

Activism in the Wild: a preliminary study of NPO incomes

**Frank Bennett
Justin Whitney**

*I can see the dancin', the silhouettes on the shade
I hear the music, all the lovers on parade
Open up! I wanna come in again
I thought you were my friend*

-- The Sensations¹

Introduction

An innocent alteration to the environment of Japanese governance in 1998 has resulted this year in a dramatic change in its atmosphere. Japan was once remarkable for being among the most restrictive jurisdictions in the developed world for the establishment of non-profit organizations.² The primary corporate personality available for use by the would-be activist required, as a precondition of incorporation, approval by the most nearly affected government ministry.³ Organizations able to clear this hurdle began life with a close and comfortable working relationship with their sponsoring agency,⁴ typically backed from the outset by significant economic and organizational resources.⁵ This legal framework underpinned a pattern of directed cooperation that had driven the transformation of Japanese society since the mid-19th century.⁶ Activism beyond the bounds of this selected community was not unknown; but without tax benefits or a collective means of making decisions and managing funds, the balance of citizen activism was

prone to fragmentation and policy drift.⁷ This helped to open the space filled by government with “administrative guidance” and other forms of discretionary intervention.

While this feature of domestic administration was an important factor in Japan’s political and economic development, as Japanese society adapted to rising affluence, citizens with broader experience began to argue the benefits of the less restrictive stance toward citizen associations in other countries.⁸ In the wake of the Great Hanshin-Awaji Earthquake and Fire of 1995, underlying disquiet erupted into vocal exasperation over mismanagement of the relief effort by government officials -- most notoriously, the initial refusal to permit overseas emergency response teams to enter the country, for quixotic reasons such as their lack of a local qualification to practice medicine.⁹ Administrative bungling was widely contrasted with the efficiency and responsiveness of Japanese and overseas volunteers and NGOs. Political parties rushed to champion citizen volunteerism, and three years later a multi-party bill was brought forward in the Diet to permit certain non-profit organizations to be formed without advance approval if certain objective requirements were met. The bill was passed into law on March 25, 1998 as the “Designated Non-Profit Activities Promotion Act”¹⁰ (hereinafter “NPO law”). The adoption of this bill marked a recognition among Diet members that an old administrative mainstay had become a political liability. On January 23 of this year, the Diet finished the job, with further legislation that entirely sweeps away the ministry approval requirement for all non-profits, and offers favorable tax treatment for qualifying organizations and their donors.¹¹ Japan is now unquestionably poised for a period of rapid “third sector” expansion.

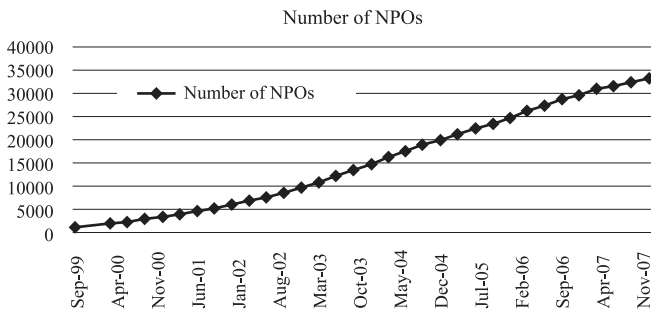
These developments have implications for the formation of civil society in Japan, and change the playing field for research. As these new organizations emerge, their nature and objectives will become an increasingly important parameter for understanding political and administrative processes. This in turn will call for

increased attention to the empirical study of policy formulation “in the wild”, beyond the well-charted boundaries laid out in government policy paper. This article represents a modest initial effort in this direction, based on data from NPO organizations incorporated since 1999.

The NPO law and NPO behavior

The original NPO legislation has now been in effect for ten years. The law permits the formation of a non-profit organization (NPO) by a simple filing made with the Cabinet Secretariat, or with a prefectural or metropolitan authority, with no minimum requirement for initial capital.¹² The purposes of the organization must be declared at the time of filing, and are to be reflected in its articles of incorporation.¹³ A menu of acceptable purposes is designated in the supporting legislation, beyond which NPOs may be permitted to engage in other activities (including business affairs), to the extent that these do not interfere with their declared purposes.¹⁴ The new-style organizations have corporate personality, and are capable of collective decision-making and the management of funds in their own right. As Figure 1 illustrates, approximately 35,000 active NPOs have been registered to date, with the number expanding at

Figure 1: Growth in NPO population



Source: Cabinet Office NPO homepage (<http://www.npo-homepage.co.jp>)

a rate of approximately 15 new incorporations per working day.

