three principal cases discussed below. First a comparison between the extremes will be presented, which are here called closed clusters and groupings, respectively. The first case relates to simple, direct connections between few agencies, the second one to complex indirect connections where many contact sources interact. Finally, a more detailed analysis of open clusters will follow, based on the fact that certain agencies utilize similar contact sources.

The importance of direct connections (closed clusters)

The direct face-to-face contacts between the 34 agencies, which were studied in KOMM 71, amounted to 10 % of the total number of contact relations in the Greater-Stockholm area.

Certain agencies naturally have higher values than the average, but a closer investigation reveals that more obvious connections only apply to a few agencies. It is a question of isolated special cases and not of any connecting system of contacts between agencies.

Agencies mostly have more contact with particular parts of their environment than with each other. This does not imply that the mutual exchange of information is without importance.

Direct contacts could and ought to be considered, but the evaluation could be based only on the relations between a few agencies. For a more detailed report on the contact relations of each investigated unit the reader is referred to Appendix 2 of the original study.

From this, the rank between different contact sources could be inferred, including the relative importance of other participating units of the same agency, in those cases where such a sub-division of agencies has been made. The tables in Appendix 2 could be of great help in those cases where direct connections are to be considered from the basis of a certain agency.

#### External, indirect contacts (Groundings)

This type of contacts contrast the direct connections. There could be many links between the sources that two agencies have in common. The network soon gets difficult to survey and practically unwieldy.

The statistical analyses, which have been carried out in connection with this study have revealed certain recurrent complex networks, in which some contact-sources appear as more central than others. The range of this network of relations, however, makes it an unrealistic basis for any assumptions about accurate conditions. Clusters of the size that may be possible in a country of the size of Sweden could not be expected to provide opportunities for evaluating this type of indirect connections.

These external connections thus are principally a fascinating area for continued research. The problems involved, however, are beyond the scope of this report.

Practical considerations of indirect connections could only be taken into account by observing the possibility that some agencies have a greater task in the total network of contacts than have others. In this study, this would primarily apply to agencies which have a particularly high proportion of orientation contacts.

### Common (type of) external contact sources

The empirically most interesting basis for joint locations are those cases where a number of agencies cooperate with a common, or common type of external contact source. It could for instance be a research institution or a special service company, which constitutes the strongest link between two agencies. Consideration of this fact could give contact-advantages even in those cases where common contact sources remain in the Greater-Stockholm area. Both the agencies and the contact source could get a greater opportunity to coordinate the necessary contacts. "Combination-contacts", i.e. contacts, which concern more than one agency, are usually easier to carry out.

### Analysis

The contact sources have been divided into 24 groups, of which 17 are situated in the Greater-Stockholm area. This collation has been made the basis for an analysis of which agencies cooperate with the same type of external contact source. Space does not permit any description of the methods, i.e. factor-analysis, which have been used in this search process. A detailed description of available methods could, however, be found in Goddard (1971). He has developed a series of methods for analysis, which have been tested on material from the English and Swedish studies.

For practical reasons the analysis has been limited to 9 groups. Other choices in this matter, as well as other divisions of contact sources could obviously lead to other results, primarily regarding the level of detail. This division in groups could thus make no claim to be the best possible. The purpose is only to give a preliminary survey of the possibilities of clustering. In table 2.3 the results of this analysis are shown, where the 34 agencies are divided into 9 groups with internally ~~similar~~ connections to external contact sources.

The first three groups A, B, C are of special interest. The agencies in these groups are characterized by one or few contact sources which dominate the exchange of information at present.

In the A-Group, ministries, central agencies and interest organizations answer for more than 58 % of the contacts with sources in the Greater-Stockholm area.

In the B-Group research organizations answer for 30 % of the contacts in Stockholm and 56 % of the contacts with sources in the rest of Sweden.

In the C-Group consultants and computer firms are the dominant sources in the Stockholm area with 43 % of the total contacts. The corresponding share for the rest of Sweden is also high, which does not appear directly from the table, due to a combination of data.

The three groups thus have a highly specialized exchange of information with the environment, which is also more important in volume than are the mutual contacts.

The following six groups, DA, DB and DF, EA, EC 1 and EC 2 all have the common characteristic that their own, and others, regional/local institutions respectively, are the totally dominant contact sources. They amount to 30 % and 60 % of the contacts, respectively, within and outside the Greater-Stockholm area. This is obviously connected with the fact that these agencies form the central unit in a large regional organization. There are however few locations which have the capacity to receive more than one, at the most two, of these from an employment viewpoint, heavy units. Also from a contact viewpoint each agency could be said to form a cluster by itself, as it is a heavy contact source, due to its size. The need to belong to a common contact-block obviously is greater for smaller units.

