《論　　文》

Morphological, Anatomical and Statistical Analyses on The Four Ancient Mesopotamian Law Codes Including The Hammurabi Law Code:

—— Part Ⅰ Survey of Size, Contents, and Transfer ——

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Contents

1 Introduction

The Hammurabi law code is widely known as the most complete, 'formerly earlist'(even now earlier) law code. Van de Mieroop(2005)[1], for example, concisely evaluated the law ,"…the earliest expression of ideas of justice, which are still with us."

As a non-specialist of Mesopotamian history, but as an expert scientist (chemist-turned economic historian) I had and even now have long persisting, simple but un-answered questions about the Hammurabi law code.

The questions are, for examples, as follows:

(1) On what points except 'Justice' are the Hammurabi(H) law highly estimated?

(2) How closely relates the Hammurabi law to the preceding (but excavated later than the Hammurabi law) three law codes; Ur-Nammu(UN), Lipit-Ishtar(LI) and Eshnunna(E) laws? Is the H law code a simple collection of UN,LI and E codes?

(3) Are traditions in the past made as statute law?

(4) Is the H law sterner than the preceding three laws ?

(5) What are the social classes at that time?

Unfortunately, I failed to get any adequate and conclusive answers from books[1-13] available. Have all the questions (or problems) above already been answered elsewhere? or is there no more any hope to find the definite answers for these?

In this and the succeeding papers, a rather reckless attempt will be made to attack these difficult and huge problems by applying somewhat different non-traditional procedure (see,2), although being popular in

science field. In other words, the comprehensive analysis on the principal data base will be carried out not only with contemporary view but also together with bird-eye view. An attempt will be made in Part Ⅰ on survey of the size, contents, and transfer of the four law codes. In Parts Ⅱ and Ⅲ (forthcoming papers) the detailed deep-analysis on the four laws will be made, especially , in social classes, penal, civil and commerce sections.

2 Methodology of the study

We employ as the primary materials the Iijima's works[12] ,which are described briefly as follows: To each cuneiform script (1), its corresponding phonetic alphabet (i.e., transcription) (2) and Japanese word (3), both corresponding to (1), are concurrently given first. Then, the cuneiform sentence in the individual article is translated literally from Sumerian (LI) or Akkadian (E and H) into Japanese (4). Iijima succeeded to build-up a collection of Japanese articles of the Lipit-Ishtar, Eshnunna, and Hammurabi law codes. (1)~(4) are the indispensable materials.

On the basis of the materials we can now examine comprehensively particularities of the individual articles. In addition, the articles of the Ur-Nammu code law, translated by Kobayashi[13] from Sumerian, to Japanese sentences are also used.

The accuracy and reliability of the Iijima's procedure and their results were confirmed by Kamide[14]: Van de Mieroop (2005) demonstrated in his book[1a] that the full sentences of the two articles, Eshnunna law code no.54 (hereafter abbreviated as E54) coincides with the Hammurabi law code no.251 (hereafter abbreviated as H251), showing E54 = H251

(Note that Van de Mieroop did not indicate the article numbers). Corresponding Iijima's articles (in Japanese) (2002)[12a] are absolutely the same as those of Van de Mieroop (2005). That is, the following two equations hold their validity: E54 (Van de Mieroop) = E54 (Iijima) for the E law code and H251 (Van de Mieroop) = H251 (Iijima) for the H law code. Note that Iijima's book[12] was published three years earlier than Van de Mieroop's was.

The above primary materials can confidently be regarded as the experimental date in science study. The materials are subjected to further rigorous and comprehensive analysis. First, we extract the needed data from the materials. Here, partial missing of the starting resource is, more or less, unavoidable. If the deficit of this kind is considered to occur accidentally (non-intentionally) we should not pay an exaggerated worry about the imperfection of the datum.

The basic tenets adopted for the analysis are:

(1) The four law codes are compared using common measure, needless to say, without any prejudice or bias.
(2) Reliable evidences – based research is carried out.
(3) The results obtained by the analysis are shown concretely so that these results can be used for any future study.

3 Periods of Mesopotamia and chronograph of the reign of Hammurbi

Table Ⅰ-1 illustrates the roughly classified periods of ancient Mesopotamia. In the table the time of enactment of the Ur-Nammu, Lipit-Ishtar and Hammurabi's law codes are indicated for comparison.

Table Ⅰ-1 The chronological chart of ancient Mesopotamia[15-18]

BC	South	North
6800		Jarmo period
6000		
5600		Hassuna-Samarra period
5300	Eridu period	
5000		
4800		Halaf period
	Hajji Muhammad period	
4300		
4000	Ubaid period	
3500		
	Uruk period	Gawra period
3200		
	Jemdet Nasr period	
2900		
2800	Early Dynastic(ED Ⅰ)period	
2700	ED Ⅱ period	
2500	ED Ⅲ period	
2350	Agade period (50years)	
2112	Ur Ⅲ Dynastic period **Ur-Nammu law**	
2004		
2000	Old Babylonian period	
	(Isin Larsa period + Babylon Ⅰ period) **Lipit-Ishtar law**	
	Eshnunna Law)	
1000	**Hammurabi law**	

Table Ⅰ-2 exemplifies some quoted examples from books[19-28] of the duration of reign of king Hammurabi of Babylon.

