ANALYSIS AND EVALUATION OF COMPENSATION SYSTEMS. THE EXAMPLE OF POLLUTION DAMAGE

BY

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INTRODUCTION

1. The concept of compensation law is used in Sweden to describe the study of the interplay between the rules of social insurance, private insurance and torts. As Jan Hellner has demonstrated in a well-known article,[1] the interplay between compensation rules could be understood in the light of cybernetics. Hellner states that tort law can be described as a functional system. It could be analysed according to certain principles as a system in planning.[2] Cybernetics may consequently be used for descriptive purposes as well as for purposes of legal policy.

Compensation systems are the objects of the study of compensation law. The concept of compensation system may be defined in at least two ways. One is to concentrate on the rules and, for instance, to regard tort law as a compensation system. This is the norm-related view. But one could also choose a perspective that is related to injuries, and for instance study compensation of a certain kind of injury such as sports injuries.

In this paper the injury-related perspective will be discussed. At first, however, the principles which could guide a study of this kind, and the main instruments for analysis, will be presented. The second part of the paper is concerned with the compensation system that relates to damage caused by pollution in Sweden.

2. Clearly, a survey or study of compensation law may have different values depending on the material used. The lawyer will, naturally, rely on statutes and cases in the first place and sometimes also on *travaux préparatoires*, cases from advisory boards, insurance conditions, legal writing, etc. However, these sources do not give a true picture of a functioning system.

It may occur that rules are not implemented among those who are to use them, and in such a case the rules do not function. A Swedish example is sec. 25 of the Consumer Insurance Act, which states that insurers are entitled to charge their customers a fee in cases of late payment of premiums. This rule has never been applied by insurers in

[1] "Värderingar i skadeståndsrätten", *Festskrift till P.O. Ekelöf*, Stockholm 1972, pp. 299–335.

[2] *Op.cit.*, pp. 300–303.

practice and the section is therefore impossible to use in a description of facts.[3]

To mention other examples, Per Stjernquist in his study of forestry law has demonstrated how a large group of officials use a give-and-take method rather than the sanctions in the statutes to enforce statutory rules.[4] Christensen and Westerhäll have indicated the difficulties in getting social insurance officials, who are seldom trained lawyers, to apply the guiding principles of cases from the social insurance courts.[5]

Sometimes there are complicated implementation problems as to the factual use of legal rights. Thus a great number of employees have not applied for their rightful compensation under the Workmen's Compensation Act or the so-called Security Insurance, which provides for additional benefits in case of injuries or disability at work.[6] The same situation, injuries which remain uncompensated, may also occur in the area of pollution.

Finally, peculiarities in the way claims are handled may change the picture. Sometimes practice here deviates from law and insurance conditions. One of the main reasons is the generosity of the insurers.[7]

3. Evidently, the more material there is available on the practical application of the rules, the more adequate the picture of the functioning of a compensation system. In Sweden there is only one major sociological investigation in the field of compensation law, namely the study of workmen's compensation by Antoinette Hetzler and Kjell Eriksson.[8] In Denmark, a comprehensive investigation by Bo von Eyben provides extensive data on compensation for personal injuries.[9] Outside Scandinavia many reports of this kind have been published.

INJURIES TO BE COMPENSATED

4. A fundamental factor in a compensation system is the choice of injuries to be compensated. Not all damage to persons and property will be compensated in full. Such a system would be too expensive in transaction costs and ineffective because it gives too little incentive to

[3] Cf. C.M. Roos in *Ledarskap och regler*, Stockholm 1986, pp. 49–52.

[4] *Laws in the Forests*, Lund 1973.

[5] A. Christensen, *Avstängning från arbetslöshetsersättning*, Stockholm 1980, p. 17, L. Westerhäll-Gisselson, *Sjukdom och arbetsoförmåga*, Stockholm 1983, p. 16.

[6] Cf. *SOU* 1985:54, pp. 126 f.

[7] E. Lindell-Frantz—C.M. Roos, *Generös avtalstillämpning*, Lund 1985 (with references).

[8] *Arbetsskadeförsäkringens tillämpning*, Lund 1983.

[9] *Kompensation for personskade* II, Copenhagen 1988.

avoid personal injury or property damage. Some compensation areas must therefore have priority over others and deductibles must be included in most compensation systems.

Some compensation systems are compulsory, above all social insurance, that is public insurance and workmen's compensation. Public insurance covers 60–90 % of the loss of income in cases of qualified inability to work, while workmen's compensation will cover almost all losses of income in cases of personal injury. This priority on injuries at work was originally intended to protect industrial workers in high-risk employment. Nowadays white-collar workers, who are at greater risk at home than at work, are also included in the workmen's compensation scheme.

Typical for Sweden and probably unique are the collectively agreed insurance schemes which for most employees supplement the basic protection of social insurance. Security Insurance for injuries at work, Collective Agreement Group Sickness Insurance, Employee Group Life Insurance and supplementary pension schemes of different types may be mentioned.

All important social and collective insurance schemes are limited to personal injury, and employees get far more benefit from social insurance and collective insurance schemes than do the unemployed.