The stated objective of the NPO law is “to promote the wholesome development of designated non-profit activities”.¹⁵ Unfortunately, this tells little about what this burgeoning population of large and small institutions actually does. Seventeen discrete areas of acceptable activity are written into the legislation, at least one of which must be specified as a condition of incorporation.¹⁶ But as the typical applicant specifies four of them,¹⁷ this data is at best an uncertain indicator of the fields in which NPOs are active. In any case, it casts no light on organizational motivations. Like any other corporate vehicle, an NPO is exposed to influence from its stakeholders: management, employees, financial contributors, and any clientele groups with which it has a close working relationship. The objectives of an NPO within an area of activity will depend on the outcome of these pressures.

Broadly speaking, there are three possible vectors for action by a given non-profit. First, an NPO might act as an agent for promoting or implementing government policy. An organization might have this as a dominant objective if, for example, it is heavily reliant upon government grants to support its operations. Second, an NPO might lobby government in one or more policy fields. An NPO reliant on a particular industry for funding could be expected to promote government regulation that favors that constituency. Third, an NPO might aim to support a shared interest or objective of its members internally, through improved coordination and economies of scale.

The obvious means of charting influences on NPO activity across a large number of organizations is through their finances. If it can be known that a particular NPO is funded entirely through individual member contributions, for example, this would tell us much about how that organization sets its objectives. The collection of such data could provide a useful guide to the lines of influence coursing through the sector.

While that far-reaching objective is beyond the scope of this short paper, we offer here a preliminary study, based on an empirical method that may, with further effort, bring more ambitious research objectives within reach. This study is limited to two simple threshold questions. First, *to what extent do NPOs purport to specialize, and do they have incentives for doing so?* The answer to this question will cast light on the significance of the designation of purpose that NPOs are required to make. It will also give an indicator of the stake that NPOs have in a particular area of public policy. Second, *is there evidence of consolidation in the non-profit sector?* NPOs are not commercial firms, but it is possible for them to grow, to merge,¹⁸ and of course to leave the stage. If they are truly autonomous, they must compete with other organizations for resources, and the expected result of that would be consolidation over time. On the other hand, if NPOs are merely a soapbox for amateurs and a mask worn by backstage players, they may not be driven toward consolidation - and the sector would, both politically and economically, be of less interest.

We attempt to address these questions empirically using publicly available data. The data set and method of collection are introduced in the next section, followed by a discussion of the result of analysis. The article concludes with comments on the significance of the results, and of the prospects for extending research in this vein.

The Data Set

As a starting point for analysis, we use information on individual NPOs supplied via a website maintained by the Cabinet Secretariat of the Japanese government. At the time of the study, this covers 31,918 NPOs, classified by licensing authority (the 43 prefectures, provincial Hokkaido, the metropolitan governments of Kyoto, Osaka and Tokyo, and the Cabinet Secretariat itself). In the first phase of data collection, the text contents of this website is acquired and

converted to list form for analysis.¹⁹ Data available from this source includes the name of the NPO, its date of incorporation, the name of the individual making the filing, the principle address of the organization, the name of the licensing authority, the description of purpose from the articles of incorporation, and an indication of the categories of activity covered by the application.

For purposes of analysis, this information is supplemented with an indication of the size of each NPO. Acquiring this data poses a special problem, due to the way in which NPO financial disclosure is managed. NPOs are required by law to file an annual financial report with their licensing authority,²⁰ and the licensing authority is required to disclose the reports that it receives. However, the law does not specify the means of disclosure, and this gives rise to unevenness at the level of the licensing authority in the way disclosure is carried out. For cost reasons, the sample data available depends on the disclosure policy adopted by each licensing authority.