It could therefore be of interest to regard the second largest contact sources of the big agencies. Even if these, as a percentage, are less marked, they are volumewise important. The agencies in the D- and E-Groups have thus been divided with consideration taken to the contact-sources that dominated the more specialized A-, B- and C-Groups.

This "relationship" between the groups implies that agencies within the nine groups could be combined to three groups, with attachment to central institutions, research, consultants- and computer firms, respectively.

To prevent misunderstanding it is important to point out that these open groupings must only be seen as a description in figures of the possibilities of clustering that exist on the basis of the present exchange of contacts with the environment.

#### Conclusion

Nothing is known about which agencies could be included in a possible relocation. The fact that an agency belongs to a certain group in this analysis does not imply more than that it has contacts with the environment, which are similar to those of other agencies in the same group.

The importance that should be ascribed to these similarities in contact patterns is a question beyond the scope of this report. As pointed out in earlier sections, the purpose of this report has only been to give an answer to certain precise sub-questions, to give a preliminary survey over areas of research which have previously been incompletely investigated. There are of course quite different questions and answers, which must be included in a complete evaluation of the advantages and disadvantages of a relocation.

APPENDIX A

KOMI 71 AGENCIES

1. The Post Office Administration, The Board of the Post Office Adm.
2. The Swedish State Railways
3. The State Power Board
4. The National Road Administration
5. The National Telecommunications Administration
  - The Central Organization
  - The Tele-school
  - The Data Central
- The District Office-East section
- The Eastern Radio-division
- The Building division
6. The National Labour Market Board
7. The Bank Inspection Board
8. The National Housing Board
9. The National Board of Public Building
10. The Civil Defence Board
  - The Educational division of the Civil Defence Board
  - Other divisions of the Civil Defence Board
11. The Royal Fortifications Administration
12. The Civil Administration of the Armed Forces
13. The National Private Insurance Supervisory Service
14. The Board of Customs
15. The National Institute for Corporate Development
16. The National Environment Protection Board
  - The Administrative division
  - The Laboratory division at Lovön
  - The Environment-Hygienic division
  - The Uppsala division
17. The National Patent and Registration Office
  - The Corporate division
  - The Patent+Library divisions
  - Other divisions
18. The Central Office of National Antiquities

APPENDIX A, cont.

19. The National Police Board
  - The Regional bureau
  - The Data division
  - Other divisions
20. The National Tax Board
  - The Technical division
  - The Tax division
  - Other divisions
21. The National Audit Bureau
  - Division 1+2+Audit Bureau
  - Other divisions
22. The National Bacteriological Laboratory
  - The Chemical+Technical+Economic division
  - Other divisions
23. The National Board of Health and Welfare
  - The Medicine bureau
  - Bureau P3 4-5
  - Other bureaus
24. The National Board of Urban Planning
25. The Swedish Agency for Administrative Development
  - The Investigation Unit
  - The Stocks- and Bonds Bureau
  - Other bureaus
26. The National Agricultural Marketing Board
27. The National Price and Cartel Office
28. The National Institute of Radiation Protection
29. The National Road Safety Office
30. The Board for Technical Development
31. The National Board of Education
  - Unit UE+UY
  - Unit L
  - Other Units
32. The Transport Commission
33. The Equipment Board for Swedish Universities
34. The National Board of Economic Defence

