# Facets in UDC: a review of current situation

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Abstract: The author explains some general principles in structuring classifications, in particular the facet as a basic building element of the scheme. The paper provides an overview of structural and presentational elements of facets and how these can be expressed through notational system. The author also analyses the way some broad fundamental facets of concepts are presented in UDC tables, when these are represented by special auxiliaries, and proposes a way of normalising facet presentation so that it becomes consistent and easy to recognize in UDC.

## 1. Facet elements

Facets are attributes that typically occur within a class: although "cats" can have any number of attributes, such as "living with a painter" or "liking to chew electric cables", some are more typically useful to describe cat instances, like "tabby" or "sterilized". In more technical terms, they are subdivisions of a class by mutually exclusive criteria, each generating an array (Vickery, 1960; Ranganathan, 1967). Any phenomena can be organized into facets according to certain attributes; however, traditional bibliographic classifications are usually concerned with the facets of a discipline, such as "methods" or "operations" besides those of the objects of study, like "fur colour".

In UDC, facets are often expressed as special auxiliaries, that is auxiliaries that can be attached only to specific classes, as opposed to common auxiliaries that can be attached to any class. This is consistent with the illustration above of what a facet is: while anything can be "in 1979" (common auxiliary), only cats can be "tabby" (special auxiliary).

The relationship between a class and its facet actually consists of a set of structural sub-elements (Gnoli, 2006; Gnoli et al., 2011). It is important to acknowledge their existence, be it explicit or not in its particular realizations:

- the **basic class**, e.g. "cats";
- the **facet introducer**: a sign meaning that what follows is a facet, as opposed to a subclass or any other structural element (this term is not found in existing literature, and should not be confused with *facet indicator* — see below);
- the **fundamental category** to which the facet belongs, e.g. "properties" as opposed to "processes" or "agents" etc.;
- the **principle of subdivision** of the facet, e.g. "fur colour". This can be given as the result of the combination of the basic class with the fundamental category (e.g. the fundamental category "processes" in the context of the astronomy class can take the meaning "celestial mechanics"). In several systems, this is notationally expressed together with the two previous sub-elements by a facet indicator (e.g. a punctuation mark in Colon);
- the **source** in the system from where the facet values can be taken (place of definition of foci). There seems to be three logical options for this:
    - foci have to be taken from a special list only defined for the facet itself (context-defined foci): the value for the "gender" facet of animals can only be either "male" or "female";
    - foci have to be taken from the subclasses of another class (special extra-defined foci, a special case of parallel division): values for the facet "in season" will be taken from the class of seasons. This includes the solution, frequent in UDC, that they are taken from the facets of another class;

    - foci can be taken from any class in the schedules (general extra-defined foci): values for the facet "special topic" in librarianship will be taken from anywhere;
- the value taken in the present classified item by the facet, called its **focus**, e.g. "tabby";
- a **facet closer,** marking the end of a facet, to which another facet or sometimes a subclass of the faceted class (a subclass of tabby cats, not just of cats) can follow. Notice that this is only a theoretical sub-element, not implemented in many systems including UDC;

Each of these elements can either be expressed in notation or not. An element can be expressed in a special character, or in a character sequence, or even in just the transition from a character set to another (e.g. the transition from numbers to punctuation marks works as facet introducer in Colon, while the transition from a later-filing to an earlier-filing letter works as facet introducer in BC2).

Expressivity in itself is clearly a benefit, but it conflicts with other requirements like simplicity and brevity: therefore, different classifications adopt different compromises. A non-expressive classification like BC2, although being fully structured into facets, does not express most of these elements in notation.

UDC is generally set as a very expressive classification, with a notation that lends itself for easy use in digital information retrieval. Therefore, it seems highly desirable that UDC follows more consistently the principle of notational expressivity when it comes to facet presentation. This objective has not been fully realised yet, primarily because different classes have been analysed into facets differently and there is a need for clear guidelines on this specific point. This review attempts to provide a contribution in this direction.

## 2. Presentation of special auxiliaries in UDC

Let us have a short review of faceted classes in UDC, in the light of the structural sub-elements listed above. We will consider here the classes that have some facets presented as special auxiliary tables (symbol | before notation in the schedules) in the English Pocket edition (BSI, 2003), though completing their presentation by some additional notation from the Master Reference File; captions will be shortened for the sake of simplicity of presentation in the present context, so please refer to the schedules for the exact meaning and scope of each class.