As of this writing, no licensing authority supplies comprehensive NPO financial data in electronic text form. On a review of relevant government websites, we find that in 33 prefectures, Hokkaido and metropolitan Tokyo and Osaka, NPO financial reports are not systematically disclosed via the Internet, but are available for inspection at local government offices in paper form. In one prefecture (Aichi), reports are accessible for inspection at dedicated computer terminals located in a single office of the prefectural government. These 34 licensing authorities are necessarily excluded from the sample. Of the remaining licensing authorities, Mie prefecture has published a summary statement of NPO income in graphical PDF form, from which data is extracted by hand. The remaining 8 authorities have adopted a policy of publishing scanned images of NPO financial reports on the World Wide Web as PDF files. We select four of these for use in our sample (the Cabinet Secretariat, Kanagawa prefecture, Shiga prefecture, and metropolitan Kyoto). The files can easily be collected by automated means, but

manual data input for analysis again poses a significant cost barrier.

To collect the PDF data, the graphical page images are extracted from each file, and the commonly available open source OCR program **gocr** is applied to each page. While **gocr** is not capable of full recognition of Japanese text, it is trainable for specific characters. As a heuristic for identifying pages of interest, **gocr** is trained to recognize the glyph 収, which occurs in income statements and is uncommon in other sections of a financial statement. Because the statement of income is customarily the last section of an annual report, by scanning pages in reverse order, and terminating the process at the first page, following the first recognition of a page containing the character 収, in which 収 is *not* found, we are able to identify pages likely to containing data of interest. By restricting **gocr** character recognition to digits, the character 収, commas, and the letter l (which **gocr** frequently returns instead of the number 1), strings of digits are obtained. By extracting the largest of these strings from the (otherwise corrupted) text returned by **gocr**, we are able to obtain a rough indicator of the financial capacity of the target NPO.

As the reader will induce from the description above, this data collection process is far from perfect. The highest degree of accuracy in optical character recognition requires text clearly printed in a consistent font and size, while the published PDF files, coming as they do from multiple sources, is of uneven quality, and in a wide variety of fonts (some are even handwritten). This, combined with the abandonment of any attempt to parse the structure and syntax of the target pages, inevitably results in errors. A review of this collection process for 40 randomly selected NPOs revealed significant errors in four cases, and minor errors of no more than 10% in another 12 cases). Of particular concern were cases in which **gocr** joined numbers in adjacent columns into a single string, resulting in a vast overstatement of income. The data is thus not trustworthy at the level of an individual NPO; but if controlled for outliers, it is sufficient for rough statistical purposes.

The method described above is used to harvest “income” data from the websites of the Cabinet Secretariat (for NPOs licensed by the national government), Shiga prefecture, Kanagawa prefecture, and metropolitan Kyoto. NPOs for which no report was available is discarded from these samples, together with those for which the OCR attempt returned no data. In the remaining entries, the top 100 items in each set is reviewed for accuracy, to control against over-statements of income. The resulting financial data is merged with the text data initially downloaded from the Cabinet Secretariat website, using the name of the organization as the key for matches. A small number of match failures arise due to asynchronicity between the local government and Cabinet Secretariat web archives, and these entries are discarded. This results in four data sets and 5043 entries, for the Cabinet Secretariat (2134 entries), Shiga prefecture (298 entries), Kanagawa prefecture (1679 entries), Mie prefecture (201 entries), and metropolitan Kyoto (731 entries). The resulting samples are the basis for the income portion of the study.

Significance of the categories

Because NPOs are free to designate multiple areas of activity and most often do so, there is an open question over how meaningful these are as an indicator of actual NPO activity. The categories specified in the NPO law are as follows:²¹

1. Activity aiming to advance health, medicine or welfare
2. Activity aiming to encourage social education
3. Activity aiming to encourage local community building
4. Activity aiming to promote scholarship, culture, art or sports
5. Activity aimed at preservation of the environment
6. Disaster relief activity
7. Community security activity
8. Activity aiming to protect human rights or to encourage peace
9. International cooperation activity

10. Activity aiming to encourage the formation of a society with equal participation of men and women
11. Activity aimed at the wholesome raising of children
12. Activity aiming to develop information society
13. Activity aiming to promote science
14. Activity aiming to stimulate economic activity
15. Activity supporting the development of employment skills or the expansion of employment opportunities
16. Activity aiming to protect consumers
17. Activity to support, advise, or coordinate with respect to the activities or the management of organizations engaged in the activities set forth in the preceding subsections