Numerical information	Questions concerning content of contact	Questions concerning the party
1. When was the contact taken? Day, Month <input type="text"/> <input type="text"/> <input type="text"/>	8. Why did the contact occur? <input type="checkbox"/> You were to give inform. <input type="checkbox"/> You were to receive " <input type="checkbox"/> Mutual exchange of "	IF the contact involved more than one person from another place of work than your own (i.e., other agency), answer only questions 16-19 on the back side of the diary instead of questions 13-15. If the contact involved only one person from another place of work answer only questions 13-15 below.
2. What was the form of the contact? <input type="checkbox"/> Telephone contact <input type="checkbox"/> Face-to-face	9. Was the contact arranged in advance? <input type="checkbox"/> Not at all <input type="checkbox"/> Same day <input type="checkbox"/> Day before <input type="checkbox"/> 2-7 days in advance <input type="checkbox"/> More than a week in advance	13. How often have you previously been in touch with this person? <input type="checkbox"/> Never before <input type="checkbox"/> One or more occasions <input type="checkbox"/> Once a month <input type="checkbox"/> Once a week <input type="checkbox"/> Daily
4. How many persons were at the meeting, excluding yourself? Number <input type="text"/> <input type="checkbox"/> persons	10. What was the range of the subject matter? <input type="checkbox"/> A limited question <input type="checkbox"/> Several limited questions <input type="checkbox"/> General, broad information	14. To what organization do the person you conferred with belong? Classify Other unit of work within your agency <input type="checkbox"/> Ministry <input type="checkbox"/> Central agency <input type="checkbox"/> Regional/local agency <input type="checkbox"/> Interest organization <input type="checkbox"/> Research organization <input type="checkbox"/> Industrial firm <input type="checkbox"/> Retail, Wholesale firm <input type="checkbox"/> Consultant/other service firm <input type="checkbox"/> Messmedium <input type="checkbox"/> Private individual <input type="checkbox"/> Other (incl. foreign parties)
IF the meeting took place outside your own place of work*	11. What was the primary subject matter? <input type="checkbox"/> Activities during the pre-sent budget year <input type="checkbox"/> Activities 1-5 years ahead <input type="checkbox"/> Activities more than 5 years ahead	15. Further information Name of this person's place of work, agency, firm etc Name of town Street (only in Greater-Sthlm)
5. Where did the meeting take place? Name of place..... Address (only in Greater-Sthlm)..... .....	12. Please write down further information that you find necessary for completing your answers!	
6. How long did the trip to the meeting take; <del>was</del> your place of work (or <del>was</del> the preceding meeting)? Hours <input type="text"/> Min <input type="text"/> <del>Travel</del> time		
IF several face-to-face contacts take place during the same trip, state however, for the part of the trip which falls within the investigation: Number <input type="text"/> additional meetings Number <input type="text"/> additional meetings What places? a) ..... b) ..... c) ..... d) .....		

\* Note the definition of place of work, which applies to this investigation at your agency (see app. 21)

THIS PAGE WILL BE FILLED IN ONLY IF THE NUMBER OF PARTICIPANTS FROM OTHER PLACES OF WORK EXCEEDS ONE.

16. State the number of participants from other places of work    NUMBER  
ANSWER THE QUESTIONS 17-19 ONLY IF THE NUMBER OF PARTICIPANTS FROM OTHER PLACES OF WORK IS 2-8.

17. State the answer for each participant (ranked from A-H).

Participant- ant	Name of unit of work, agency etc	Code (not to be fil- led)	Name of town	Code (not to be fil- led)	Name of street (only within Greater Stockholm)
A	.....	.....	.....	.....	.....
B	.....	.....	.....	.....	.....
C	.....	.....	.....	.....	.....
D	.....	.....	.....	.....	.....
E	.....	.....	.....	.....	.....
F	.....	.....	.....	.....	.....
G	.....	.....	.....	.....	.....
H	.....	.....	.....	.....	.....

18. To what organization does the person you con-  
ferred with belong?  
Classify.

	II Participant					III Participant			
	A	B	C	D	E	F	G	H	
Other unit of work within your agency	<input type="checkbox"/>								
Ministry	<input type="checkbox"/>								
Central agency	<input type="checkbox"/>								
Regional/local agency	<input type="checkbox"/>								
Interest organization	<input type="checkbox"/>								
Research organization	<input type="checkbox"/>								
Retail, wholesale org.	<input type="checkbox"/>								
Consultant or other service firm	<input type="checkbox"/>								
Massmedium	<input type="checkbox"/>								
Private individuals	<input type="checkbox"/>								
Other	<input type="checkbox"/>								

19. How often have you  
previously been in touch  
with this person?

Never before  
Very occasionally  
Once a month  
Once a week  
Daily

II Participant

A B C D E

<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					

III Participant

F G H

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Guidance for the registration of contacts

The investigation involves 34 public agencies with 20 000 employees. To limit the work caused by the participation in this project we have aimed at making the questionnaire in the diary brief, general, and unambiguous. However, it is difficult to cover all possible situations in a few words.

Therefore, we ask you to read this commentary offered as a guidance, before you start registering your contacts. Further questions can be addressed to the contact man at your place of work.