Further compulsory systems are the Traffic Insurance scheme, Environmental Damage Insurance and Nuclear Power Plant Insurance.

Among the voluntary systems we note group life, sickness and accident insurance. Many home-owners' insurance policies are arranged under collective insurance schemes. The voluntary systems also include Patient Insurance and Medical Drug Insurance.

Liability in tort is usually covered by liability insurance, which is included in the home owners' insurance package as well as in industrial insurance schemes.

This short survey of the coverage already shows that personal injuries, and especially injuries to employees, have priority. This means that groups with a weak position in society, such as children, students and the handicapped, have low priority. Property damage has lower priority than personal injury.

Discussion of priorities within personal injury is often related to the so-called bathtub argument: why will the injured get better compensation if he was hit by a car than if he slipped and got hurt in the bath.[10] The person involved in the traffic accident will get full compensation up

[10] J. Hellner, *op.cit.*, p. 309 (with further references).

to torts level for material as well as immaterial damage, while the person who was hurt in the bath will—leaving aside possible voluntary accident insurance cover—practically get compensation for loss of income only up to a certain level. Generally it is difficult to justify these types of difference.

5. In their design, compensation systems usually vary between schemes where liability for the tortfeasor is the central issue and systems where the needs of the injured person have priority. A tendency in Sweden has been to cover needs rather than to state responsibilities. This is true for the compulsory schemes where the legislator has been involved. Voluntary schemes however are often founded on a different principle, that compensation depends on the price or premium paid to the insurer.

Liability as the principal goal is most evident in tort law. In Sweden this is natural since, historically, tort law is very closely connected with criminal law. The injured person cannot be compensated under tort law unless he manages to demonstrate the probability that somebody by a negligent or intended act or omission has caused him personal injury or property damage or some consequential loss. The negligence rule and the concept of causation however involve much discretionary reasoning where the results are difficult to know in advance. Further, it is not always certain that the tortfeasor has enough money to compensate the damage. These and other inconveniences of the tort liability system have naturally been observed.[11]

In recent torts legislation several changes have been made to ameliorate the position of the insured. In many statutes strict liability has been stated. This is the case with statutes on damage caused by electricity, oil, railways, nuclear power, etc. Also, in the Environmental Damage Act the liability of the tortfeasor is strict. As to environmental damage the burden of proof of causation has been facilitated by a rule that only a small probability will be enough for compensation to be granted. The same principle could be found in other areas of Swedish compensation law.

The risk that the tortfeasor is insolvent is always important, especially as most executive measures directed against physical persons tend to be unsuccessful. This is where liability insurance comes in. Liability insurance in the home-owners' policy as well as in the industrial insurance policy is regarded as a security for the tortfeasor as well as for the

[11] See, for instance, A. Kjønstad, *Trygd og erstatning ved personskade*, 2nd ed. Oslo 1983 (with references), and *Prop.* 1972:5, pp. 95 ff.

injured person or the owner of the damaged property. The liability cover is, however, limited. In the first place, not every tortfeasor has a liability policy. In addition, there are extensive exclusions from the liability cover. Thus, criminal acts are generally excluded. For injury through criminal actions there is limited cover in the Victims of Crime Compensation Act, chiefly for personal injury.

In certain circumstances, the method of pointing out a responsible tortfeasor has appeared especially burdensome for the victim. Therefore in many fields no-fault systems have been introduced, giving the injured compensation up to torts level if the injury is caused by a certain activity.[12] The conditions for coverage in the Traffic Damages Act are formulated like this: traffic insurance will always cover personal injuries due to the use of the vehicle regardless of whether the driver himself has been injured or if someone else has been hurt. The great social and economic impact of traffic accidents is part of the reason for establishing the scheme. Corresponding conditions prevail in the area of health care and medical drugs where the difficulty for the victim to prove the negligence and the causation is the main reason for establishing the two schemes.

Security Insurance is also designed as a no-fault scheme. Here, the difficulty of proving an employer's negligence would seem to have been decisive. According to the scheme the employee will be entitled to compensation in torts even if the injury or sickness due to his work cannot be attributed to someone else's negligence.

As to the liability factor, in Sweden a development may be discerned from the basic and pure negligence rule in the Torts Liability Act to rules of strict liability and rules to facilitate the burden of proof for the injured party. Liability insurance and the enforcement of the Criminal Victims Compensation Act have also made it easier for those injured to get payment for damages in torts. Where the system has demonstrated adverse effects to the injured, the torts and liability insurance system has been replaced by no-fault insurance schemes.

6. The need for compensation is the decisive factor in public insurance. The conditions for compensation are very extensively formulated: sickness that causes inability to work at least half-time.[13] Sick pay covers nearly all loss of earnings. As to permanent disability, the need for income is covered by a flat-rate pension. What is left to be covered is not related to need but to pension points gained in prior occupation.

[12] See for further information, *Compensation for Personal Injury*, Stockholm 1988.
[13] The Public Insurance Act (1962:381), ch. 3, sec. 7.

Even in the Workmen's Compensation scheme, the need for compensation is central. However, the notion of risk should justify the compensation being higher than in public insurance. The same goes for Security Insurance with its supplementary compensation up to torts level.