The duration of the Hammurabi's reign was determined on astronomical basis : An astronomical record in the 6th year of the 10th King of Babylonian Ⅰ dynasty[19a] and also the fourth successors of the Hammurabi[26a],Ammisaduga(1648-1628 BC)[1b]'s reign, showed that on 28th day of August the planet Venus disappeared in Babylon to the west and as from the day for three days Venus did not appear. On 1st of

September the planet emerged from the east again[19a]. This kind of phenomenon is, now, known to occur once in a hundred years. First, this date was roughly estimated to be 1971-1972BC[19b]. After accurate and complicated calculations, most scholars now favor the middle date 1792 for accession of Hammurabi[22]. A reassessment of the above date is 1848BC for that[22].

Table Ⅰ-2 The reign of King Hammurabi of Babylon

Period (BC)	Literature(year)
1792-1750	Kishimoto (1968)[19]
1724-1682	Kuroda (1969)[20]
1792-1750	Tomimura (1973)[21]
1848-	Crawford(1991)[22]
1848-1806	Delley (1998)[23]
1792-1750	Onuki et al. (1998)[24]
1792-1750	Matsumoto(2000)[25]
1792-1750	Iijima (2002)[26],Kobayashi(2005)[27]
1792-1750	Van de Mieroop (2005)[28]

Table Ⅰ-3 summarizes the brief chronograph of the Hammurabi 's reign. The table was constructed using mainly from the Van de Mieroops's book[19]. Other literatures[30-33] were also referred in part. Dates of these four law codes are evidently say, 700- 2000 years older than the Bible. Then, detailed study should be carried out without taking into consideration for the Bible, but the reverse is, of course, not true. Hammurabi seems to have focused on the internal development of his kingdom for the first twenty-eight years and the last three years of his reign. Hammurabi completed at his 39th year the first major expansion of the Babylonia state and he finally unified whole Mesopotamia in 1754

BC.

All cities and towns referred in the prologue of the Hammurabi law code could be considered to be the area where law code was effective. Prologue refers to[26b] ; Babylon, Nippur, Eridu, Ur, Sippar, Larsa, Uruk, Ishir, Kish, Kutha, Barsippa, Dilbat, Kesh, Lagash, Girsu, Aleppo, Karkar, Asab, Mashkan-shapir, Assur, Nineveh, and other four cities.

Table Ⅰ－3 The Hammurabi 's reign

BC	The Hammurabi 's reign	Achievements or records
1792	1st	Babylon; Sippur, Borshippa and Kish*
1792~1787	1st-6th	domestic administration
1786~1782	7th-11th	foreign conquest: raids to Uruk, Ishin and Yamutbal : destruction of Malgum, Rapikum, Shalibi
1781~1766	12th-19th	domestic affairs: construction of canals
1736	30th	foreign conquest :Elam, Subartu(Assilian), Gutium (north-west Iran)
1764	29th	assault and victory against Elam (Elam's defeat)
1763	30th	the first major expansion of the Babylonian State (Larsa)
1762	31st	unification of Babilonia:possition of Eshnunna and a part of Assyria
1760	33rd	destruction of Mari :great canal construction(Nippur- Eridu-Ur –Larsa –Uruk –Ishin)
1754	39th	unification of whole Mesopotamia: Nippur, Ur, Larsa, Uruk, Ishin
1753~1750	40th-43rd	domestic affairs :The Hammurabi law code

* some 60 by 160km in size

4 Elementary data base of the four law codes

Table Ⅰ-4 supplies us an elementary data base, all accumulated fruits from the past studies.[35-51] The table is a revised version of the previous paper[34].

Table Ⅰ-4 Four law codes in ancient Mesopotamia

code name	Ur-Nammu	Lipit-Ishtar	Eshnunna	Hammurabi
dynasty reign	Ur Ⅲ (2112-2004 BC)	Isin Ⅰ (1934-1924 BC)	Eshnunna	Babyronia Ⅰ (1792-1750 BC)
location address of clay plate (year of findings)	Nippur Museum (1952)[35]	Isin (1947)[35]	Eshnunna (1948)[35]	Sippur(original)[36] (transfer in 120 BC to Elam)
Time of enactment	21 century BC (2112-2095 BC)[37]	20 century BC (about1934-1924 BC)[38]	19 century BC[39,40] (around 1870 BC)	18 century BC[41] (about 1754 BC)
time difference from④	360-320 years	180-170 years	some tens years[42] one generation	——
establisher	King Ur Nammu[43]	King Lipit-Ishtar[44]	King Bilalama[45] (not known)[43,46] Susa in Elan	King Hammurabi
excavated and / or safe keeping address	Istanbul archeology museum			Discovered by french (1901) Louvre museum
Area where the low code was effective	Ur	Isin, Larsa	Eshununna River Diyala valley	Entire Mesopotamia
race lunguage language	Summerian[47]	Smmerian[49]	old Akkadian[50]	Akkadian[51]
race	Summerian	Amorite	Elamite	Amorite
constitution	prologue /main text(32)[48]	prologue / main text(28)[49]	prologue / main tex(53)[50]	prologue /main text(282) 66-99 lacking- Epilogue[51]

Time difference of three preceding codes from the Hammurabi code are estimated, as listed in the table, to be 360-320 years for UN, 180-170 years for LI, and 23-30? years for E, respectively and note that these laws were effective in rather local area, compared with H, because, kings UN, LI were only regional superpowers. Then, the characters of these codes may reflect the time difference ranging 360-320 years from the H law, in addition to the locality.