It turns out that the elements above have been modelled differently in the facetization of different UDC classes. Facet introducer is sometimes the single character - and sometimes the two-character sequence .0. Although these are by far the most widespread introducers, others are used, such as ` (back quote).

The first digit following the facet introducer usually expresses the principle of subdivision. However, in some cases the facet introducer consists of two digits. No category indicator is usually expressed; this is a quite deliberate choice, as it is believed to have no special use in application of classification, while being primarily important in the process of building the system. (Tentative category schemes are only discussed in FID 1990 guideline, with an example for astronomy, and in Philosophy revision Report 1 about the cases of philosophy and religion (Gnoli, 2009). Further digits after the facet indicator usually express focus. Source notation is mostly internal to the facet itself (context-defined foci), except for some facets with notation parallel to that of others (special extra-defined foci) and rare cases of notation taken from anywhere in the scheme (general extra-defined foci).

### 2.1 Facets introduced by - (hyphen)

A common situation in UDC is to have a hyphen - as the facet introducer, followed by one digit for the principle of *subdivision, and the subsequent digits for context-defined foci:*

*Philosophy*

A proposal for a new faceted schedule of philosophy is in preparation and is expected to adopt the following model:

1-2 Philosophy sources
1-3 Philosophers
1-4 Applications of philosophy
1-5 Practice of philosophy
1-8 Viewpoints
1-9 Philosophical systems

Example of combination:
17-949 Ethics, in Epicureanism
basic class: 17 Ethics
facet introducer: -
category indicator and principle of subdivision: 9 Philosophical systems
source notation: context-defined
focus: 49 Epicureanism

*Religion*

2-1 Theory and philosophy of religion
2-2 Evidences of religion
2-3 Persons in religion
2-4 Religious activities
2-5 Worship
2-6 Processes in religion
2-7 Religious organization and administration
2-8 Religions characterised by various properties
2-9 History of the faith, religion, denomination or church

Example of combination:
24-788 Buddhism, monastic orders

basic class: 24 Buddhism
facet introducer: -
category indicator and principle of subdivision: 7 Organization and administration
source notation: context-defined
focus: 88 Monastic orders

*Social welfare*

364-1/-7 Special auxiliary subdivision for social welfare
364-1 Theories of social welfare
364-2 Principles of assistance
364-3 Social welfare agencies
364-4 People as providers of assistance
364-5 Social welfare facilities
**364-54 Homes**

364-6 Contributions and payments
364-7 Social welfare operations

Example of combination:
364.662-54 Welfare homes, almshouses

basic class: 364.662 Poverty
facet introducer: -
category indicator: lacking
principle of subdivision: 5
source notation: context-defined
focus: 4 Homes

*Astronomy*

51-1/-8 Special auxiliary subdivision for astronomy
52-1 Mode of treatment
52-3 Properties and phenomena, especially geometrical
52-4 Processes of bodies and systems
52-5 Stages in development of bodies and systems
52-6 Processes of radiation
52-7 Character of radiation
52-8 Parts and features of individual systems
52-**87** **Satellites. Companions**

Example of combination
523.4-87 Solar System planets satellites

basic class: 523.4 Solar System planets
facet introducer: -
category indicator and principle of subdivision: 8 Parts and features of systems
source notation: context-defined
focus: 7 Satellites

*Engineering*

62-1/-9 Special auxiliary subdivision for technology in general
62-1 General characteristics of machines
62-2 Fixed and movable parts, components of machines
62-3 Fluid control parts and drives
62-4 State, condition and form of materials
62-5 Operation and control of machines and processes
62-**51** **General operation and control of machines and processes**
62-6 Fuel and other heat-source characteristics of machinery and installations
62-7 Servicing, maintenance, protection of machines
62-8 Machines according to motive power
62-9 Variables, conditions and characteristics of production processes, plant and equipment

Example of combination:
629-51 Transport vehicle engineering, steering controls

basic class: 629 Transport vehicle engineering
facet introducer: -
category indicator: lacking
principle of subdivision: 5 Operation and control of machines and processes
source notation: context-defined (special extra-defined only for 62-9)
focus: 1 General operation and control, incl. steering controls