The Victims of Crime Compensation Act (1978:413) is clearly intended to cover the needs of the injured. According to the Act, compensation will be paid to those who have suffered personal injury that cannot be compensated by the tortfeasor or from other sources. As to property damage, only that damage is compensated where the victim is in real need of compensation.

In other arrangements it is the premium that decides the amount of compensation. This the usual picture in private insurance schemes. In property and liability insurance the protection is generally limited to the value of the goods or the value of replacing the damaged goods with new goods. The premium is fixed so as to cover this risk. In life, sickness and accident insurance one may choose the level of compensation and pay the premium accordingly.

COMPENSATION

7. Full compensation for damage is seldom possible. As to goods, one may often be compensated in full at the market price or, even better, with new goods.

Still, full compensation may mean more than this. If a home-owner gets his home burnt down and the risk is covered by insurance, full compensation means that the owner should be compensated to the same degree as if he had voluntarily sold the property in question. As for real property this reservation price includes the market value, the value for the owner to remain and not settle elsewhere plus affection values that may be connected with the house and its surroundings.

The reservation price is not a suitable basis for calculating compensation in case of damage. Above all, a reservation price contains so many subjective and irrational components. As to bodily injury, there is seldom a reservation price at all. For instance, no reservation price can be imagined in the case of rape or severe brain damage. However, the introduction of a reservation price will help understand that most compensation for damage is merely an approximation of full compensation.[14]

[14] L. Werin, *Ekonomi och rättssystem*, Stockholm 1982, pp. 349 ff.

The usual way to calculate in Swedish law is termed differential calculation. This means comparing the value before and after the accident and trying to reinstate the victim or his property. This is quite a different valuation from one based on the reservation price.[15]

The principal rule as to property is to calculate compensation as the reinvestment price minus reductions for age and lack of modernity, see sec. 37 of the Insurance Contracts Act (1927:77). Other valuation models include market price or reinvestment value. The latter does not harmonize with the rule in sec. 39 of the Insurance Contracts Act that the insured should not make profits from a property insurance policy. This view is not self-evident if the reservation price is regarded as full compensation.

In a case of personal injury, the main ambition is to compensate the injured person for loss of earnings. In public insurance, the disabled person normally gets 90 per cent compensation for this. In permanent disability cases the compensation is considerably lower.

In tort law, however, the principle of full compensation for loss of income dominates, though this is not uncontroversial. Thus excluding especially high income levels from full compensation has been discussed in Scandinavian law.[16] Such exclusions have been made in the Social Insurance legislation where income above a level of 7.5 times the basic index (about US$ 30,000 in 1989) is not considered. Practical difficulties occur in the calculation of future income for children who are disabled before being employed and for housewives who plan to join the labour force.

Where compensation is to be calculated according to the principles of tort law—and this goes for all compensation systems for personal injury except Social Insurance—compensation for immaterial damage will be paid. This includes pain and suffering, loss of amenities, and other inconvenience.[17] These kinds of compensation are in Swedish law calculated more or less according to guidelines and tables compiled by the Traffic Injuries Board and approved by the Swedish courts. There are however some differences in the ways of calculating Security Insurance, Patient Insurance and Medical Drug Insurance.

Several factors may reduce the initial calculation of compensation. Benefits from Social Insurance may be withdrawn or reduced in certain

[15] Cf. J. Hellner, *Skadeståndsrätt*, 4th ed. Stockholm 1985, pp. 308 f., with further references.

[16] Cf. A. Kjønstad, *op.cit.*, pp. 25 f., with references, and *Prop.* 1972:5, pp. 95 ff.

[17] See O. Ekstedt, *Ideellt skadestånd för personskada*, Lund 1977.

situations, above all if the insured has supplied the authorities with false information.

According to tort law, the compensation could be reduced if the victim himself has contributed to the injury. Such reduction will only rarely take place in personal injury. In cases of property damage, reduction will always occur if there has been contributory negligence. Rules of reduction also apply to certain categories of tortfeasors such as minors and mentally disturbed or retarded people. As to employees, torts liability for actions or omissions at work is practically excluded and transferred to the employer. The Torts Liability Act (1972:207) also includes rules on reduction of damages when payment of full compensation is too great a burden for the tortfeasor.

Insurance benefits can also be withdrawn or reduced statutorily or by the insurance conditions. Among the contractual limitations, deductibles play an important role. In compensation for personal injury, no deductible is usually stated since the victim's suffering implies a participation in the loss that cannot be properly compensated by money; compare the discussion of the reservation price above. The statutory limitations, which are often supplemented by contractual provisions, relate chiefly to the obligations of the insured to supply information, to adhere to the safety restrictions in the policy, etc. In Sweden since the promulgation of the Consumer Insurance Act (1980:38) there has been a tendency to prefer an equitable reduction related to the behaviour of the insured and other factors of the case in question to a *pro rata* reduction related to an *ex post* calculation of the correct premium.

At least in personal injury, the general rule is that the benefits to the victims come from different sources. The problem is often to coordinate compensation from these sources. The rules are quite complicated. Roughly, the range of priority is

1. social insurance
2. sick pay or pension according to an employment contract
3. compensation according to collective employment pension insurance
4. periodic compensation from collectively-agreed accident and sickness insurance.