5 Morphological size: numbers of overall, legible and analyzed article numbers as parameters representing the law size

Table Ⅰ-5 collects the total number of the articles, the number of legible articles, and the portion of the articles on awilum, mushkenum and wardum. Here, it is easily recognized from inspection of the articles of the four law cords that two or three social classes existed, each differing the legation position, at ancient Mesopotamia. Therefore, in the Table Ⅰ-5, these classes are, for convenience, simply expressed in terms of awilum, mushkenum and wardum, respectively (for example, see Kuroda[52]).

The first social class is lu$_2$ in Ur-Nammu (NU) and Lipit-Ishtar (LI) law codes, corresponding to awilum in the Eshnunna (E) and Hammurabi (H) law codes.[33] In the UN and LI codes the lowest social class is expressed as ir$_{11}$ and in the E and H codes is represented as wardam. Both ir$_{11}$ and wardam mean male slave. Female slave is geme$_2$ (UN and LI) and amta (amtum) (E and H). In this paper, whole slavery position is simply described, irrespective of sex, as wardum.

The second social class, found in the E and H cudes, was not existed

in UN and LI codes, and expressed as musukenim in the E code[50] and as musenkak (transcript of Sumerian from Semetic (Akkadian)[53]) in the H code[51], respectively.

The detailed discussion will be given in a forthcoming paper[54].

The data in the table was constructed using the following procedure:

(1) Ur-Nammu law code[47,48]:

Among about 32 articles (proposed number of the Ur-Nammu law varies 39 (1971) ~ 31 (1979)) [55], and four articles (UN12,16, 23 and 27) are partly broken and illegible. Ultimately, 32 - 4= 28 articles are legible (*1 of Table Ⅰ-5).“Sixteen articles” are “quite well preserved”[55]. Full sentences for 16 articles were given by Kobayashi (probably the above mentioned “sixteen articles”) were translated into Japanese (UN 1,2,4~11, 14, 18~22). In addition the titles of the articles are given to UN 1~11,13~15, 17~22, 24~26,28~32. Among these four articles (UN 17 and UN 24~26) are on slave. Totally, the number of the articles on awilum are fourteen (UN 1,2,6~11,14~22) (see below note) (*3 in Table Ⅰ-5) and those for wardum are six (UN 4,5,17,24~26)(*4 in Table Ⅰ-5). The number of articles suitable for further analysis is twenty (=16+4) (*2 in Table Ⅰ-5). For more detailed analysis, which needs full sentence, sixteen articles are selected in place of twenty(Table Ⅰ-6 and Ⅰ-12). The portion of awilum term in the UN cord is 70%(=14/20) and of wardum term is 30% (=6/20).

(note): The articles, starting with “takumbi lu_3-<u_3>…” are found in UN 1,2,6~11,14,18~22 (13 articles) and the article starting with “lu_3-<u_3>…” is UN7. Totally, we obtain 14 articles (*3 in Table Ⅰ-5).

(2) Lipit-Ishtar law code[49]

Among total 28 articles the seven articles (LI1~ LI7) are missing and LI19~ LI23 (sub-total 5 articles) are also missing, then, 28-(7+5)=16 articles are eligible (*5 in Table Ⅰ-5).

(3) Eshnunna law code[50]

To total 59 articles, the article E9A is added and E35 is missing (*6 in Table Ⅰ-5).

Summation of the four articles starting with “awilum …”, the two articles with “mar awilum …” and the twenty-two articles with “Summa awilum…” gives the total articles on awilum (28 articles) (*7 in Table Ⅰ-5).

(4) The Hammurabi law code[51]

Total number of the articles is 282, and H66 ~ H99 (sub-total, 34 articles) are omitted. Then, 282-34=248 articles are legible and subjected to further analysis (*8 in Table Ⅰ-5). Among 248 legible articles 102 articles, strictly start with the sentence “ Summa awilum…”. In addition, other about 54 articles are concerned with awilum.

Then, 102+54=156 articles (*9 in Table Ⅰ-5) are regarded as the articles on awilum (accordingly, 156/248=62.9% is its portion).

The size of the H code, expressed by the total number of articles, is much larger than the three preceding codes: 8.8 times, 15.5 times, and 4.2 times larger than UN, LI and E, respectively. Arithmetic summation of the total number of the three preceding codes occupies only 42% (103/248), strongly suggesting that the H code is predominant in size as compared with a simple accumulation of the preceding laws. The portions of awilum related articles in the laws are in the range 47% ~70% and any significant difference among the laws is not observed. That the main target of these laws is awilum is unquestionable.