*Place and space*

| | |
|---|---|
| (1-0/-9) | Boundaries and spatial forms of various kinds |
| (1-0) | Zones |
| (1-**04)** | **Limiting zones. Boundaries** |
| (1-1) | Orientation |
| (1-5) | Dependent or semi-dependent territories |
| (1-6) | States or groupings of states from various points of view |
| (1-7) | Places and areas according to privacy |
| (1-8) | Location. Source. Transit. Destination |

Example of combination:
(430-04) The boundaries of Germany

basic class: (430) Germany
facet introducer: -
category indicator: lacking
principle of subdivision: 0 Zones
source notation: context-defined
focus: 4 Boundaries

**2.2 Facets introduced by .0 (point naught)**

The same model is also frequent with .0 as the facet introducer, again with context-defined foci:

*Writing systems*

| | |
|---|---|
| 003.01/.09 | Special auxiliary subdivision for writing systems and scripts |
| 003.01 | Origins, precursors of scripts |
| 003.02 | Emergence of writing |
| 003.03 | Graphic expression of language |
| 003.07 | Uses and styles |
| 003**.072** | **Palaeography. Palaeographic writing** |
| 003.08 | Characteristics of writing |
| 003.09 | Techniques and methods of deciphering scripts |

Example of combination:
003.344.072 Latin script, palaeography

basic class: 003.344 Latin script
facet introducer: .0
category indicator: lacking
principle of subdivision: 7 Uses and styles [of writing]
source notation: context-defined
focus: 2 Palaeography

*Computer science*

| | |
|---|---|
| 004.01/.08 | Special auxiliary subdivision for computing |
| 004.01 | Documentation |
| 004.02 | Problem-solving methods |
| 004.03 | System types and characteristics |
| 004**.031** | **System types** |
| 004**.031.2** | **Offline. Including: Batch** |
| 004.04 | Processing orientation |
| 004.05 | System and software quality |
| 004.07 | Memory characteristics |
| 004.08 | Input, output and storage media |

Example of combination:
004.55.031.2 Hypertexts, offline

basic class: 004.55 Hypertexts
facet introducer: .0
category indicator: lacking
principle of subdivision: 31 System types
source notation: context-defined
focus: 2 Offline

*Social sciences in general*

| | |
|---|---|
| 3.07/.08 | Special auxiliary subdivision for social sciences in general |
| 3.07 | Administrative arrangements |
| 3.08 | Personnel of authorities |

facet introducer: .0
category indicator: lacking
principle of subdivision: 7/8
source notation: context-defined

*Demography*

| | |
|---|---|
| 314.01/.04 | Special auxiliary subdivision for demography |
| 314.01 | Subject, scope and aims of demography |
| 314.02 | Sources of demographic data |
| 314.04 | Types and features of populations |

facet introducer: .0
category indicator: lacking though implicit in facet captions

principle of subdivision: 1/8
source notation: context-defined

*Law*

34.01/.09 Special auxiliary subdivision for law, jurisprudence
34.01 Nature of law
34.02 Conditions of existence of law
34.03 Operation, workings of law
34.04 Reformation of law
34.05 Comparison
34.06 Questions of legal method and technique
34.07 External organization of law
34.08 Legal personnel
34.09 Individual cases, issues, points of law

facet introducer: .0
category indicator and principle of subdivision: 1/8
source notation: context-defined

*Military affairs*

355.01/.09 Special auxiliary subdivision for military affairs
355.01 Sociology of war. Philosophy of war
355.02 Military policy
355.08 Military, naval, and other service personnel
355.09 Military, naval, and other service personnel

facet introducer: .0
category indicator and principle of subdivision: 1/8
source notation: context-defined

*Education*

37.01/.09 Special auxiliary subdivision for theory, principles, methods and organization of education
37.01 Fundamentals of education
37.02 General questions of didactics and method
37.04 Education in relation to the educand, pupil
37.06 Social problems
37.07 Management aspects of educational institutions
37.09 Organization of instruction

facet introducer: .0
category indicator and principle of subdivision: 1/8
source notation: context-defined

*Physics in general*

53.01/.09 Special auxiliary subdivision for physics
53.02 General laws of phenomena

53.05 Observation and recording of phenomena
53.07 Apparatus for production and study of phenomena
53.08 General principles and theory of measurement

facet introducer: .0
category indicator: lacking
principle of subdivision: 2/8
source notation: context-defined