After these items, compensation under torts or torts-related arrangements will follow.

The practical effect of the rules is that the main burden of covering loss of income will rest upon social insurance and collectively-agreed insurance connected to employment, while, for instance, torts and

traffic insurance compensation correspond to only a small part of the losses of income.

As to property damage, the ruling principle is that the same damage must only be covered once. It is up to the owner to choose between for instance compensation in torts or insurance.

This order of the different sources of compensation may be changed by recourse action from the authorities and insurance companies involved. Generally, no recourse is allowed from social insurance.[18] Roughly speaking, recourse is very little used in the field of personal injury, while recourse actions occur more often in the property area.

COSTBEARERS

8. Initially, a riskbearer can choose to expose himself to a risk or to share it with others. Some riskbearers choose to handle the losses themselves and act as self-insurers. This is true for local and national government and some large enterprises. In these cases the organizations are so big as to provide a sufficient distribution of costs. Generally the distribution of costs is taken care of by compensation systems constructed in the form of public or private insurance schemes, funds, etc. Captive insurance companies may be called a middle way between self-insurance and ordinary insurance.[19]

However the risk coverage may be technically arranged, the victim or the insured must often suffer some of the loss himself. This follows from what has been mentioned about deductibles. In addition some types of insurance, such as sickness insurance, do not cover all the calculated loss. The amount of compensation may also be reduced by factors indicated above. The cost of insurance and other compensation schemes is paid by the insured as premiums or other contributions, and it is often difficult to identify the real costbearers. The degree of financing through taxes and the recovering of costs from resellers and customers makes this issue problematic.

When the costs are pulverized by distribution over a collective of payers of premiums, or taxes or other contributions, certain distributionary effects occur. The distribution may be on the basis of solidarity or on the basis of differentiation.

[18] The Public Insurance Act (1969:381), ch. 20, sec. 7, and the Workmen's Compensation Act (1976:380), ch. 6, sec. 7.

[19] See, for instance, DsE 1980:1 Återförsäkring genom captivebolag, *SOU* 1983:5 Koncession för försäkringsrörelse and *Prop.* 1984/85:77.

Social insurance is founded on solidarity. As long as one has no income, the benefits are the same for all. However, the benefits vary with income when any income is lost; but then contributions that correspond to the benefits have been paid by the employer or by the insured.

There are, however, group insurance compensation schemes where the contributions and the benefits are the same to all irrespective of risk. A solidarity approach has also been chosen for premium payment in some collective-agreement-based group policies such as Security Insurance, Employment Group Life Insurance, Collective Agreement Group Sickness Insurance and Special Employment Pension Insurance. Here the premium is calculated on every firm's salary record. This means that firms with different sickness and personal injury risks support one another on a solidarity basis.

In most types of private insurance, there are degrees of differentiation of premiums in relation to relevant risk factors and premium arguments. As to real property insurance, the value and the situation of the property could be considered, in traffic insurance the type of car, prior claims evidence (bonus), mileage and traffic zone; in life insurance, age and health status.

The balance between solidarity and differentiated premium payment in private insurance is regulated by the equity principle in the Insurance Business Act. According to this principle, every branch of insurance must cover its own costs. The differentiation of premium costs between individual customers must be calculated in a way that is equitable considering the risk that the insurance is to cover. The equity principle is evidently wide and vague as it allows flat-rate premiums in group life insurance and considerably differentiated premiums in for instance traffic insurance.[20]

DETERRENCE

9. The deterrent effects of compensation rulings are very much discussed in legal writing. This is a question of high significance in the construction of compensation systems. It is important to find whether there is any connection between liability for damages and the willingness to prevent damage. The question is usually linked to the negligence rule

[20] See further *SOU* 1986:8 Soliditet och skälighet, especially ch. 8.2.

in tort law, but may also be connected with for instance split liability, contributory negligence, deductibles, and recourse action.

For the purpose of this paper, it may be instructive to relate the theories on deterrence to three different schools, each with its own view of the problems. The *ideological school* is founded on the idea that if you change the law, you will also change human behaviour. On moral grounds and to avoid sanctions, people adapt their behaviour to the law. When liability is extended to cover a new area, people will change their behaviour to become more cautious. This thinking is not based on systematic observations of real life but on speculation. This type of research, a philosophically-influenced legal scholarship, has been gradually abandoned due to the growth of social science in the 20th century. This is no argument against the findings of introspective research—they may well coincide with empirical results.[21]

The ideological theories however raise some difficult issues. In the first place the theories presuppose that the actors have information of the contents of the law, which may often be doubtful. Further, this view is based on the erroneous notion that the law is efficient to the extent that illegal acts are discovered and sanctioned. As to torts, the question of deterrence is influenced by the fact that almost all compensation is paid by the insurers and only the deductible will be paid by the tortfeasor. The reasoning of the ideological school, finally, presupposes that all people react alike to the same social stimuli. These arguments alone are enough to cast doubt upon the theories of the ideological school.[22]

Another basis of theories on deterrence is *law and economics*. Especially well known are the theories on general deterrence developed by Guido Calabresi.[23] The basis of the theories of law and economics in this field is a cost-and-earnings calculation. If a damage means a cost without a corresponding earning, then "economic man" will tend to prevent the damage. In Sweden these thoughts have been elaborated by Göran Skogh.[24]

The idea that a person exposed to liability will adapt his behaviour to minimizing future losses seems reasonable. The theory, however, has certain limitations in common with the ideological school. As usual in theories of law and economics, one must proceed from conditions

[21] See, for instance, A.V. Lundstedt, *Grundlinjer i skadeståndsrätten*, Stockholm 1944–53, and P.O. Ekelöf, *Straffet, skadeståndet och vitet*, Uppsala 1942.

