

Minutes of GEOSNet board meeting, 12 Jun 2009, Gifu

Date: 12 June 2009

Time: 1300-1400 hrs

Venue: Secretariat Room, Nagaragawa International Convention Center, Gifu, Japan

Present: KK Phoon (Chair), Y Honjo (co-Chair), B Simpson, HW Huang, M Uzielli (Secretariat), T Hara (TG1), JY Ching (TG3), B Schuppener (TG4)

Guests: Ivan Au, Sêco e Pinto, N Vogt, Yu Wang,

Apologies: DE Becker, CT Chin, MH Faber, CH Wang, K Horikoshi

1. Introduction and welcome

KK Phoon convened the meeting at 1:00 pm. Members and guests present introduced themselves.

2. Matters arising from previous minutes

KK Phoon circulated minutes of Shanghai meeting, 18 Oct 2007. With reference to item #4, KK Phoon mentioned that B Simpson agreed to join the 2nd GEOSNet Board after receiving approval from his company. KK Phoon welcomed B Simpson on behalf of the executive board. He mentioned that other matters arising from previous minutes would be covered in following agenda items.

3. Past/current activities

a. Report of TG1

Y Honjo reported that there are 122 registrations in IS-Gifu, out of which 36 are overseas participants (statistics as of 10 June 2009). He mentioned that IS-Gifu is financially healthy. On behalf of the executive board, KK Phoon thanked Y Honjo, T Hara and the organizing committee (including student helpers) for their hard work over the past 2 years and congratulated Y Honjo for the successful organization of IS-Gifu.

b. Report of TG2: (Y Honjo)

Y Honjo reported that he is current chair of ACECC TC8 on "Harmonization of Design Codes in Asian Region". K Horikoshi is the secretary of TC8. Y Honjo circulated a brief report on activities of TC8 (report enclosed – Appendix 1). He highlighted the 4-step strategy for harmonization on p. 4. Currently, efforts are focused on step 2, which is essentially preparation of a glossary. The next meeting for TC8 is scheduled for fall of 2010 in Sydney. Y Honjo mentioned that the mission of TG2 is fully in line with ACECC TC8. Hence, he is undertaking activities for TC8/TG2 jointly.

c. Report of TG3 (JY Ching)

JY Ching reported both current and future activities of TG3:

- Development of an example template containing clear definition of performance function, probability models, and validated reliability solutions from standard approaches (e.g. FORM, SORM, simulation) – Appendix 2
 - Examples are made available at the TG3 (Reliability benchmarking) website, http://jyching.twbbs.org/reliability_benchmark/
 - Organization of a special session in IS-Gifu (5 presentations)
 - Informal lunch TG3 meeting, 11 June 2009, Session Room 2
 - About 10 people attended the meeting. They were invited to participate in TC3.
 - Ivan Au and Y Wang agreed to promote development and compile a library of EXCEL-based reliability tools.
 - JY Ching agreed to develop a web-based reliability analysis and design “calculator”.
 - B Simpson suggested TG3 to close gap between code drafters and reliability researchers as an intermediate step towards broadening awareness and acceptance of reliability-based design among practitioners. He mentioned that ERTC has revised the design examples for Eurocode 7 evaluation. KK Phoon will approach T Orr to maintain a library of design examples for TG3. TG3 can play a useful role in providing reliability of design solutions obtained from Eurocode 7.
 - TG3 is planning to organize another reliability benchmarking session at 17SEAGC, Taipei, 10-13 May 2010.
 - JY Ching and KK Phoon have conducted a 1-day reliability short course to practitioners in Taiwan on 25 May 2009. They are planning to conduct the same short course at Shanghai, late July and at GeoFlorida, West Palm Beach, 20-24 Feb 2010.
 - B Schuppener requested KK Phoon to circulate the short course outline and to consider giving a similar short course at 3rd ISGSR, Munich, 2011.
- d. Report of TG4 (B Schuppener)
 B Schuppener reported that TG4 has established a discussion forum at www.geoengineer.org. Questions pertaining to pore water pressure and ground water were posed for discussion. The forum is well visited but received limited responses. To elicit more responses, structured questionnaires similar to multiple-choice questions are being prepared on issues related to selection of characteristic values from site data, approaches for dealing with pore water pressure/ground water, etc. Sample design solutions would be provided for comparison.