*Biological sciences*

57.01/.08 Special auxiliary subdivision for theoretical aspects, characteristics, factors etc. in biology
57.01 General laws
57.02 Biological and ethological processes
57.03 Pattern of property variations
57.04 Factors. Influences
57.06 Nomenclature and classification
57.07 Analytical palaeontology
57.08 Biological techniques

facet introducer: .0
category indicator and principle of subdivision: 1/8
source notation: context-defined

*Botany*

582.091/.099 Special auxiliary subdivisions for classification of plants according to size and form

facet introducer: .0
principle of subdivision: 9
source notation: context-defined

*Home economics*

64.01/.08 Special auxiliary subdivision for domestic science
64.01 Household management
64.048 Study of work and working methods in the household
64.05 Home economics for particular kinds of person
64.06 Household appliances and machines
64.08 Moving house. Removals

facet introducer: .0
category indicator: lacking
principle of subdivision: 1/8
source notation: context-defined

*Chemical technology*

66.01/.09 Special auxiliary subdivision for chemical engineering
66.02 Chemical processing operations and equipment
66.04 Heat treatment operations and equipment
66.06 Chemical technology of liquids
66.07 Chemical technology of gases
66.08 Physical and physicochemical operations and equipment
66.09 Chemical technical reactions

facet introducer: .0
category indicator: lacking
principle of subdivision: 2/9
source notation: context-defined

*Rubber and plastic industry*

678.02 Manufacturing processes and operations
678.03 Raw materials
678.04 Auxiliary materials. Additives
678.05 Plant. Machinery. Equipment
678.06 Applications of macromolecular materials. Finished products
678.07 Classification according to special characteristics
678.09 Materials resulting from particular processes

facet introducer: .0
category indicator: lacking
principle of subdivision: 2/7
source notation: context-defined

*Arts in general*

7.01/.09 Special auxiliary subdivision for the arts
7.01 Theory and philosophy of art
7.02 Technique. Craftsmanship
7.03 Artistic periods and phases
7.04 Subjects for artistic representation
7.05 Applications of art
7.06 Various questions concerning art
7.07 Occupations and activities
7**.079** **Arts festivals**
7.08 Characteristic features, forms, combinations etc.
7.09 Kind of performances and presentations

Example of combination:
791.65.079 Film festivals

basic class: 791.65 Film exhibition
facet introducer: .0

category indicator: lacking
principle of subdivision: 7 Occupations and activities
source notation: context-defined
focus: 9 Arts festivals

*Photography*

77.01/.09 Special auxiliary subdivision for photography
77.01 Theory, principles and nature of photographic phenomena
77.02 Photographic operations
77.03 Documentary photography
77.04 Pictorial, artistic photography
77.05 Photography and exposures according to ambient conditions
77.06 Photographs, pictures or prints according to appearance, form or size
77.07 Photographs according to support or base material
77.08 Photographs according to intermediate stages

facet introducer: .0
category indicator: lacking (except for .01)
principle of subdivision: 1/8
source notation: context-defined

**2.3 Classes with two kinds of facet introducers**

Some UDC classes have special auxiliaries presented with more than one type of notation. Occasionally -1/-9 is used to present concepts that are applicable in all areas of the main class, while .0 and `1/`9 are normally used to present more specific concepts.

*Chemistry*

54-1/-4 Special auxiliary subdivision for state of substance, chemicals
54-1 State of substance
**54-16 Solid phase**
**54-162 Crystalline state**
54-3 Particular kinds of compound
54-4 Chemicals. Reagents

Example of combination:
546.26-162 Graphite. Diamond

basic class: 546.26 Carbon
facet introducer: -
category indicator: lacking
principle of subdivision: 1 State of substance
source notation: context-defined
focus: 62 Crystalline state

54.01/.08 Special auxiliary subdivision for composition, production, preparation and analysis

54.01 Chemical substances and systems. Origin. Occurrence. Phases
54.02 Composition. Structure. Isotopes
54.05 Production. Preparation. Isolation. Purification etc.
54.06 Analysis, investigation and handling in general
54.07 Apparatus and equipment for preparation, investigation and analysis
54.08 Measurement principles, methods, techniques. Instrumentation

facet introducer: .0
category indicator: lacking
principle of subdivision: 1/8
source notation: context-defined