[22] Cf. J. Andenæs in *TfR* 1966, pp. 1–21.

[23] G. Calabresi, *The Cost of Accidents*, New Haven and London 1970. Cf. S. Shavell, *Economic Analysis of Accident Law*, London 1987.

[24] See especially *Priser, skadestånd och straff*, Stockholm 1977

which do not correspond to reality, for instance that all agents are fully informed.

The *sociological school* of deterrence is a result of several disparate efforts of, chiefly, criminological research. The efforts have induced more knowledge, but too many links in the chain are missing to build up a general theory. According to Eckart Kühlhorn, there is evidence that in the long term, normative thinking is influenced by punishment rates, while short-term deterrent effects vary considerably according to different crimes, different situations or different social groups. Naturally, it is not advisable to transfer these results directly from the criminal field to that of compensation.[25]

To conclude, knowledge of the deterrent functions of compensation law is not complete enough to support statements on the deterrent effects of different rulings. However, some value must be attached to the theories presented here. It is for instance probable that general deterrence according to the theories of law and eonomics has a considerable influence on the interplay between well-informed firms working for profit.[26]

TRANSACTION COSTS

10. The concept of transaction costs is used to signify those costs which are necessary to produce a contract. Social regulations and institutions like markets and firms can be explained with the support of transaction cost theories. Thus, non-compulsory legislation may be regarded as a method of diminishing contractual costs and the firm may be seen as an instrument for reducing the number of contractual transactions and thus transaction costs in industrial markets generally. Transaction cost aspects have been stressed by Coase and developed by, among others, Oliver Williamson.[27]

While the compensation systems discussed here are largely non-contractual, a broad "transaction cost" analysis may be rewarding. In legal reasoning, generally, transaction cost aspects seem to have played a minor role compared to other considerations.[28]

[25] *SOU* 1986:15, pp. 30 f.

[26] For instance P.S. Atiyah, *Atiyah's Accidents, Compensation and the Law*, 4th ed. by Peter Cane, London 1987, p. 524.

[27] See further *Företaget. En kontraktekonomisk analys*, Stockholm 1989, P.O. Bjuggren and G. Skogh eds., with references.

[28] But compare S. Bergström in *Festskrift till P.O. Ekelöf*, Stockholm 1972 , pp. 113 ff.

Consequently the concept of transaction cost is used in a broader sense than usual, that is to mean all costs that may occur in a compensation system before the victim is compensated. The following "transaction" costs will be distinguished:

- information costs
- distribution costs
- claims-handling costs, and
- conflict costs.[29]

Information is necessary for the victim to discover the possibility of compensation. In well-established and comprehensive systems, no difficulties will arise. As to individual insurance, there are compulsory rules on information before and after entering insurance contracts, see chiefly the Consumer Insurance Act, secs. 5 to 8. The lack of information will be most evident in compensation systems such as workmen's compensation and security insurance, where the insured are not included in an active and individual way. Special information efforts must be made to encourage employees to apply for compensation according to the Workmen's Compensation scheme. Another problematic area is compensation to victims of crime. There is evidence that this compensation scheme is unsatisfactorily known by many victims. Similar difficulties occur in voluntary group insurance. For instance many life insurance benefits remain unsettled because the relatives of a deceased person do not know about the insurance.

Distribution costs are low in compensation systems which are compulsory and comprehensive, but higher in voluntary and individual insurance policies. Variations occur between for instance a travel insurance policy issued by a computer instantly and a pension insurance which has been preceded by a time-consuming investigation of the economic situation of the insured. This type of distribution cost will decrease if insurers offer similar services. However, this may be a sign of restrictive competition practices.

Generally, group insurance will generate lower distribution costs since the choice of insurance is in practice made by representatives of big groups. This development will facilitate large-scale business and encourage standardized products.

Claims-handling costs vary between different compensation areas. Differences between the public and the private sector should be expected. A comparison between administrative costs in home-owners' insur-

[29] Cf. *Företaget* (footnote 27 above).

ance and those regarding compensation to victims of crime gives no indication of a significantly different cost level.[30] However, there are numerous complaints about the high cost level in public insurance and workmen's compensation.[31] These few observations call for caution when comparing the level of claims-handling costs in private and in social insurance.

Striking is, however, the low administration cost in Security Insurance—only 10 % of the amount of benefits paid.[32] This demonstrates the fact that public authority classification of workmen's injury or disease is the crucial condition for the rights to benefit from Security Insurance; it remains only to calculate the benefits. Types of collective or group insurance have low administration costs because the administrative tasks are more or less transferred to the group representative.