4. Third GEOSNet Board

a. Chair and co-chair

KK Phoon mentioned that he is stepping down as Chair and Y Honjo would be next Chair, following the guidelines developed during 1st ISGSR meeting, 18 Oct 2007. KK Phoon further mentioned that he has invited B Schuppener to host the next ISGSR in Germany, in part because of significant code

development activities in Europe. Y Honjo and KK Phoon proposed B Schuppener to be incoming co-Chair given his key role in organizing the 3rd ISGSR. The meeting agreed that Y Honjo and B Schuppener are highly qualified to lead the 3rd GEOSNet Board.

b. Board members

KK Phoon opined that guidelines for succession of Chair, co-Chair and secretariat have been discussed and approved in the 1st ISGSR meeting, 18 Oct 2007. However, the term of board members was not discussed. He proposed restricting board membership to 2 terms or approximately 4 years. He has sounded out CT Chin and HW Huang, because both of them have served 2 terms. They supported this proposal. Hence, they would step off as board members.

CT Chin would like to nominate ML Lin as member of 3rd GEOSNet board. KK Phoon mentioned that ML Lin was past chair of Taiwan Geotechnical Society and she is currently leading a major geotechnical code revision exercise in Taiwan.

HW Huang would like to nominate DM Zhang as member of 3rd GEOSNet board. He mentioned that younger board members would broaden the appeal of GEOSNet and contribute actively to GEOSNet activities. He nominated DM Zhang because she is active in numerous large underground projects, in particular risk assessment/management aspects related to these projects. DM Zhang was the secretary of 1st ISGSR.

The meeting accepted ML Lin and DM Zhang as members of 3rd GEOSNet board. KK Phoon requested Y Honjo to invite both members formally.

c. Secretariat

CH Wang has served 2 terms and he is slated to step off following the guidelines developed during 1st ISGSR meeting, 18 Oct 2007. In consultation of Y Honjo, KK Phoon proposed T Hara to replace CH Wang in the secretariat. T Hara is the secretary of 2nd ISGSR. The meeting accepted KK Phoon's proposal.

d. In summary, the 3rd GEOSNet board (2009-2011) consists of:

Y Honjo (Chair)

B Schuppener (co-Chair)

DE Becker

MH Faber

K Horikoshi

ML Lin

KK Phoon (immediate past Chair)

B Simpson

DM Zhang

5. Future Activities

- a. Next conference at Technical University Munich (B Schuppener & N Vogt)

B Schuppener and N Vogt presented a proposal to organize the 3rd ISGSR at Technical University Munich in 2011. N Vogt mentioned that 3rd ISGSR has secured the support of the German Geotechnical Society. HW Huang suggested using the name “3rd ISGSR”, rather than “IS-Munich” to ensure that this conference will be identified with the ISGSR series. Y Honjo mentioned that the 3rd ISGSR could be developed with a strong design code theme, given the significant level of activities related to Eurocode 7. KK Phoon highlighted that the 11th ICASP will be held at ETHZ, Zurich, in mid 2011 as well. KK Phoon would provide more definite dates to B Schuppener and N Vogt so that they can consider the possibility of holding the 3rd ISGSR back to back with 11th ICASP. N Vogt suggested roping in D Straub, who is a faculty member of TUM, into the organizing committee. KK Phoon supported this suggestion.

- b. Task groups

Future activities have been discussed in item #3 above.

- c. GEOSNet track at 17th Southeast Asian Geotechnical Conference (KK Phoon)

On behalf of JR Chen, KK Phoon reported that the 17th Southeast Asian Geotechnical Conference (17SEAGC) would be held in Taipei, 10-13 May 2010. JR Chen has secured support from 17SEAGC to organize a track consisting of several sessions on “Risk Assessment and Management, Reliability Analysis and Design, and Design Code Development”. This track would be sponsored by GEOSNet.

- d. Short courses

JY Ching and KK Phoon are scheduling 1-day short courses in Shanghai, China, July 2009; West Palm Beach, USA; Feb 2010, Taipei, Taiwan, May 2010; Munich, Germany, mid 2011.

6. Membership

KK Phoon reported that he has invited all 2nd ISGSR delegates to join GEOSNet. The invitation letter and application have been inserted in all conference bags. He would extend this invitation during the GEOSNet general meeting as well.