*Linguistics*

81-11 Schools and trends in linguistics
81-2 Characteristic features of language

Example of combination:
811.11-112 Historical linguistics of Germanic languages

basic class: 811.11 Germanic languages
facet introducer: -
category indicator: lacking
principle of subdivision: 11
source notation: context-defined
focus: 2 Diachronic linguistics

81`01/`08 Special auxiliary numbers for origins and periods of languages
81`01 Old period. Archaic period
81`02 Classical period
81`04 Middle period
81`06 Modern period
81`08 Revived language

81`1/`4 Special auxiliary subdivision for subject fields and facets of linguistics and languages
81'1 General linguistics
81`2 Theory of signs. Theory of translation. Standardization. Usage. Geographical linguistics
81`3 Mathematical and applied linguistics. Phonetics. Graphemics. Grammar. Semantics. Stylistics
81`4 Text linguistics, Discourse analysis. Typological linguistics

*Literature*

82-1/-9 Literary forms. Genres
82-1 Poetry. Poems. Verse
**82-2 Drama. Plays**
82-3 Fiction. Prose narrative

82-4 Essays
82-5 Oratory. Speeches
82-6 Letters. Art of letter-writing. Correspondence
82-7 Prose satire. Humour, epigram, parody etc.
82-8 Miscellanea. Polygraphies. Selections
82-9 Various other literary forms

82.02/.09 Special auxiliary subdivision for theory, study and technique of literature
82.02 Literary schools, trends and movements
82.09 Literary criticism. Literary studies

82`01/`06 Special auxiliary numbers for periods (phases and developments) of literature
82`01 Old or early periods. Earliest forms
82`04 Middle period. Mediaeval
82`06 Modern period

Example of combination:
821.112.2-2 German drama

basic class: 821.112.2 German literature
facet introducer and principle of subdivision: -
category indicator: lacking source notation:
context-defined focus: 2 Drama

*Prehistory*

903-4 Shape and form of remains (special auxiliary re-introduced from 62-1/-9)

facet introducer: -
principle of subdivision: 4
category indicator: lacking
source notation: special extra-defined

903'1 Prehistoric culture forms

facet introducer: '
principle of subdivision: 1
category indicator: lacking
source notation: context-defined

**2.4 Two-digit facets**

From this point onwards we are going to consider facets with any introducer together, as discussion is focused on other elements.

Some classes use two or even more digits for the principle of subdivision; therefore, their foci will start from the third (or later) digit after the introducer, instead that from the second digit as usual. Sometimes

this is a way to express a subfacet, that is a more specific principle of subdivision. While in Linguistics the two digits are used to obtain more than ten facets, in Chemical technology this is not the case, so that in a future revision of the class they could easily be changed to one-digit facets. Pathology has an even more complex situation that could be partly simplified in the occasion of the planned revision of medicine:

*Pathology (medicine)*

| | |
|---|---|
| 616-001/-009 | Special auxiliary subdivision for morbid processes |
| 616-001 | Traumata. Injuries. Wounds |
| 616-002 | Inflammation. Irritation. Engorgement (hyperaemia). Mucous congestion |
| 616-003 | Regressive and reparative processes |
| 616-004 | Sclerosis. Hardening (induration). Cirrhosis |
| 616-005 | Local circulatory disorders |
| 616-006 | Tumours. Neoplasms. Blastomata. Choristomata. Hamartomata. Oncology |
| 616-007 | Defective structural development. Physiological deformities. Malformations. Abnormalities |
| 616-008 | Functional and metabolic disorders |
| 616-009 | Neural (nervous) disorders |
| | |
| 616-01/-099 | Special auxiliary subdivision for general aspects of pathology |
| 616-01 | Various aspects of disease, patients and medical intervention |
| 616-02 | Aetiology. Causes of disease |
| 616-03 | Various forms of disease, of treatment |
| 616-05 | Persons and personal characteristics |
| 616-06 | Complications. Consequences. Repercussions. Concurrence |
| 616-07 | Semeiology. Symptomatology |
| 616-08 | Treatment |
| 616-091 | Pathological anatomy. Morbid anatomy |
| 616-092 | Pathological physiology |
| 616-093 | Microbial techniques |
| 616-094 | Microbial morphology |
| 616-095 | Microbial physiology |
| 616-097 | Immunogenicity |
| 616-098 | Microbial physics, chemistry, metabolism, catabolism |
| 616-099 | Poisoning. Intoxication |
| | |
| 616-71/-78 | Special auxiliary subdivision for medical and surgical instrumentation and equipment |
| 616-71 | Medical instruments and equipment in general |
| 616-72 | Surgical and therapeutic instruments |
| 616-74 | Reinforcement and reparative materials and equipment |
| 616-76 | Corrective and protective appliances, aids etc. |
| 616-77 | Prosthetic materials and parts. Artificial organs etc. |
| 616-78 | Machines and mechanical apparatus |