Conflict costs consist of all costs for the victim in a conflict with the authorities or the insurer. In the first place, the insured will rely on a resettlement by the authority or insurance company. In this case the conflict cost will be charged to the organization or, in other words, the insured group. Typical for Sweden are advisory boards, paid by the insurers to solve conflicts regarding above all the construction and interpretation of insurance contracts. There is also a public advisory board for consumer insurance matters.

Usually anybody who disapproves of the way a claim is handled can proceed to a public court. Astonishingly enough, however, there are some areas where the insurer's decision in consumer cases cannot be submitted to a public court but must instead be handled in secret by arbitration. The arbitration costs are often paid by the insurer. This happens in Security Insurance, Patient Insurance, Medical Drug Insurance and in some other branches of Collective Insurance. Even the new Pollution Damage Insurance is included here. This observation concerns only types of insurance which are unique and lack competitive alternatives. Although many of these arrangements may function well, it could be argued that the procedural rules are in some opposition to art. 6 of the European Convention on Human Rights regarding "access to justice".

The availability of legal aid will mean a transfer of the claimant's private conflict costs. In Sweden there is a general system for legal aid, and legal expenses insurance is included in many policies. The cost

[30] See *Enskilda försäkringsföretag*, Stockholm 1987, and *Prop.* 1986:100, appendix G.
[31] See *SOU* 1985:54 Översyn av arbetsskadeförsäkringen, ch. 6.
[32] See *Enskilda försäkringsföretag* (footnote 30 above).

picture in this respect varies considerably from area to area. Generally it is much more difficult to get legal expenses covered in public insurance than in private.

POLLUTION DAMAGE

11. Access to clean air, clean water and unspoiled natural surroundings have long been regarded as self-evident ingredients of life in great parts of the world. These common assets, however, have appeared insufficient in an industrialized society. Industrial activity has produced contaminated air and polluted water and has affected the environment in a negative way. Economists call this "external effects", costs imposed on others which do not have to be considered in a firm's calculations of profit. Another expression which is relevant here is "the tragedy of the commons". This means that there is a lack of incentive to avoid exploitation of common assets such as air, water, etc.[33]

Two main legal strategies can be used to prevent further pollution of the environment. One is public law restrictions, another is private law rulings connected to property rights or corresponding rights to the land. In the latter case possible instruments may be compensation in torts, or contracts regarding the level of disturbances as contributions according to the degree of infringement of property rights.

Both these strategies have disadvantages. The public law approach is time-consuming and calls for much information and supervision. The private law approach is above all disadvantageous in transaction costs. Basic rights, such as property rights, are connected to land. In cases of environmental disturbance, different holders of rights are involved in different ways. This type of conflict is difficult to solve since so many are involved, and since there are no appropriate legal institutions.[34]

In Sweden both strategies have been used. There is public law supervision according to the Environment Protection Act (1969:387). The rules of this Act force firms that carry on a polluting activity to apply for public permission. Detailed guidelines are stated for each firm, containing marginal limits etc. Each firm pays a certain contribution to the state. If the Act or the guidelines are not adhered to, injunctions or penalty may follow. The efficiency of this system has, however, been questioned.[35]

A private law model has long been used in neighbour relations.

[33] See, for instance, *Värdera miljön*, Stockholm 1989, L. Bergman ed.
[34] Cf. P.-H. Lindblom, *Grupptalan*, Stockholm 1989.
[35] See, for instance, S. Westerlund, *Miljöfarlig verksamhet*, Lund 1975.

Disturbances between real properties have resulted in compensation to the offended party. These compensation rules were introduced in the Environment Protection Act and have later been elaborated and included in the Environmental Damage Act (1986:225).

Pollution damage conflicts generally deal with diminished value of real property, difficulty to exploit real property, etc. In Swedish practice, there have also been some cases regarding personal injury due to contaminated water, etc.

Swedish experience has been modest so far. However, these risks are of a catastrophe type. Generally there is a flow of rather small incidents, which are of little significance. But all at once circumstances may change into a pollution catastrophe of giant proportions. Although the influence of hazardous substances may be of long duration, the effects appear suddenly. The parallel with product damage is striking.

12. Environmental liability is stated in the Environmental Damage Act. The liability is mainly strict. As to causation, the burden of proof is alleviated so that only predominant probability is required. Liability is imposed on those who carry on activities on real properties. The disturbances covered are inundations, contaminations of water, air and soil, noise, vibration and similar occurrences. Even where public permission has been granted, compensation can be made according to the Act. If the disturbances do not exceed what is general usage and usage of the region, the tortfeasor is liable only in cases of intent or negligence.

The principles for calculating compensation are the same as in tort law. Real estate owners are usually covered by liability insurance included in their general real property insurance and industrial insurance policies. It appears, however, that the disturbances covered by the Environmental Damage Act are excluded from liability insurance. This means that those who have suffered damage must generally claim for damages according to the Environmental Damage Act without the services that may be offered by a liability insurer. However, liability insurance will cover damage due to occasional errors or sudden and unforeseen defects in insured buildings or equipment. Industrial liability insurance will for instance cover damage to cars parked near plant, if the damage was caused by polluted smoke from the plant due to an occasional error in connection with the activities in the plant. Occasional defects in purification plants may cause damage through contaminated water, etc.[36] Under rather special circumstances, compensation may be

[36] See, for instance, P. Lagerström—C.M. Roos, *Företagsförsäkring*, Stockholm 1988.

granted from the first party insurance coverage of the party suffering the damage.