7. Other Business

The meeting was adjourned at 2:00 pm.

Appendices

Appendix 1 - Report on ACECC TC8 activities (provided by Y Honjo)

Appendix 2 – TG 3 reliability benchmarking sample template



GEOSNet Board Meeting at Secretariat Room, Nagaragawa International Convention Center, Gifu, Japan, 12 June 2009, 1:00 – 2:00 PM

Left to right:

(Back row) N Vogt, Y Honjo, JY Ching, M Uzielli, B Simpson, B Schuppener

(Front row) HW Huang, Sêco e Pinto, KK Phoon, T Hara, Ivan Au

(Photograph courtesy of Y Wang)

On ACECC TC8 Harmonization of Design Codes in Asian Region

Yusuke Honjo
Kenichi Horikoshi
Eiki Yamaguchi
(JSCE)

Organization of ACECC

Executive Committee Meeting (ECM)

Technical Coordinating Committee

- TC1* Asian and Pacific Coastal Network (JSCE)
- TC2* Integrated River Management (JSCE)
- TC3 Inter-regional Cooperation for Great Mekong Sub-region (JSCE)
- TC4* The Sumatra Offshore Earthquake and the Indian Ocean Tsunami (JSCE)
- TC5 The Sustainable Development of Civil Engineering (CICHE)
- TC6*: Quantitative Risk Assessment for Hazard Mitigation (ASCE)
- TC7 : Disaster Mitigation and Preparedness Strategies (PICE)
- TC8 : Harmonization of Design Codes in the Asian Region (JSCE) * finished**

Planning Committee 企画委員会

- Sub-committee
1) Membership, 2) Awarding, 3) Operational Task, 4) E-publication

Local Organizing Committee for CECAR

ACECC Technical Committee (TC-8) on Harmonization of design codes in the Asian region

Chair Prof. Yusuke Honjo (Gifu University, JSCE)

Secretary Dr. Kenichi Horikoshi (Taisei Corporation, JSCE)

Terms of References of the new TC:

- 1) Create and strengthen human network on code development through continuous discussions,
- 2) Provide the latest information on design code in the Asian region, and make it public on the website, and
- 3) Create the glossary of terminology for basis of design, which will be based on a new concept such as performance based design.

Activity period: 2007-2010

Code Development and related issues

Developing Countries

International projects based on bilateral or multilateral assistance,
Code development can not catch up with very rapid infrastructure development,
Without own code, or Mixture of different overseas codes,
Lack of latest code information source,

Developed Countries

Cooperation for code development as global standard
Cooperation for creation of unified idea of design concept and terminologies



Necessity

to discuss future of code development
to exchange information on code development in each country
to enhance personal network among code writers
beyond boundaries of nations and fields of study

Information on Design Codes in each ACECC members

The screenshot shows the ACECC website with the following content:

ACECC
The Asian Civil Engineering Coordinating Council

2. Source of code information in each ACECC member

Australia

- Australian Standards
<http://www.standards.com.au/catalogue/script/Search.asp>
- <http://www.standards.org.au/>
- Australian Building Codes Board <http://www.abcb.gov.au/>
- National Association of Testing Authorities <http://www.nata.asn.au/>
- National Standards Commission <http://www.nsc.gov.au/index.html>

Japan

General

- Japan Industrial Standard Committee (JISC): <http://www.jisc.go.jp/eng/index.html>
- Japan Standard Associations (JSA): http://www.jsa.or.jp/default_english.asp

Activities related to ISO

- Institute of International Harmonization for Building and Housing (iibh): http://www.bekkoame.ne.jp/~aicbh/index_e.htm
- ISO/TC98/SC3/WG10: Bases for design of structures - Seismic actions for designing geotechnical works: <http://www.jsce.or.jp/opcet/tc98sc3wg10/links.htm>

Concrete

- International Committee on Concrete Model Code for Asia (ICCMC): <http://www.iccmc.org/>

Geotechnical Engineering

- International Society for Soil Mechanics and Geotechnical Engineering TC 23: Limit State Design in Geotechnical Engineering Practice: <http://www.cive.gifu-u.ac.jp/~tc23/index.html>