Table I -5 Total number of articles, number of legible articles and portions of articles on awilum, muskenum and wardum

	①UN	②LI	③E	④H	④—[Σ(①+②+③)]
1. Total number of articles	32	28	59	282	165
2. Number of legible articles	28[*1] (20)*2	16[*5]	59[*6]	248[*8]	147
3. Articles on LU_2 (UN and LI) or muskenkak (E and H)	UN1,2,6-11 11,14,18-22 **[14]**[*3]	LI8,9,10, 11,17,25, 27,28 **[8]**	awilum(4)E9,12, 13,19 Mar awilum **[2]** E16,17 Summ awilum **[22]** E6,18,19,20,21,22, 23,25,26,27,29, 30,31,32,36,39,40, 42,43,44,49,59 **[4]+[2]+[22]=28** **28**[*7]	**[102+54=156]**[*9]	
4. Portion of the LU_2 or awilum articles	14/20=70%	8/16=50%	28/59=47%	156/248=63%	
5. Articles on mushkenun (UN and LI) or awilum (E and H)	**[0]**	**[0]**	E12,13,2434,50 **[5]**	H8,15,16,140,198, 201,204,208,211, 212,216,219,222 **[13]**	
6. Portion	**0%**	**0%**	**5/59=8%**	**13/298=5%**	**156/248=63 %**
7. Articles on ir_{11} and $geme_2$ (UN and LI) and amtum(E and H) wardum	UN4,5,17,24 -26 **[6]**[*4]	LI12,13,14, 25,26 **[5]**	E15,16,22,23,31, 33,49-52,55,57 **[13]**	H7,15-20,117-119, 144,146,158,170, 171,175,176,199, 205,213,217,219, 220,223,226,227, 231,252,278-282, **[33]**	
8. Portion	**6/20=30%**	**5/16=31%**	**13/59=22%**	**33/147=22%**	

6 An anatomical analysis: categorization of the four law codes

All articles of the four laws are classified into 11 categories:
(1) legal litigation, (2) human right, (3) protection and rescues of social misfortune, (4) agriculture, (5) woman and family,(6) penal, (7) commerce, (8) fee, pay and reward, (9) rental, (10) responsibility to failure and product liability, and (11) disease and treatment.

Following procedure is adopted for analysis:

Step1 Determine in advance 11 regions.(see above)

Step2 To the above predetermined regions the new-concept based boxes (≡ regions) are prepared in addition to the traditional ones.

Step3 Examine carefully the content of individual articles, one by one.

Step4 Classify the individual article into the adequate region (box) (1)~(11).

Step5 If a single article has dual contents it is classified to dual boxes. We experienced that 'duplicated classification method' is sometimes reasonable.

Kishimoto(1968)[56]. Kuroda(1969)[57], and Van de Mieroop(2005)[58] tried independently to classify all the articles[56,58] or to show arrangement[57] of the Hammurabi law code, keeping the order of articles, originally engraved on the stela stone, as it is, and separating the whole articles in some number to blocks of the sequential articles(12 groups by Kishimoto[56], 10 groups by Kuroda[57], and 11 groups by Van de Mieroop[58]). Their methods may be correct, provided that every articles belonging a given block, made without changing the order of the

Hammurabi law first arranged, has common characteristics (hypothesis A). And so all articles in a block is classified into one category (hypothesis B), and all blocks formed thus, are expected to have somewhat different nature with each other (hypothesis C).

Unfortunately, hypothesis A is not strictly realized, then I dare say that their procedure is only the zeroth-approximation method, although it is time-saving.

The results of analysis are briefly tabulated in Table Ⅰ-6.

Foot notes to Table Ⅰ-6

(3) c1 child of war-prisoner 1

Succession of father's business (H28)

(3) c2 child of war-prisoner 2

Case when the son in c1 (H28) is too young to manage his father's business

(3) c3 wife of war-prisoner1

During her husband is war-prisoner and his wife has short of food to eat, the wife is allowed to come into other man's house (H134)

(3)c4 wife of war-prisoner 2

In case of c3, the wife is allowed to give birth baby to that man (H135)

(7)i the H code of Susa stela stone lacks H88. It is said, although the source is not shown, that H88 determines the interest of 20%.

Table Ⅰ-6 Overview composition of the four law codes

Category	UN	LI	E	H
(1) **Legal litigation**				
a. general	UN 13,14			H4,5
b. accusation				H1,5
c. paintiff				H1
d. judge				H4,5,9
e. witness, testimony, bond				H3,4,7,9-11,13
f. proof, evidence				H1,2,3,7
g. fine				H12
h.misconduct				
h1. judge				H5
h2. commander				H33,34
h3. governor			E50	
j .perjury	UN28,29			H3
(2)**Human rights**				
a. see also(1)b				
b. property right	UN17	LI12-14		H21,22
b1. buy and sell of field				H36-41
b2. running of slave		LI12,13		H15-20
b3. house breaking				H21
b4. theft				H8
b5. women's property				H152
c. marriage	UN4,5		E27,28	H128
d. divorce	UN9-11			H142,149
e. inheritance	UN5	LI24-27		H172,176,180-182
(3)Protection of the social misfortune				
a. general				
b. damage compensation				H23,24
c. wife and widow				
c1. child of war-prisoner				H28
c2. child of war-prisoner 1				H29
c3. wife of war-prisoner 2				H134
c4. wife of war-prisoner3				H135
c5. wife whose husband escaped from the town				H136
c.6 inheritance of window				H171,172
c7. remarriage of widow having infant(judge)				H177

Table I-6 (continued 1)