While the law does require NPOs to focus primarily on the areas of activity that they select, applicants select four categories on average; and nearly fourteen percent of applicants designate seven or more of them. Vagueness comes in varying degrees,

Table 1: Specificity of category selections

Category	Nationwide data	Income sample
1	0.238	0.245
17	0.184	0.179
2	0.181	0.181
11	0.180	0.178
3	0.179	0.172
4	0.174	0.173
5	0.169	0.168
15	0.160	0.148
9	0.159	0.159
8	0.153	0.150
14	0.143	0.138
12	0.129	0.126
16	0.129	0.130
7	0.127	0.127
10	0.124	0.115
13	0.118	0.116
6	0.117	0.117

(Range: 0.058 to 1.00)

however. To measure the relative specificity of categories in the eyes of applicants, we divide the total number of NPOs selecting a particular category by the total number of category selections made together with it. Table 1 shows the result of this calculation, for all entries in the national database, and for the limited sample of “income” data. In the table, a value of 1.000 would indicate a selection made uniquely in all cases, while a value of 0.058 would indicate a selection only made together with all others.

As the result illustrates, Category 1 (Activity aiming to advance health, medicine or welfare) is accompanied by the smallest number of other selections. The comparison with the limited sample also shows that filing behavior in the sample jurisdictions closely resembles that for all jurisdictions nationwide.

Specialization and income

When an NPO registers for a single purpose, it thereby legally restricts itself to that primary area of activity. As we have seen, NPOs do not need to constrain themselves in this way, and many in fact do not. The choice made by an organization in this regard can be read to depend upon its economic underpinnings. Where the members of an organization wish to reserve for themselves a wide scope of permissible activities, and where they also enjoy the freedom to do so (whether by virtue of solidarity, charismatic appeal, philanthropic infusion, or a solid lead on government contracts), a multi-purpose registration statement will best serve this objective. On the other hand, organizations marketing a particular skill or service in a competitive market (whether to government or to private parties) will tend to hold themselves out as specialists in that single area of activity. In this case, registering for a single purpose in the (publicly circulated) registration statement is a means for such an NPO to raise the credibility of its expertise through pre-commitment.

Certainly NPOs come in both flavors, and many in between. But the question of which model best describes the NPO community in aggregate has important consequences when considering the future input that these organizations are likely to have into political, lawmaking, and administrative processes.

Our data harvested from financial statements suggests that NPOs as a class attract more money when they declare a specialization. Table 2 shows the total “income” of the organizations included in

Table 2: Income distribution by number of selections

Selections	1 st quartile	2 nd quartile	3 rd quartile	4 th quartile	Total	NPOs	Average “income” (¥)
1	6.75	9.00	10.83	11.25	37.83%	1273	25,595,712
2	5.31	4.37	4.83	2.49	17.01%	1032	14,194,110
3-4	7.45	6.76	4.95	4.77	23.92%	1557	13,234,328
5-16	5.36	4.84	4.05	6.79	21.04%	1171	15,476,986

Note: Quartile divisions by “income” of individual NPOs at 30,807,699, ¥81,097,801, and ¥246,650,726.

Table 3: NPO “income” by date of incorporation

Year	1 st quartile	2 nd quartile	3 rd quartile	4 th quartile	Total	NPOs	Average “income” (¥)
1999	1.17	1.59	2.74	1.52	7.03	181	32,828,815
2000	1.95	2.90	3.36	4.84	13.05	363	30,404,999
2001	2.34	3.63	2.88	4.97	13.82	430	27,180,011
2002	3.44	3.93	4.22	3.81	15.40	614	21,208,763
2003	4.87	4.20	3.78	1.81	14.65	893	13,874,554
2004	4.36	3.82	3.15	2.95	14.29	834	14,482,224
2005	3.71	2.30	2.89	1.98	10.87	797	11,529,809
2006	3.20	2.89	1.79	1.48	9.36	759	10,424,778
2007	0.38	0.17	0.41	0.57	1.53	170	7,591,638

