

# TEKST NR 55

# 1982

MATEMATISKE MODELLER

Litteratur på Roskilde Universitetsbibliotek

En bibliografi

Af Else Høyrup

## TEKSTER fra

### IMFUFA

**ROSKILDE UNIVERSITETSCENTER**  
INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK SAMT DERES  
FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER

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Resumé:

Denne bibliografi omfatter litteratur om matematiske modeller på Roskilde Universitetsbibliotek (RUB) indtil august 1982. Der bliver dels fremdraget bøger om modeller, som i RUB's systematiske katalog er klassificeret som matematik eller datalogi (ikke nødvendigvis som opstillingsgruppe), dels tidsskriftsartikler om modeller fra 4 matematiske tidsskrifter i perioden 1976-82, samt IMFUFA's egen skriftseries numre om matematiske modeller. Bogtitlerne er forsynet med den opstillingssignatur, som de har på RUB's åbne hylder, og bøger og tidsskriftsartikler er ordnet sammen systematisk i et til lejligheden konstrueret klassifikationssystem, som gennemgås i indholdsfortegnelsen og i et alfabetisk emneregister. Der er desuden et alfabetisk navneregister.

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MATEMATISKE MODELLER

LITTERATUR på  
ROSKILDE UNIVERSITETS-  
BIBLIOTEK

En bibliografi

Af E L S E H Ø Y R U P.

Roskilde, 1982

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## F O R O R D

Denne bibliografi har et dobbelt sigte: Dels er den et speciale til forskningsbibliotekaruddannelsen på Danmarks Biblioteksskole, dels er den tænkt som en publikation til IMFUFA's skriftserie (IMFUFA = Institutet for studiet af matematik og fysik samt deres funktioner i undervisning, forskning og anvendelser, Roskilde Universitetscenter).

På Roskilde Universitetscenter og det dertil knyttede Roskilde Universitetsbibliotek forsøger man at bygge nogle tværfaglige miljøer op, som for matematiks vedkommende indebærer en stor interesse for en måde at anskue matematikkens moderne anvendelser på, som kan kaldes "matematiske modeller". (Ved en matematisk model forstås en repræsentation af et udsnit af virkeligheden ved hjælp af matematiske teknikker). Tidligere anvendtes matematik fortrinsvis i fysik, astronomi og teknik; men i de senere år har man udvidet anvendelsesområderne til biologi, miljøproblemer, energiproblemer, økonomi og andre samfundsvidenskaber, lingvistik, psykologi m.m. Denne udvidelse er sket på godt og ondt, det sidste når matematikken kun bliver brugt som en overfladisk tilsmykning af ideologiske argumenter. I undervisningen og forskningen ved IMFUFA beskæftiger man sig dels med den ofte krævende modelbygningsproces, dels med en evaluering af forskellige færdige modeller.

I samarbejde med IMFUFA og datalogerne på RUC (som er tilknyttet et andet institut, Institut for datalogi og geografi) har vi på Roskilde Universitetsbibliotek (RUB) indkøbt en del litteratur om matematiske og datalogiske modeller, dels som bøger, dels som tidsskrifter. Disse publikationer indgår i den større samling, som et universalbibliotek er. For at IMFUFA's og datalogis lærere, studenter og teknikere, andre grupper på RUC samt evt. interesserede uden for RUC skal kunne få et mere dybtgående kendskab til specialsamlingen om matematiske modeller, har jeg lavet denne bibliografi.

Bøger og tidsskriftsartikler om matematiske og datalogiske modeller er trukket frem (ved hjælp af en noget formalistisk udvælgelsesmetode, som beskrives nedenfor). Derefter er de ordnet systematisk i et til lejligheden konstrueret specialklassifikationssystem, som gennemgås i indholdsfortegnelsen og i et af registrene. Jeg har valgt at sætte bøger og tidsskriftsartikler sammen for bedre at kunne belyse del-emner, og jeg har valgt en anden måde at klassificere på end den, jeg og de andre forskningsbibliotekarer på RUB anvender til daglig. Til daglig er vores univers nemlig det universelle univers, mens det her er det delunivers, der består af matematikken og datalogien samt deres anvendelser. En bog eller en artikel om en bestemt anvendelse af et bestemt område af matematikken eller datalogien kan teoretisk dels placeres under det matematiske (eller datalogiske) emne eller under anvendelsesområdet (og i det universalklassifikationssystem, der benyttes på RUB (UDK = det universelle decimalklassifikationssystem), endvidere under koblingen mellem de to emner, betegnet med : ). Af overskuelighedsgrunde har jeg valgt kun at give litteraturen én placering, og da jeg som sagt kun beskæftiger mig med et delunivers her, har jeg her valgt at lade anvendelsesområdet trække mest. Det betyder dog ikke, at jeg ønsker en ændret opstilling af bøgerne til daglig. Selv om jeg anvender en anden teknik her end til daglig, så har jeg alligevel haft stort udbytte af de klassifikationer, bøgerne allerede har, og af vores klassifikationsskemaer generelt.

Under temaet katalogisering (udformning af indførelserne) nævner jeg, at jeg anfører bøgernes opstillingsmærke på de åbne hylde. For én, som er bekendt med vores UDK-klassifikationssystem, vil klassifikationstallet måske se lidt tilfældigt ud; men det skyldes, at det er meget vanskeligt i et universalbibliotek at klassificere tværfaglig litteratur konsekvent. Det er ikke nok at kigge på bogens titel, man må også se på hvilke nuancer, der ligger i bogens indhold, for at kunne vælge, om bogen skal placeres under det ene eller det andet fag. Det er denne usikkerhed, jeg er kommet om ved, ved at lade anvendelsesområdet trække mest (med mindre der er



tale om så mange anvendelser, at bogen egentlig handler om anvendt matematik (eller datalogi) generelt).