Category	UN	LI	E	H
(4) **Agriculture**				
a. general	UN30-32	LI8-11	E7-9A	H 42-65
b. canal management		LI19		
c. submergence caused by neglected management				H53,54
d. irrigation				H55,56
e. cultivation				H42,43
f. reclamation		LI9-11		H44
g. tenant/landlord				
g1. contract		LI18		H45-47
g2. debt				H49-51
h. garden		LI12		
h1. orchard				H59-65
h2. gardner/landload		LI9		H60-65
h3. invasion to orchard		LI10		
h4. cutting tree				H59
i. domestication				H261,263-267
(5) Women and family				
a. general				
b. engagement, marriage portion, betrothal money			E25,26	H137-140,159-164, 167,171,173, 174,176,178-180,184
c. marriage(→(2)c)	UN4,5		E27,28	H128,152
d. remarriage	UN9-11			H167,173,174,177
e. divorce(→(2)e)				H137-143,149
f. family property				H175,176
g. recognition				H170,171
h. disown				H168,169
i. fortune dispenser				H165-167,17
j. inheritance		LI24-27		H172,176,180-182
k. bond				H150,182,183
l. adopted child				H185-193
m. adultery(incest)	UN7		E28	H129-132,154-158
n. rape	UN6,8		E26,31	H130,
0. concubine				H170-176

Table Ⅰ-6 (continued 2)

Category	UN	LI	E	H
(6) Penal				
a. general				
b. murder	UN1			H22
c. robbery	UN2			
d. injury			E45	
d1. foot	UN18			
d2. bone	UN19		E42	
d3. nose	UN20		E42	H200,201
d4. tooth	UN22			H202~205
d5. cheek			E42	
d6. eye			E43,44	
d7. finger, hand			E42,46	
d8. ear				H206~208
d9. blow				H209,211,213
d10. blow→misscarrige				H210,212,214
d11. blow→misscarrige →death				H130
e. rape	UN6,8		E26,31	H130
f. death caused by animal (by lion)			E54-57	H250-252 (244,266)
g. theft				
g1. boat			E6	
g2. slave			E40	
g3. plow				H259
g4. cow			E40	
g5. kidnup				H14

Table Ⅰ－6 (continued 3)

Category	UN	LI	E	H
(7)Commerce				
a. marchant				
a1. general				H101-107
a2. merchant(money lender) /peasant				H49,50
a3. merchant(money lender) /family				H152
a4. merchant(ransom payer) /war prisoner				H32
a5. slave/merchant				H280,281
b. buying and selling				
b1. prohibition or restriction on merchant sheep, field, orchard and house				H35-39,41
b2. buying and selling by nurse, merchant, enterpriser				H40
b3. buying and selling of slaves				H278-282
c. trust			E36,37	H120,122-125
d. contract				
d1.buying and selling merchant				H41
d2. tenant contract				H46-48,52
d3. marriage contract				H128
e. receipt				H104,105
f. hostage			E22-24	H115-117
g. mortgage			E18,21	H118
h. witness				H122-124
i. interest(finance)			E18-21	
j. illigal seizer			E22-24	

Table Ⅰ－6 (continued 4)

Category	UN	LI	E	H
(8)Fee, pay, and reward				
a.professional fee				H215-225
a1. medical doctor				H215-217
a2. veterinarian				H221,222
a3. archirect				H224
a4. ship builder				H234
b. reward for achievements(see,also a)				
b1. gardneas of orchard				H60-65
c.pay for day laborer , coachman, and various caraftman				
c1. day laborer(day)			E7,8,9, 11-14	H273
c2. boatman(year)				H239
(day)			E4	
c3. cultivator(year)				H257
c4. cattleman(year)				H258
c5. herdsman(year)				H261
(day)			E3	
c6. coachman(year)			E10	H271,272
c7. craftman(per day)				
i. brick caster				H274
ii. flax worker				H274
iii. malt worker				H274
iv. milking worker				H274
v. smith				H274
vi. carpenter				H274
vii. tanner				H274
viii. reed worker				H274
ix. builder				H274

Table I-6 (continued 5)

Category	UN	LI	E	H
(9)Rental				
(for transportation)				
a. cattle + cart + coachman			E3	H242,243,271
b. cart				H272
c. cattle				H242,243
d. troubles of the rented cars				H244-250
e. boat			E4	H276,277
(for threshing)				
f .cattle				H268
g. donkey			E10	H269
h. lamb				H270
I. sickle + belt			E9A	
(10)Responsibility to falure and product liability				
a. general				
b. medical failure				
b1. medical doctor				H218-220
b2. veterinarian				H225
c. house builder				H229-233
d. ship builder				H235
e. shipwreck(boatman)			E5	H236-238
f. coliision of ship(boatman)				H240
g. troubles of borrowed cattle caused by borrower's misconduct				H244-249
(11)Disease and treatments				
a. disease				
a1. epilepsy		LI 15,16		
a2. lepprosy; hansen's disease(laabuum)				H148
a3. brain attack (atrophy)		LI 28		
a4. benni disease				H278
b. medical treatment				
b1. surgical operation				
i .surgical operation of serious hurt				H215-217
ii. surgical operation of tumor (eye)				H215-217
b2. fracture treatment(orthopedics)				H221
b3. medical treatment of large intestine				H221

From the table it is clear for the three preceding laws (except the H code) that:

(1) Legal litigation [category 1] is described only in the UN code.

(2) Human right [category 2] is relatively frequently regulated in the UN and LI codes. On the other hand, it is extremely few (only two) in the E code.

(3) The number of articles on agriculture [category 4] is the biggest in LI code.

(4) Woman and family are (the Family matters code) [category 5] commonly regarded as one of principal areas in the laws.

(5) Penalty code [category 6] is most frequently treated in both the UN and E codes. In contrast , zero article is found in LI for that category(missing?).