Environmental damage which is not covered by industrial or real property liability insurance may be compensated by an environmental damage liability insurance. In Sweden this type of insurance is rare. For obscure reasons, environmental damage liability insurance has met very little interest from presumptive pollutors.[37]

Typical for most environmental damage is that the effects will not appear until a long time has passed. Under these circumstances it may be difficult to locate the pollutor responsible or an insurance that covers the damage. In these cases and where the pollutor is insolvent, compensation may be granted from compulsory Environmental Damage Insurance. This insurance entered into force on July 1, 1989, and covers property damage as well as personal injury, compare sec. 65 of the Environment Protection Act. All factories with public permission for polluting activities are collectively included. The insurance conditions are similar to those in other Swedish no-fault insurance schemes. The main prerequisite is that the relevant claim regards compensation to which a physical person is entitled under the Environmental Damage Act.

As to compensation for personal injury, the main part of the compensation comes from other sources. As stated above, persons who suffer qualified disability will be compensated for loss of income through public insurance. Supplementary benefits may be granted to employees under the Collective Agreement Sickness Insurance. (Special compensation rules apply if the injury is classified as industrial.) Compensation from these insurance schemes is primary, and benefits under the Environmental Damage Act are reduced accordingly.

13. The rules on compensation in the Environmental Damage Act correspond to those in the Torts Liability Act. As to property damage, compensation will be settled to cover the difference between the value of the property before the damage and the value after, see the Torts Liability Act (1972:207), ch. 5, sec. 7. Important is that clean-up costs should be compensated as a consequential loss according to this section.

The same rules are applicable in liability insurance, in environmental liability insurance and in compulsory Environmental Damage Insurance. If, by exception, first-party insurance coverage is applicable, the

[37] Cf. for an international perspective *Aida Studies in Pollution Liability and Insurance*, W. Pfenningstorf ed., Budapest 1986, and *Insuring Environmental Risks, Essays in Honour of A. Kelly*, London 1986.

property loss will usually be more generously compensated, while consequential losses are more seldom covered.

The compensation rules in cases of personal injury have already been touched upon. The connection with the tort rules means that the injured person will get full compensation for the loss of income not already compensated through public or collective insurance. Additionally, compensation for immaterial losses will be granted, i.e. pain and suffering, loss of amenities and "other inconvenience". Typical for environmental damage is psychological inconvenience, that is, the general nuisance consisting of unpleasant smells and other impressions, even including the unpleasant feeling of living in particularly risky surroundings. These inconveniences have to a certain extent been compensated in Swedish law.[38]

The time limits for claims are of special interest here. Under the Environmental Damage Act a general period of 10 years from the event applies. Industrial liability cover applies to occurrences when the policy is in force, while the (rare) environmental liability policy uses the claims--made principle. In compulsory Environmental Damage Insurance the claim must be made within three years of the occurrence of the damage.

There is certainly more to be said on the calculation of compensation. Compensation may be reduced in cases of contributory negligence, in cases where an insured party has not fulfilled his duties according to the law or the policy conditions, etc. Rules on limitation of compensation amounts are of particular interest as pollution damage cover appears as a catastrophe cover. The only general limitations are those in the compulsory Environmental Damage Insurance Scheme. Here the maximum amounts are 5 million SEK for every person injured and 50 million SEK for every damaging occurrence. Further, there is an overall limitation consisting of 200 million SEK for each year.

14. In cases of personal injury, the major part of the compensation comes from public and collective insurance. These schemes are financed by taxes and contributions and premiums from employers which are related to the payroll. In this area, the costs are pulverized over a large number of cost-bearers.

The Environmental Damage Act, however, is a type of tort liability legislation, which means that financing is unsecure and posterior to the damage. The probability that compensation will be paid is higher than usual since it is often enterprises that are liable. However, in case of

[38] *SOU* 1983: 7 Ersättning för miljöskador, pp. 50 f.

pollution damage it may happen that the compensation amounts are so high that many enterprises are unable to pay them in full. Only a minor part of pollution damage—i.e. that resulting from sudden and unforeseen events—is covered by the regular industrial liability policy. The premiums are differentiated according to risk and prior experience, and vary according to a firm's number of employees and its pollution risks.

Thus insurance premium costs are distributed among presumptive pollutors, mainly industrial enterprises. However, costs may be passed on to consumers or suppliers when possible under relevant conditions.

The pollution risk is a type of catastrophe risk. The necessary compensations may consequently exceed the limits of the compensation system. In such a situation it is probable that supplementary resources will be provided by the state. In Sweden this has happened in cases of severe inundations or landslides.