the sample. The column quartiles categorize NPOs by the size of their “income”. The four tiers in the table provide the figures for organizations filing for one, two, three-to-four, and more-than-four purposes respectively. Category 17, which we interpret to most often indicate an interest in liaising with other NPOs with shared objectives, is excluded from these figures.²² The result is remarkably clear. Over one third of total NPO “income” is attributed to organizations declaring a single area of activity, and the quartile within this group having the largest share of “income” is that for the largest category of organizations. To be sure, there are large NPOs with diverse purposes, and there are many specialized NPOs of diminutive stature. But specialized organizations with big appetites tend to claim a larger share of the pie.

Consolidation

The majority of NPOs are entirely new undertakings, the start line for which falls no earlier than 1999. Judging from our sample data, most are extremely small, with no more than 30 million yen in income per year.²³ A survey by the Research Institute of Economy, Trade & Industry in the year 2000 estimated the entire sector to be only one-half the total size of Japan's trade associations alone, and little larger overall than the nation's domestic bicycle industry. Clearly growth will take place, but the pattern of that growth is important. The NPO law is thought to matter because it provides a new vehicle for collective decision-making by previously dispersed interests. This is but a first step; the effective expression of newly emerging interests through social activism and political input depends on further consolidation within the NPO community.

With our single observed sample, it is possible to draw qualified conclusions about the tendency of NPOs to grow and merge or to do otherwise.²⁴ The "income" data collected strongly suggests that consolidation is proceeding apace. Table 3 shows the total current "income" of NPOs in the sample, banded into quartiles by organizational size and divided into cohorts by year of incorporation. (The year 2008, a fragmentary cohort currently containing only three NPOs with combined "income" of 1.5 billion yen, is excluded from this table.) The distribution across the quartile bands illustrates the progressive rise in institutional size within each cohort, resulting in a rise in average "income" of 11% per year. It appears that NPOs tend to grow larger over time.

In the context of discourse on Japan's civil society, it has been observed that the nation "largely lacks sizable professional groups that influence the public sphere or policy making".²⁵ This landscape was shaped by the pre-1998 controls on non-profit incorporation, which are now no longer with us. The observed pattern of NPO growth demonstrates that the easing of restraints on collective action has been accompanied by a move toward professionalism in

the non-profit sector. It also provides a salutary reminder to the impatient that change on this scale requires time.

Conclusions

While this article can claim the distinction of being the first empirical study of NPO behavior based on comprehensive data using individual organizations as the unit of analysis, the results are admittedly unremarkable. Commercial firms benefit from specialization, generally speaking, and firms in a newly emerging area of economic activity tend to grow and to consolidate. The observation that this is equally true of Japanese non-profit organizations is not going to shift anyone's paradigm. However, the very tepid nature of our results offers some encouragement for the methods that produced them; and this opens the prospect of pursuing more ambitious questions, the answers to which are *not* yet known.

As noted in our description of the data set, the OCR tool used to gather the financial data for this study is prone to error in individual cases. The risks associated with this shortcoming has restricted our scope of coverage in two respects. First, we have not sought to compare behavior across jurisdictions (prefectures and metropolitan authorities), or between local authorities and the Cabinet Secretariat. This is due to a concern that anomalies in individual entries could distort results with smaller sample sizes. Second, because the rough-and-ready nature of our collection method provides only an aggregate notional figure for "income" for each organization, we are unable to examine the sources from which this figure is derived. This latter point is critical for analysis of the forces driving NPO development. It is useful to know that the sector is undergoing consolidation, but this does not reveal in whose interest that consolidation is taking place.

Fortunately, there are prospects for refining the data collection method in future efforts. The approach to optical character

recognition used by the **gocr** tool behind this study is known to degrade rapidly as the quality of input text decreases.²⁶ When applied to poorly printed text and low quality copies - found in many of the PDF images containing NPO financial data - this can create insurmountable difficulties for recognition. In the course of this study, the researchers identified a possible alternative to this tool. In 2005, Hewlett-Packard released the code for the **tesseract** OCR system for free use.²⁷ This program adopts a more sophisticated approach to character recognition,²⁸ and is expected to be more robust with documents of low quality. Like **gocr**, with some effort **tesseract** can be trained to recognize a limited subset of Japanese characters. If sufficiently high recognition rates can be obtained, prefecture-level analysis of NPO funding patterns, will become a possibility, with sampling costs low enough to repeat observations at regular intervals. We leave this attempt for a future occasion.