Related Institute

- Ministry of Land, Infrastructure and Transport <http://www.mlit.go.jp/english/index.html>

<http://www.acecc.net/modules/tinycontent5/index.php?id=37>

Workshops and Forums on Code Harmonization




4 November, 2006 (Taipei, Taiwan)
1st Workshop on Harmonization of Design Codes in the Asian Region

27 June, 2007 (Taipei Taiwan)
4th CECAR Special Forum:
Harmonization of Design Codes in the Asian Region

11 September, 2008 (Sendai, Japan)
2nd Workshop on Harmonization of Design Codes in the Asian Region

18 April, 2009 (Hanoi, Vietnam)
3rd Workshop on Harmonization of Design Codes in the Asian Region



Level of Harmonization	
Step 1 	Share of information beyond boundaries of societies and civil eng. fields (source of code, methodology of code development) Activities of this level have already been started by ACECC, i.e. code information on ACECC website, and ACECC workshop on Harmonization of design codes in the Asian region Nov. 4, 2006
Step 2 	Harmonization of basic terminologies used for designs, Harmonization of design concept, such as limit state design, performance based design, Informative to code writers Avoid misunderstanding among engineers in practice
Step 3 	Harmonized code for basis of design, Harmonized code for a specific design field, such as concrete, structural engineering, and geotechnical engineering.y Codes to be refereed by code writers in each country Such as Eurocode 0: Basis of Design, ISO 2394: General principles on reliability for structures,
Step 4	Harmonization extended to broader area and broader engineering field. Asian Concrete Model Code activity toward ISO Asian Voice to the world

Main Objectives of ACECC workshop & Forum

1. To share the information on activities and methodologies for formulating design codes in each country and make use of them for future activities,
2. To discuss the direction for the code harmonization in the Asian region. As well, to provide a place for discussions in the same languages and vocabularies,
3. To transmit to the world the idea about the design code in the Asian region as the Asian voice,
4. To create stronger human network among the people involved in the code development

Some of summaries of workshops so far:

- 1) Wide variety of design codes in each field in each country, which have been influenced by many other countries, such as Russia, USA, Europe, and Japan.
- 2) We should realize that we have common natural conditions, such as climates, ground types and disasters in the Asian region.
- 3) We need to differentiate between short-term and long-term targets. Creating a glossary of terminology may also be a nice step for the harmonization.
- 4) The limit state design concept was a base for the harmonization in European countries. A new concept such as 'performance based-design', 'performance based specifications', and 'sustainable design' may be necessary for harmonization.
- 5) A civil engineering society is not the only body to deal with design codes. It is necessary to exchange information with other professional groups such as concrete and steel institutes, and architectural institute.
- 6) Eurocodes are the government-oriented projects and they have close ties with European Union. Writing up a model framework by the engineering societies/institutions does not imply immediate application of practice of design codes. However collaboration work and information exchange with governments are necessary for future harmonization.

The 3rd Workshop on Harmonization of Design Codes in the Asian Region

Organized by ACECC TC-8
JSCE (Japan Society of Civil Engineers)
VFCEA (Vietnam Federation of Civil Engineering Associations)
Institute of Basic Research and Standardization
Japan Society of Civil Engineers Vietnam Section

8:30-8:35	Greetings by Prof. Yusuke Honjo, Chair of ACECC TC-8, JSCE
8:35-8:40	Greetings by Prof. Pham Hong Giang, VFCEA
8:40-9:00	Introduction of ACECC Activities towards Code Harmonization in the Asian Region by Dr. Kenichi Horikoshi
9:00-9:40	Introduction of JSCE Standard Specifications for Steel and Composite Structures by Prof. Eiki Yamaguchi
9:40-10:20	Introduction of Current Vietnam Design Codes and their future by Dr. Nguyen Trung Hoa
10:20-10:35	Coffee Break
10:35-11:30	Introduction of Current Japanese Design Codes, and Terminologies for basis of designs by Prof. Yusuke Honjo
11:30-12:20	Discussion on the Activities towards Code Harmonization Chaired by Prof. Yusuke Honjo
12:20-12:25	Greetings by Prof. Pham Hong Giang, VFCEA
12:25-12:30	Closing by Dr. Yukihiko Sumiyoshi, Representative of JSCE



Some of the comments during the discussion session.