(6) Number of articles on categories 7~11(fee, rental, responsibility and disease) for UN and LI are almost zero (except category 3 of LI).

(7) Articles classified in commerce, fee, rent and others (category 7-10) emerge in E, first , increasing the number rapidly in H. In other words, this phenomenon seems to be closely correlated with economic growth ,in particular, private big business in broad sense.

(8) Only during one generation (at the most some tens years) the social system changed remarkably (E~H).

(9) Human rights are, to some extent, acknowledged in UN and LI.

(10) In E code, legal litigation, human right are neglected.

(11) Concept (idea) of contract (written document) is not accepted formally in the three preceding laws. Rapid popularization of cuneiform script over ordinary people can't be overlooked.

The characteristics of the Hammurabi law code can now be recognized

well from the above anatomical analysis of the four laws: They are (1) legal procedure (mulla poena since lege), (2) fundamental human rights, (3) protection against social misfortune, (4) responsibility to failure and product liability. These are evidently disconnected with the preceding laws; It is no exaggeration to say that these are the basic legal principles even at the present.

Table Ⅰ-7 summarizes number of the articles classified into the categories (1)-(11).

Table Ⅰ-7 Number of the articles classified into categories (1)-(11)

Category	UN	LI	E	H
(1) Legal litigation	4[4]*	0	1	24[13]
(2) Human right	7	9[7]	2	25[24]
(3) Protection	0	0	0	10[10]
(4) Agriculture	3	12[7]	3	84[65]
(5) Woman & family	8[8]	4[4]	7[5]	72[49]
(6) Penal	6[6]	0	17[13]	28[26]
(7) Commerce	1?	0	14[9]	50[47]
(8) Fees & pays	0	0	8[8]	33[27]
(9) Rental	0	0	4[4]	16[14]
(10) Responsibility	0	0	1	20[20]
(11) Disease	0	3	0	8[6]
**	(2),(5),(6)	(4),(5)	(5)-(8)	(1)-(11)

* The number in blanket [ ] means the number of the articles, in which duplications in a category are excluded.

** categoryies which in law cord forcuses its concentration.

7 Transfer of three preceding laws to the Hammurabi (H) code : Is the H code a direct heir of the preceding codes?

The degree of intimacy between the two law codes, in particular

between the H code and a preceding code is estimated as follows:

Step 1 Make the **i**-th pair of two articles (article a and article b), each arbitrarily chosen from the two different codes (A and B), designated as **i** ｛**a**i (A) **b**i (B)｝. Here, **a**i (A) is the article a in A law code, and **b**i (B) is the article b in B law code, both forming the **i**-th pair.

Step 2 Examine the relations between **a**i (A) and **b**i (B), according to the criterion below(shown in parenthesis) : The degree of relation of the **a**i **b**i pair is identified to one of the four classes ; identity (same topic ; same sentence), similarity (same topic ; different term), correlation (same topic ; different sentence) and no relation. Evaluation for the specific pair is simply shown, for example , in a line such as ;

common topic ⇄ a_i ⇄ degree of relation ⇄ b_i (for **i**)

Step 3 Repeat steps 1 and 2 for all possible combinations (**i** =1~ $\mathbf{i}_{max}$) ; $\mathbf{i}_{max}$=maximum number of pair given by the product of legible numbers of articles of the A code N_A with that of B code N_B, $\mathbf{i}_{max}$ = $N_A \times N_B$ (for examples, for UN - H, and LI - H, $\mathbf{i}_{max}$ = 14.632 (=59×248) ; for UN - E, $\mathbf{i}_{max}$ =544 (=16×59), see Table Ⅰ-5).

Step 4 Compile the results (**i** =1~ $\mathbf{i}_{max}$) for a given A - B combination (see Table Ⅰ-8~ Ⅰ-10). In this case, grade of no relation is omitted for simplicity.

Step 5 Generalize the step 4 for all possible combinations of two law codes. Then, we obtain the relations for the combinations such as UN - H, LI - H, E - H, UN - LI, UN - E, and LI - E.

The procedure can be extended, if necessary, to the case of 'three-body' particles ; for examples, UN - E - H combination. In

this case, $i_{max} = N_{UN} \times N_E \times N_H = 16 \times 59 \times 248$ (= 234, 112). (see Table Ⅰ-11).

Table Ⅰ-8~10 summarize the results : the identity, similarity, and correlation between the Ur-Nammu (UN) , Lipit-Ishtar(LI), Eshnunna(E) codes versus the Hammurabi (H)code.

We can conclude from these tables that :

(1) 8 articles in the Ur-Nammu code were adopted in 10 articles in the Hammurabi code(Table Ⅰ-8).

(2) 8 articles in the Lipit-Ishtar code were adopted in 7 articles in the Hammurabi code(Table Ⅰ-9).

(3) 16 articles in the Eshnunna code were adopted in 22 articles in the Hammurabi code(Table Ⅰ-10).

(4) Totally 34 articles in the Hammurabi code are those cited or modified from the three preceding articles(see, Table Ⅰ-12).