**PLEASE NOTE!** Mark only one alternative for each question.

2. What was the form of the contact?

The investigation concerns:

I Face-to-face and telephone contacts with employees at other agencies, firms, organizations and individuals, for the purpose of discussing questions pertaining to your work.

II Face-to-face and telephone contacts with employees at other places of work within your own organization.

The investigation does not concern:

I Contacts with persons belonging to your OWN PLACE OF WORK, regardless of the person(s) involved there.

II Contacts of a shorter duration than two minutes, regardless of the means used or the person(s) involved.

Contacts are to be registered regardless of who took the initiative. Also to be included are contacts taken during business trips. The contact diary should thus be brought along on business trips and then be used as usual. Telex, telegraph and contacts by letter are not to be included.

Note that contacts with intercommunication telephone of a duration of more than 2 minutes should be included.

3. How long did the contact last?

Preparatory work and waiting time prior to the contact are not to be included.

4. How many persons participated from your place of work excluding yourself?

All participants, active and passive, should be included. In the case of telephone conferences this implies that all participants in the conference (excluding yourself) are to be included.

**IF the contact took place outside your place of work:**

## APPENDIX E

### Explanation of tables 2.1.1 and 2.1.2

The total number of contact events, divided into face-to-face and telephone contacts, refer to the number of registered contacts with persons employed outside the respondent's own agency. This implies that contacts between places of work within the same agency are excluded.

Time spent, only refers to talking-time lasting more than 2 minutes, excluding any waiting and preparation time.

The number of business trips as well as time for travel, only refer to purely external contacts, i.e. with persons outside the respondent's own agency. Time for travel concerns the total time for movement from door to door in the connection with this particular contact.

The number of employees, refer to the number of full-time employees on the 15th of September 1971, according to the mentioned agencies. The figures have been rounded off to even tens.

The number of participants, refer to the number of distributed contact-diaries, which, due to the low drop-out, is almost identical with the number of returned and analysed diaries rounded off to even tens. In many agencies all employees have participated in the investigation. In certain agencies however, a few smaller sections have been excluded in cooperation with the managers. These sections are also judged in managers as having no external contacts to register.

Actors refer to the number of participants who have registered one or more face-to-face and telephone-contacts, respectively. The difference between the number of participants and the number of actors thus indicates how many of the participants that have not registered any face-to-face or telephone contacts. An analysis of the extent to which this fact was a result of absence due to illness, military service, etc., or was a result of the fact that the person in question did not have any external contacts to register, could be found in section 1.3.

These questions (5-7) need only be answered if the contact took place outside your ordinary place of work, which implies that contacts during business trips are to be included.

5. Where did the meeting take place?  
State the name of the town or county.

6. How long did the trip take from your place of work (or from the previous meeting)?  
The question concerns the total time for movement from door to door, in connection with this particular contact.

The time may be estimated if you start the trip from your own home and make stops overnight during the trip.

7. The question concerns those cases when you made the trip to participate in several different meetings.

8. Why did the contact occur?  
The question concerns your judgement of the main purport of the contact. "Information" also include advice, instructions, orders etc.

9. Was the contact arranged in advance?  
"Arrangement" here is taken to include all advance knowledge that the contact would occur at a specific time and place.

10. What was the nature of the subject matter?  
Alternative 3 concerns contacts, having subject matters whose limits are difficult to define and whose immediate consequences were difficult to judge even in retrospect.

11. The question refers to the time perspective of the registered conversation. If you and the parties had different time perspectives the longest is to be stated.

13. and 19. How often have you previously been in touch with this person?  
This question involves only contacts with persons regarding official matters. Alternative 2 "on one or more occasions", is meant to cover infrequent and irregularly occurring contacts, including, for example, those cases in which you have recently had numerous contacts with a person with whom you otherwise usually do not communicate.

14. and 15, 17. and 19. If you have contact with a member of the board, committee etc, this person's main employer is to be stated. Please make further comments under no 12.

14. and 18. Your contacts with regional and local agencies within your own organization as well as with units of your central agency situated outside the Stockholm area should be stated under 14.1 and 18.1 respectively. Contacts with persons employed at regional or local organizations of other agencies are to be stated under 14.4 and 18.4 respectively.

17. Each "external" participant is to be stated separately, that is a new row for each participant. Repetitive signs could be used.

18. and 19. These questions are to be answered for each of the participants stated in question 17. Hereby the person, who in 17. has been identified as "A" is to be assigned to "A" also in 18. and 19, etc.