- Issues related to design codes among the developing countries are recognized:
 - co-existence of multiple different codes based on different background.
 - no room to introduce new and effective materials and construction methods etc.
 - not necessarily suitable for regional conditions.
- New concept is required to harmonize the codes – Performance based Design.
- Simple and practical codes developments for regional problems.
- Involvements of government sectors and supports from developed countries.



Visit to MOS
(Ministry of Construction)
16 April, 2009

Visit to IBST
(Institute of Building
Science and Technology)
16 April, 2009



Future Perspectives

- Organize a technical session in Sydney in 2010.
- Propose Glossary of Terminologies.
- Recommendations for future activities.

Cảm ơn

Thank you very much!

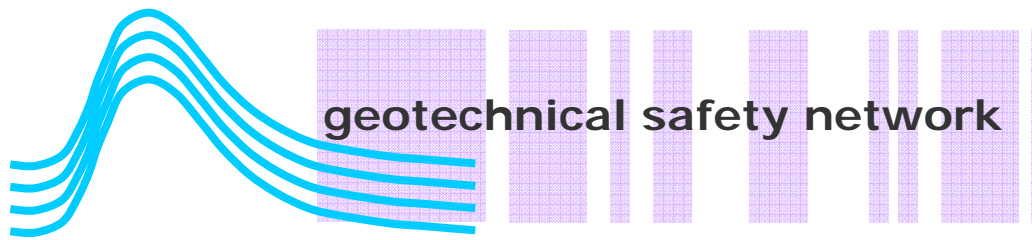


Cảm ơn

Thank you very much!



APPENDIX 2 – TG 3 reliability benchmarking sample template



TASK GROUP 3 – RELIABILITY BENCHMARKING

Example No.	4
Author(s)	KK Phoon
Date	25 April 2008 (ver. 1)
Brief description	<p>Footing problem subjected to inclined loading with 5 independent random variables.</p> <p>The purpose is to show that load variables can be both favourable and unfavourable in the same problem. The vertical load is unfavourable in the usual load context and favourable in the bearing capacity inclination factor.</p>
Figure	
Performance function	$P = (0.5 B \gamma^* N_\gamma \zeta_{\gamma s} \zeta_{\gamma i} \zeta_{\gamma r}) B^2 - V$ $N_q = \exp(\pi \tan \phi) \tan^2(45^\circ + \phi/2)$ $N_\gamma = 2 (N_q + 1) \tan \phi$ $\gamma' = \gamma_{\text{sat}} - \gamma_w = 20.3 - 9.81 = 10.5 \text{ kN/m}^3$ $\gamma^* (\text{kN/m}^3) = \gamma = 17.7 \quad h > B$ $= \gamma' + (\gamma - \gamma')h/B = 10.5 + 7.2h/B \quad B > h > 0$ $\zeta_{\gamma s} = 1 - 0.4 (B/L) = 0.6$ $\zeta_{\gamma i} = \left(1 - \frac{H}{V}\right)^{2.5}$ <p>Rigidity index, $I_r = G / (\sigma'_a \tan \phi)$</p>