Table Ⅰ-8 Identity, similarity and correlations between the UR-Nammu (UN) code and the Hammurabi (H) code

Item	Ur-Namu(UN)code		Hammurabi(H)code
① Robbery	UN2	=	H22
② Marriage of male slave with free female	UN5	≃	H175
③ Rape for vargin wife	UN6	~	H130
④ Adultery of wife and some man	UN7	~	H131
⑤ Divorce from wife	UN9	~	H138
⑥ Promiscuity of wife with young man	UN14	~	H132
⑦ Crush of bone	UN19	~	H197(m→m)*1 H198(m→mus)*2 H199(m→s)*3
⑧ Hit of tooth	UN22	~	H200

=identical ; ≃ similar ; ~ corresponding

*1 (m→m) ; Case where assailant is awilum and victim is awilum.

*2(m→mus) ; Case where assailant is awilum and victim is muskenum.

*3(m→s) ; Case where assailant is awilum and victim is wardum.

Table Ⅰ-9 Identity, similarity and correlations between the Lipit-Ishtar (LI) and the Hammurabi (H) codes

Item	Lipit-Ishtar(LI)code		Hammurabi(H)
① Uncultivated land	LI 8	=	H61
② Cutdown of trees	LI 10	≃	H59
③ Harbor for escaped slaves	LI 12	≃	H19
④ Giving refuge to escaped slaves	LI 13	≃	H19
⑤ Denial of slaves	LI 14	≃	H192
⑥ Gossip(backbite)	LI 17	=	H127
⑦ Remarriage of mother with child	LI 24	≃	H167
⑧ Child of female slaves	LI 25	≃	H171

=identical ; ≃ similar ; ~ corresponding

Table Ⅰ-10 Identity, similarity and correlations between Eshnunna(E) and Hammurabi(H) codes

Item	Eshnunna(E)code		Hammurabi(H)
① Price of seed oil and pig fat	E2	~	H271
② Rent of ship	E4	~	H277
③ Shipwreck	E5	~	H236
④ Pay for barley harvesting	E7	≃	H257
⑤ Day-pay of harvesting	E9	~	H242
⑥ Rent of donkey	E10	≃	H242
⑦ Pay of daylaborer	E11	≃	H273
⑧ Marriage portion	E17	≃	H163,164
⑨ Twice-fold return of marriage expense	E25	≃	H160
⑩ Local wife	E29	~	H135
⑪ Escaped man's wife	E30	≃	H136
⑫ Deposit	E36	~	H125
⑬ Confirmation of seller	E40	~	H10
⑭ Physical injury (tooth, bone)	E42	~	H196-201
⑮ Treatment cost	E44	~	H206
⑯ Death by ox	E54	=	H251,252

= identical ; ≃ similar ; ~ corresponding

Table Ⅰ-11 Identity, simularityand correlations among U-Nammu(UN), Eshnunna(E) and Hammurabi(H) codes

Item	Ur-Nammu(UN)		Eshnunna(E)code		Hammurabi(H) code
① Bone fracture	UN19	≃	E42	~	H197(m→m)
				~	H198(m→ms)
				≃	H199(m→s)
② Injury of tooth	UN22	≃	E42	~	H200 (m→m)
				≃	H201 (m→ms)

≃, similar ; ~, coresponding : (m→m), assailant(awilum) /victim(awilum); (m→ms) , ssailant(awilum)/ victim(mushkenum), assailant(awilum)/ victim(amtum)

As Table Ⅰ-11 shows , for two items, both on body injuries, the similarity and correlations among the Ur-Nammu, Eshnunna and Hammurabi law codes are recognized.

Table Ⅰ-12 summarizes the transfer of the articles in the preceding law codes to the Hammurabi code. 39 articles in the Hammurabi codes are transferred from the preceding laws : H10(E), H19(LI), H22(UN), H59(LI), H61(LI), H125(E), H127(LI), H130(UN), H131(E), H132(UN), H135(E), H136((E), H138(UN), H160(E), H163(E), H164(E), H167(UN), H171(LI), H192(LI), H196(E), H197(UN+E), H198(UN+E), H199(UN+E), H200(UN+E), H201(UN+E), H202(E), H203(E), H204(E), H205(E), H206(E), H236(E), H242(E), H251(E), H252(E), H257(E), H271(E), H273(E), H277(E) (Total 39 articles).

Here, UN, LI and E in the parenthesis means the article, transferred from the UN, LI and E codes to the Hammurabi code, respectively.

Table Ⅰ-12 Transfer of the articles in the three precedeing law codes to the Hammurabi code

Item	①UN	②LI	③E	④H
(1) Number of legible articles	16*1	16	59	248
(2)Number of donner aticles tranfered to④	8	8	16	-
(3) Ratio (2)/(1)	0.5	0.5	0.27	-
(4) Number of ④ articles transfered from ①~③	10	7	22	39(34)*2
(5) Ratio of (4)/(1)	0.63	0.44	0.37	0.14

*1 see note to Table I-5. *2 five dupliate countings are excluded

About 30 - 50% of the articles in the three preceding law codes are transferred to the H code. Accordingly, we can conclude from Table Ⅰ-12 that in the H code DNA of ancient Mesopotamian law system is certainly detected. However, the transferred articles, mentioned above, are only 14% of the total H code. Then, the degree of influence of preceding codes to the H code is very restrictive, as shown in Table Ⅰ-13. We can say that the H law code is by far remote offspring.

If we define the ratio (4)/(1) as an impact factor for these law codes, the ratio from Table Ⅰ-12 is 1.25 (=10/8) for UN, 0.88 (=7/8) for LI and 1.38 (=22/16) for E, respectively. The Esununna law has the highest impact factor.