facet introducer: -

category indicator: lacking

principle of subdivision: 00/7

source notation: context-defined

*Engineering*

| | |
|---|---|
| 62-9 | Variables, conditions and characteristics of production processes, plant and equipment |
| 62-91 | State of material: characteristics and variables |
| 62-92 | Reactions in terms of reagents |
| 62-93 | Processes, machines and equipment |
| 62-94 | Direction, velocity, rate, duration of processes etc. |
| 62-95 | Simple and multiple processes |
| 62-96 | Processes in terms of altering product properties |
| 62-97 | Thermal characteristics |
| 62-98 | Pressure |

facet introducer: -

category indicator: lacking

principle of subdivision: 91/98

source notation: context-defined

*Linguistics*

| | |
|---|---|
| 81`01/`08 | Origins and periods of languages |
| 81'1 | General linguistics |
| 81`2 | Theory of signs. Theory of translation. Standardization. Usage. Geographical linguistics |
| **81`24** | **Practical knowledge of languages** |
| 81`3 | Mathematical and applied linguistics. Phonetics. Graphemics. Grammar. Semantics. Stylistics |
| 81`4 | Text linguistics, Discourse analysis. Typological linguistics |

Example of combination:

811.134.2'24 Practical knowledge of Spanish

basic class: 811.134.2 Spanish language

facet introducer: '

category indicator: lacking

principle of subdivision: 24 Practical knowledge

source notation: not specified

focus: not specified

### 2.5 Parallel facets

Although context-defined foci are the most frequent, some faceted classes instead prescribe to take notation for both facets and foci from another class (special extra-defined foci), a special case of parallel

division as variously adopted in UDC. Special auxiliaries created by parallel division have now been systematically removed and replaced by an instruction to use special auxiliary table that was developed first:

*Prehistory*

903-4 Shape and form of remains (derived from 62-1/-9 Special auxiliary subdivision for technology in general)

facet introducer: -
principle of subdivision: 4
category indicator: lacking
source notation: special extra-defined

**2.6 Colon combinations in facets**

In some further cases, source notation for foci can be taken from anywhere in the schedules, and is then connected to the facet by a colon. A similar structure has been hypothesised for the facet of special philosophies 1-7: in the revision proposal of class 1. As observed in Report 1 of Philosophy revision (Gnoli, 2009), using colon to introduce foci generates a syntactical problem with parsing in case more facets have to follow.

*Mathematics*

51-3 Computation techniques
51-7 Mathematical studies and methods in other fields of knowledge
51-8 Mathematical games and recreations

Example of combination:
519.2-7:33 Statistical methods in economics

basic class: 519.2 Probability and statistics
facet introducer: -
category indicator: lacking
principle of subdivision: 7
source notation: general extra-defined (delimited with colon)
focus: 33 Economics
Foci without facet marker

Sometimes, foci are directly expressed by the first digit after the facet introducer. That is, the basic class has only one facet, so there is no need to express the principle of subdivision, which is squeezed together with the facet introducer:

*Mechanics*

531-1/-9 Special auxiliary subdivision for mechanics
531-1 One-dimensional
531-2 Two-dimensional
531-3 Three-dimensional
531-4 Hyperspace
531-9 Non-Euclidean spaces

facet introducer and principle of subdivision: -
category indicator: lacking
source notation: context-defined
foci: 1/9

*Optics*

535-1/-3 Radiation according to wavelength
535-1 Long waves. Infrared
535-2 Visible light. Colours
535-3 Short waves. Ultraviolet
535-4 Polarized light
535-5 Natural light

facet introducer and principle of subdivision: -
category indicator: lacking
source notation: context-defined
foci: 1/5

Here is a similar case, with the addition of a mix of two facets squeezed into one by telescopic notation:

*Acoustics*

534-1/-8 Special auxiliary subdivision for vibrations and acoustics
534-1 Vibrations according to material
534-13 Vibrations in gases
534-14 Vibrations in liquids
534-16 Vibrations in solids
534-18 Vibrations in heterogeneous, multiphase systems
534-6 Low-frequency vibrations
534-7 Audible-frequency vibrations
534-8 High-frequency vibrations

facet introducer and principle of subdivision: -
category indicator: lacking
source notation: context-defined
foci: 1/5

**2.7 Subclasses of faceted classes**

Sometimes the focus is followed by further digits, expressing a subclass of the whole faceted class. Although in UDC no facet closer is marked to separate the focus from the further subclass, for practical needs this works anyway: the combination of focus plus subclass is presented as a new special auxiliary under the class under which it is developed. More problems can be expected if there were a need to parse notation for automation purposes. This situation has been described as "the Genesis problem" (Gnoli et al., 2011) as it was identified in class Religion for expressing the subclasses of the faceted class "Bible", to be further divided into "Genesis", "Exodus" etc. (Broughton, 2010):

*Transport vehicle engineering*

| | |
|---|---|
| 629.01/.08 | Special auxiliary subdivision for transport vehicle engineering |
| 629.01 | Vehicle design principles: characteristics, capabilities, tests |
| 629.02 | Vehicle structure, construction principles, general layout and parts |
| 629.**03** | **Propulsion system** |
| 629.**035** | **Propeller or screw propulsion systems** |
| 629.04 | Interior layout |
| 629.05 | Guidance, control-initiation and navigation systems and instruments |
| 629.06 | Vehicle auxiliary systems and devices |
| 629.07 | Technical aspects of vehicular operations |
| 629.08 | Base equipment, installations and corresponding technical procedures |

This table for transport vehicle engineering above was then used as a basis for developing the following differential facet of special auxiliaries for air/space vehicles under 629.7

| | |
|---|---|
| 629.7.01 | Air/space vehicle design principles, characteristics and tests |
| 629.7.02 | Air/space vehicle structure. Construction principles. General layout and parts |
| 629.7.**03** | **Propulsion systems in air/space vehicles** |
| 629.7.**035** | **Airscrew propulsion: propeller, rotor, fan** |
| 629.7.**035.3** | **Turbine-engine airscrew propulsion** |
| 629.7.04 | Interior layout of air/space vehicles. Accommodation. Installations. Equipment |
| 629.7.05 | Guidance, control-initiation and navigation systems and instruments (vehicle-borne) |
| 629.7.06 | Auxiliary systems and devices on air/space vehicles |
| 629.7.07 | Technical aspects of operations (operational techniques), including performance |
| 629.7.08 | Ground or base equipment, installations and techniques |

Example of combination:

| | |
|---|---|
| 629.7.**035.3** | Turbine-engine airscrew propulsion |

basic class: 629.7 Air and space transport engineering

facet introducer: .0

category indicator: lacking

principle of subdivision: 3 Propulsion systems

source notation: context-defined

focus: 5 Propeller or screw propulsion systems

subclass of the faceted class: 3 Turbine-engine

**3. Conclusions and suggestions**

It would of course be desirable that the expression of facet elements be standardized throughout UDC. However, the current situation shows a great variety as the result of the long history of the system and

various revisions of individual classes. As both - and .0 are now common as facet introducers, it looks difficult to abolish either of them. However, guidelines could be developed about their use in future revisions. The easiest step would be to abolish the least frequent solutions, in order to reduce variations and improve notation predictability.

Two-digit facet indicators are also rare but would probably require a careful analysis in order to replace them with other solutions (e.g. a combination of - and .0-introduced facets, like already present elsewhere). Cases of facets without foci and vice-versa are not frequent, so they could be studied in order to define them in the schedules in ways avoiding ambiguities in automatic parsing.

Parallel facets (special extra-defined foci) are less common than context-defined ones, so it would be conceivable to mark them differently (e.g. by using a different facet introducer) in view of automatic parsing. Colon combinations in facets (general extra-defined foci) are very rare (Mathematics, Philosophy proposal) and generate syntactic problems. This could suggest to abolish them and convert them into simple colon combinations without using facets.

Fundamental categories are rarely defined and expressed with a distinctive notation in UDC, unlike Colon. Although it would be advisable to follow them within particular classes, envisaging a notational model for broad facet categories with some consistency throughout UDC seems to be hard at this stage.

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