	<p>Reduced rigidity index, $I_{rr} = I_r / (1 + I_r \Delta)$ $\Delta = 0.00025 (45 - \phi)(\sigma'_a / 100 \text{ kPa})$ (Note: ϕ in degrees) σ'_a (kPa) = $0.5B\gamma = 26.55$ $h > B/2$ = $h\gamma + (0.5B-h)\gamma' = 7.2h + 5.25B$ $B/2 > h > 0$</p> <p>$I_{rc} = 0.5 \exp[(3.30 - 0.45 B/L) \cot(45^\circ - \phi/2)]$</p> <p>$I_{rr} > I_{rc} \Rightarrow$ General shear failure $I_{rr} < I_{rc} \Rightarrow$ Local/punching shear failure</p> <p>$\zeta_{yr} = \exp\{[(-4.4 + 0.6 B/L) \tan \phi] + [(3.07 \sin \phi)(\log_{10} 2I_{rr})/(1 + \sin \phi)]\}$ $I_{rr} < I_{rc}$ = 1 otherwise</p> <p>h = depth of groundwater table below ground surface γ and γ_{sat} = moist unit weight and saturated unit weight of sand, respectively γ_w = unit weight of water (9.81 kN/m^3) ϕ = effective stress friction angle of sand G = shear modulus of sand V = vertical dead load H = horizontal live load</p> <p>There are five independent random variables in this problem (h, ϕ, G, V, H)</p>																																								
Inputs	<table border="1"> <thead> <tr> <th>Variable</th> <th>Description</th> <th>Distribution</th> <th>Statistics</th> </tr> </thead> <tbody> <tr> <td>h</td> <td>Depth of water table</td> <td>Lognormal</td> <td>mean = 2 m cov = 50%</td> </tr> <tr> <td>ϕ</td> <td>Effective stress friction angle</td> <td>Lognormal</td> <td>mean = 35° cov = 8%</td> </tr> <tr> <td>G</td> <td>Shear modulus</td> <td>Lognormal</td> <td>mean = 20 MPa cov = 50%</td> </tr> <tr> <td>V</td> <td>Vertical dead load</td> <td>Normal</td> <td>mean = 1500 kN cov = 5%</td> </tr> <tr> <td>H</td> <td>Horizontal live load</td> <td>Extreme Type I</td> <td>mean = 150 kN cov = 20%</td> </tr> <tr> <td>B</td> <td>Footing width</td> <td>Deterministic</td> <td>3 m</td> </tr> <tr> <td>γ</td> <td>Moist unit weight of soil</td> <td>Deterministic</td> <td>17.7 kN/m^3</td> </tr> <tr> <td>γ_{sat}</td> <td>Saturated unit weight of soil</td> <td>Deterministic</td> <td>20.3 kN/m^3</td> </tr> <tr> <td>γ_w</td> <td>Unit weight of water</td> <td>Deterministic</td> <td>9.81 kN/m^3</td> </tr> </tbody> </table> <p>$\gamma = \gamma_w (G_s + 0.2e)/(1+e)$ (assume degree of saturation = 20% for "moist") = 17.7 kN/m^3</p>	Variable	Description	Distribution	Statistics	h	Depth of water table	Lognormal	mean = 2 m cov = 50%	ϕ	Effective stress friction angle	Lognormal	mean = 35° cov = 8%	G	Shear modulus	Lognormal	mean = 20 MPa cov = 50%	V	Vertical dead load	Normal	mean = 1500 kN cov = 5%	H	Horizontal live load	Extreme Type I	mean = 150 kN cov = 20%	B	Footing width	Deterministic	3 m	γ	Moist unit weight of soil	Deterministic	17.7 kN/m^3	γ_{sat}	Saturated unit weight of soil	Deterministic	20.3 kN/m^3	γ_w	Unit weight of water	Deterministic	9.81 kN/m^3
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Results (optional)	<p><i>Deterministic</i> (based on origin of standard normal space): $h = 1.8$ m, $\phi = 35^\circ$, $G = 18$ MPa, $V = 1500$ kN, $H = 155$ kN</p> $FS = (0.5 B \gamma^* N_\gamma \zeta_{\gamma_s} \zeta_{\gamma_i} \zeta_{\gamma_r}) B^2/V = 2.87$ <p><i>Probabilistic</i> (based on distributions):</p> <table border="1"> <thead> <tr> <th></th> <th>FORM (EXCEL)</th> <th>FORM</th> <th>SORM</th> <th>Simulation (n = 10⁶)</th> </tr> </thead> <tbody> <tr> <td>β</td> <td>2.612</td> <td>2.593</td> <td>2.653</td> <td>2.664</td> </tr> <tr> <td>p_f</td> <td>0.0045</td> <td>0.0048</td> <td>0.0040</td> <td>0.0039</td> </tr> <tr> <td>% error in p_f</td> <td>15.4</td> <td>23.1</td> <td>2.56</td> <td>-</td> </tr> </tbody> </table>						FORM (EXCEL)	FORM	SORM	Simulation (n = 10 ⁶)	β	2.612	2.593	2.653	2.664	p_f	0.0045	0.0048	0.0040	0.0039	% error in p_f	15.4	23.1	2.56	-																
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% error in p_f	13.35	18.33	0	-	-3.3																																				
# of evaluation of P function (optional)	11	176	217	10 ⁶	2800																																				
Estimator cov (optional)	n/a	n/a	n/a	1.29%	28.98% ⁽⁵⁾																																				