Table Ⅰ-13 collects the quality (i,e., identity, similarity, and correlation) and the quantity(i.e., the number of articles) of the articles transferred from the three preceding law codes. Obviously, the number of the transferred articles decreases significantly in the order : identity <similarity < correlation.

Only five articles in 32 articles is transplanted, keeping absolutely the

original form, to the H law code. Half of the transferred articles reveals only some correlations with the H law code: Although similar or correlated topics with the previous laws are adopted in the H code their principal philosophy is quite different from the H laws.

Table Ⅰ-1 3 Number of articles of the three preceding law codes, which have identity, similarity and correlations to the Hammurabi law code

Donor → Receptor	Identity	Similality	Correlation	Sub-total
Ur· Nammu → Hammurabi	2	1	5	8
Lipit· Ishtar → Hammurabi	2	5	1	8
Eshnunna → Hammurabi	1	6	9	16
(Sub-total)	5	12	15	32

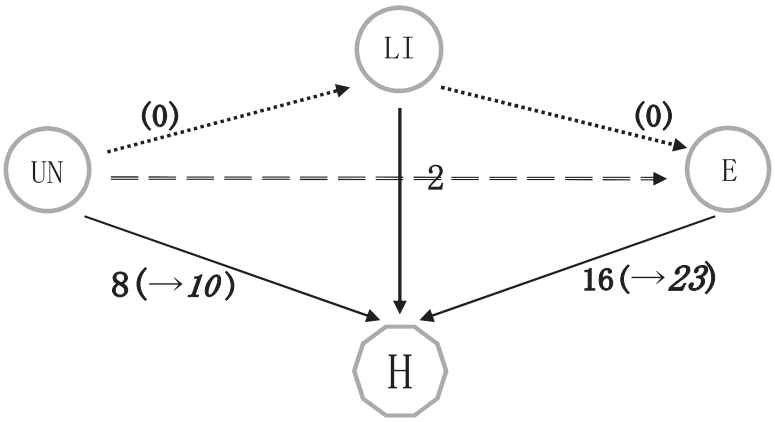

Fig. 1 Correlations among the four law codes

Note to Figure 1 : Gothic number : number of the articles in UN, LI, and E, transferred to H. Italic number in brackets : number of the articles of the Hammurabi law code, transferred from the preceding codes.

Any significant correlation is not observed between the Ur-Nammu and Lipit-Ishtar law codes, and between the Lipit-Ishtar and Eshnunna law codes. Some small connection (mainly through penal for body injury) is detected between the Ur-Nammu and Eshnunna law codes. In the transfer, an original article in the donor often brings about two or more acceptor articles (two from E17 (marriage portion) and E54 (death by ox); three from UN19 (fracture of bone) ; six from E42 (injury of tooth, bone)). These facts strongly suggest that the three preceding codes were almost isolated, independently formulated, and transferred individually to the Hammurabi code.

Based on the analytical results obtained in this study, various opinions or hypothesis about the four law codes can be examined : A few examples are shown below :

(1) Kuroda[56] described that Hammurabi made the law code as a summation (of the Lipit-Ishtar and Eshnunna law codes). Table Ⅰ-5 denies his hypothesis evidently.

(2) Kishimoto[57] wrote that the Hammurabi law code is a law code edited imitating the Lipit-Ishtar code (as a model) on three grounds that both law codes have similar constitution (i.e., consisting of prologue + main articles + epilogue), (b) both law codes have similar contents, and (c) the LI law code is about 100 years older than the H code. Table Ⅰ-12, shows that LI differs insignificantly from the other two (UN and E) codes and inspection of Table Ⅰ-6~ Ⅰ-7 leads us to the conclusion that the LI law code differs greatly from the H law codes. Then, Kishimoto's opinion can't be accepted.

8 Conclusions

Morphological, anatomical, and statistical analyses on the primary fundamental materials lead to the following conclusions.

(1) The Hammurabi law has overwhelming size; 2.6 times (=248/95) of the arithmetic summation of other three preceding laws (Table Ⅰ-5) : The H law is not a simple accumulation of the preceding laws.

(2) About 30~50% of the article in the three preceding law codes is transferred to the H code(Table Ⅰ-12). The transferred articles occupy only 13% (=32/248) (Table Ⅰ-13) of the total articles of the H code : The degree of influence of the preceding codes to the H code is very restrictive (Table Ⅰ-13). The H code is by far remote offspring.

(3) The main target of these laws is obviously awilum(Table Ⅰ-5). This fact gives us an ignorable suggestion to the nature of awilum (see, Part Ⅱ).

(4) All the legible articles of the four law codes are classified into 11 categories, which are consisted of eight traditional and three new categories, added from a contemporary view point, such as human right (category 2), protection of social misfortune (category 3), responsibility to failure and product liability (category 10).

(5) Number of the articles on human right increased from 18 (three law codes) to 24(the H law) (hereafter, expressed as 18 → 24) ; we obtain also for protection (0 → 10), and responsibility(0 → 20). Total 54 articles (i.e., about 22% (54/248) are grouped into new groups (Table Ⅰ-7) : Modern legal ideas emerged evidently first from , except category 2, the Hammurabi law, which was said by the

Hammurabi himself in 'Prologue' to be based on 'Justice'. 'Justice' in the Hammurabi law should be interpreted in broad sense and categories 2, 3 and 10 are conceived a kind of ' Embodied Justice'.

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