Denne bibliografi er desuden forsynet med et alfabetisk navneregister og et alfabetisk emneregister (som er lavet på grundlag af mit klassifikations-skema).

Jeg har valgt ikke at annotere den udvalgte litteratur, da dette ville have krævet et større tidsforbrug, end jeg har kunnet afsætte til denne opgave.

I den sidste del af dette forord vil jeg beskæftige mig med den præcise udvælgelse af litteraturen samt med den valgte katalogisering af indførelserne:

Da denne bibliografi også er et speciale til Biblioteksskolen, hvor man ved bibliografier ønsker en konsekvent udvælgelsesprocedure, er der her anvendt en noget formalistisk udvælgelsesmetode af bøgerne: nemlig de bøger, som i RUB's systematiske katalog er klassificeret som matematik eller datalogi (ikke nødvendigvis som opstillingsgruppe, gerne som biindførelse, for at få så mange anvendelser med som muligt). Dvs. i vores UDK-systematik gruppe 51 (matematik) med undergrupper og gruppe 681.3 (datalogi) med undergrupper. Desuden er medtaget de overordnede naturvidenskabelige grupper: gruppe 5/6 (naturvidenskab og teknik generelt), gruppe 50 (naturvidenskab generelt) og gruppe 50:1 (naturvidenskabernes filosofi). Der er også taget filosofisk litteratur om modeller med inden for de nævnte grupper; men der er gjort én undtagelse: gruppe 510.6 (matematisk logik) er ikke medtaget, da begrebet "model" nærmest bruges omvendt her (virkeligheden betragtes her som en model for teorien).

Ved den valgte udvælgelsesmetode får man også bøger med, som er opstillet andre steder end i matematikgrupperne, men desværre ikke alle relevante bøger (hvilket nok også til dette formål havde været for stort et arbejde). F.eks. kommer de grundlæggende bøger om "verdensmodeller" (Forrester, Meadows m.fl.) desværre ikke med, se noterne til denne gruppe.

Blandt tidsskrifterne er ikke alle gennemgået (af tidsgrunde). Der er valgt 4 matematiktidsskrifter (gruppe 51), som alle spiller en vis rolle på RUC, samt IMFUFA's egen skriftserie:

Tekster fra IMFUFA (gruppe 50).

De 4 tidsskrifter er:

American Mathematical Monthly (fork. Amer. Math. Mon.).  
International Journal of Mathematical Education in Science  
and Technology (forkortet Int. J. Math. Educ. Sci. Technol.).  
Bulletin / Institute of Mathematics and its Applications  
(=IMA) (forkortet Bull. Inst. Math. Appl.).  
Applied Mathematical Modelling. Environmental, Social and  
Engineering Systems (forkortet Appl. Math. Modelling).  
NB Vol.2 (1978) er ikke gennemset, da det ikke findes  
på RUB.

I Applied Mathematical Modelling handler selvfølgelig alle artiklerne mere eller mindre om matematiske modeller, og jeg kunne enten have taget alle eller ingen med. Jeg har valgt at tage de artikler med, som direkte i titlen handler om modeller, for dog at belyse nogle interessante anvendelsesaspekter.

Dette udvalg af 4 artikler og 1 serie betyder imidlertid ikke, at ikke også andre RUB-tidsskrifter eller serier indeholder artikler (eller numre) om matematiske modeller.

Af praktiske grunde har jeg kun taget nyere tidsskriftsartikler med (fra og med 1976).

Jeg startede arbejdet med denne bibliografi februar 1982 og afsluttede indsamlingen af litteratur i begyndelsen af august 1982.

Afgrænsningen af bibliografien er selvfølgelig udtryk for et valg: Når jeg har udvalgt litteratur om matematiske modeller kunne jeg også have taget nærbeslægtede områder som systemteori med generelt. Det har jeg dog i denne sammen-

hæng syntes var for stor en mundfuld, når det faldt uden for resten af bibliografiens rammer.

Med hensyn til katalogiseringen af bogtitlerne (udformningen af indførelserne), så gør denne bibliografi det ikke ud for et mønsterkatalog, jeg har blot valgt en nogenlunde let bearbejdning af den katalogisering, som bruges i vort katalog på RUB. Jeg har under hver titel anført bogens opstillingssignatur på de åbne hylder, så bøgerne er lige til at finde. Det første opstillingsbogstav er signaturen for den afdeling, bogen står på, det næste er opstillingstallet, som svarer til det omtalte UDK-klassifikationssystem, mens de tre bogstaver til sidst bestemmer bogens alfabetiske placering gennem de tre første bogstaver af det såkaldte hovedordnings-element. Dette er ikke altid så gennemskueligt for udenforstående, så for at lette på det, starter jeg min udformning af den enkelte titelindførelse med hovedordnings-elementet. (Normalt er det første forfatters efternavn; men ved en udgiver er det første ord i titlen).

Til slut vil jeg udtrykke mit håb om, at denne bibliografi vil kunne udbrede kendskabet til RUB's samlinger på dette område, samt medvirke til arbejdet med at bygge bro mellem den rene og den anvendte matematik.

Else Høyrup,  
Roskilde Universitetsbibliotek,  
august 1982.

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