15. Pollution damages is a field where general deterrence—in the sence of the word in law and economics—may be influential. Many economists argue that the problem consists of internalizing external effects. This is not possible regarding compensation from public insurance and collective insurance, but perfectly feasible in the case of, for instance, compensation according to the Environmental Damage Act.

It is easy to imagine situations where industrial activities induce pollution risks and where practically the only incentives in the choice between different actions are economic ones. This may mean that a firm avoids certain kinds of polluting activity because of the risk of penalty or paying compensation. Such an ideal picture is probably rare owing to transaction costs. Even if the agents are fully informed, public control and supervision is often inefficient, prosecutors are reluctant and compensation trials may be complicated owing to the great number of persons involved in pollution cases.

Industrial liability insurance contains some clauses which may have a deterrent function, above all the exception from cover in cases of actions that violate the law or decisions of the authorities.[39] Deductibles could also be mentioned. Further, premiums vary to some extent with pollution risks so as to produce deterrent effects, provided that the premium costs cannot be passed on to other subjects.

Compulsory Environmental Damage Insurance contains few deterrent elements other than the differentiation of premiums that partly corresponds to the pollution risk involved.

[39] See footnote 36 above.

16. Information costs are minimal in public insurance and collectively agreed insurance. The liability rules of the Environmental Damage Act are founded on old principles which might be generally known and accepted. Information efforts should in the first place be aimed at supplementary and compulsory Environmental Damages Insurance. The information problems here resemble those of Victims-of-Crime Compensation, which is also a last resource type of compensation.

Distribution costs are not necessary in cases of the right to compensation from public insurance, from collectively-agreed insurance and from the Environmental Damage Act. The general liability insurance in the industrial insurance scheme is quite broad in scope. Compulsory Environmental Damage Insurance covers all enterprises with public permission to engage in polluting activities. Further distribution costs are needed, however, if voluntary Environmental Liability Insurance is to be more widely used in practice.

Claims-settlement costs show a more diversified picture. For personal injury, the claims handlings system in social insurance is in many respects costly, while the administration costs in collectively-agreed insurance are low, partly because the conditions for cover coincide with those in social insurance, partly because conflicts in these types of insurance cannot generally be brought before the courts.

When it comes to liability under the Environmental Damage Act, the costs are generally high, since a tort law system calls for assistance from the courts and since the number of parties involved may be great.

It is particularly problematic that there are environmental damage compensation devices on at least three different levels. Sudden and unforeseen damage is covered by liability insurance, long-range damage is the object of strict liability but is only covered if a voluntary Environmental Liability Insurance exists. The third level consists of compulsory Environmental Damage Insurance, which covers some types of damage not compensated by other schemes.

It is evident that this trinity entails borderline problems and unnecessary administration costs. More rational solutions could be suggested, for instance a comprehensive environmental damages policy corresponding to the liability of the Environmental Damage Act and including the last-resource coverage of Environmental Damage Insurance. International experience shows, however, that such an insurance scheme often tends to be too expensive for the relevant insurance market.

The crucial point is that the Swedish solution is based primarily on the tort liability system of the Environmental Damage Act. Such a system

contains many weaknesses as to transaction costs. The information needed for claims handling is dispersed and difficult to obtain. Hence it is of little importance that the legislator has distributed the rights to everyone. Furthermore, it is costly and irrational that negotiations take place between parties who generally have very small experience of handling environmental damages claims. Above all, many parties may be involved, which makes the procedural situation even more confused. The courts lack the resources to handle many environmental damages conflicts. Enterprises may even have difficulty to cover their legal expenses. One disadvantage of a tort liability system, however, is eliminated, since compulsory insurance covers claims where the liable pollutor is insolvent.

It is evident that a functioning overall environmental liability insurance should facilitate the exchange of information, induce cheap and established routines for negotiation and conflict solution, secure the coverage of the expenses involved and guarantee the payment of compensation. It is a common experience that a compensation system based on torts liability cannot function effectively without a liability insurance scheme.

As to conflict costs, finally, the Swedish system is expensive since the majority of claims are handled outside the insurance system, which means a risk of heavy legal expenses. On the other hand, conflicts related to the compulsory Environmental Damage Insurance may not be brought to court. According to the insurance conditions, disputes must be settled by arbitration. This solution could be criticized from the point of view of "access to justice".

17. In conclusion, the Swedish system for compensating pollution damage has certain advantages but also some disadvantages.

Among the advantages, the Swedish Pollution Damage Act states strict liability for the pollutor, with only minor exceptions. Further, the compulsory Swedish Environmental Damage Insurance is an ambitious effort to solve the problem of what have been termed old burdens (*Altlasten*).

Among the disadvantages is, in the first place, the lack of a liability insurance covering long-range damage, which is the most frequent. It has been argued here that a tort liability system cannot be expected to function effectively without the support of a liability insurance scheme. Another disadvantage follows from the limitation of compensation amounts in the different insurance schemes. As pollution damage may appear in form of a catastrophe, the amounts may appear insufficient. In this case supplementary compensation may be provided by the state.

Other inconveniences may be observed, such as the arbitration clause in the compulsory Environmental Damage Insurance and the difficulties for firms to get their legal expenses covered by legal aid or legal expenses insurance.[40]

[40] Cf. *SOU* 1987:32.