The NPO vehicle is a potentially important new outlet for diverse forms of activism. This new sector is rapidly taking root, undergoing consolidation and gathering strength, validating the implicit political judgment that there was a strong underlying demand in Japanese society for a more flexible platform for collective action. The precise role that these organizations will play in the future development of Japanese society is not yet certain, but their presence being firmly established, further study of their behavior will surely reward persistence in the researcher.

Notes

¹ “Let Me In”, *The Sensations*, words and music by Yvonne Baker, 1961.

² *The Nonprofit Sector in Japan 17* (Manchester University Press, T. Yamamoto, ed., 1998). *See also* *Defining the Nonprofit Sector: A Cross-National Analysis* (Manchester University Press, L. Salamon & H. Anheier, eds., 1997).

³ Civil Code art. 34 (Law no. 89 of Apr. 27, 1929), later revised by Law no. 50 of 2006. Concerning the impact of this provision, *see generally*, The Nonprofit Sector in Japan, *supra* note 2.

⁴ S. Garon, *From Meiji to Heisei: The State of Civil Society in Japan*, in *The State of Civil Society in Japan* (Cambridge University Press, F. Schwartz & S. Pharr, eds., 2003).

⁵ In practice, sponsoring agencies imposed significant financial requirements on newly approved non-profits. See 国会会議録 (Transcripts of the National Diet), 140th Session, 内閣委員会 (Committee of the Cabinet Secretariat), 13th statement, by 熊代昭彦 (Kumashiro Akihiko) (indicating that, of the two types of non-profit personality available at the time, the rule of thumb appeared to be that a civil corporation, or *shadan-houjin*, typically required a showing of 10 million yen in annual income, and a civil foundation, or *zaidan-houjin*, 300 million yen in initial capital).

⁶ See Garon, *supra* note 4 at 61.

⁷ See R. Kidder & S. Miyazawa, Long-Term Strategies in Japanese Environmental Litigation, 18 Law & Soc. Inquiry 605 (1993).

⁸ See, e.g., N. Ikegami, The Economics of Health Care in Japan, 258 Science 614, 618 (1992) (mentioning the need for more flexible solutions to address the care needs of Japan's aging population); 海外の救援隊、逃した3日のぼん回到に懸命—大阪大震災 [Foreign rescue teams strive to recover three lost days - the Great Osaka Earthquake and Fire], Asahi Shinbun (evening edition), p.1, Jan. 25, 1995 (hereinafter "Foreign rescue teams") (in which a Japanese volunteer opines on the need to strengthen citizen activism in preparation for the next earthquake).

⁹ The first three days following an earthquake are said to be the most critical for successful relief operations. One member of a rescue dog team from France tellingly related her disappointment that she and her colleagues had been able to find nothing but dead bodies on account of the delay. Foreign rescue teams, *supra* note 8. This and other powerful stories were widely reported in Japan, and contributed to the fall of the government of the day.

¹⁰ 特定非営利活動促進法, art. 1 (Law no. 7, Mar. 25, 1998).

¹¹ 一般社団法人及び一般財団法人に関する法律 (Act Concerning Ordinary Civil Corporations and Ordinary Civil Foundations) (Law no. 48, 2006); 公益社団法人及び公益財団法人の認定等に関する法律 (Act Concerning the Certification of Public Benefit Civil Corporations and

Public Benefit Civil Foundations) (Law no. 49, 1998).

¹² NPO law, arts. 10 & 12.

¹³ NPO law, art. 11(c).

¹⁴ NPO law, art. 5.

¹⁵ NPO law, art. 1.

¹⁶ NPO law, art. 2(a).

¹⁷ A nationwide average of 3.96 was derived on March 14, 2008 from data on 31,918 NPOs maintained by the Cabinet Secretariat (*Naikakufu*), available at <http://www.npo-homepage.go.jp/>. Entries in the database for Chiba and Kumamoto prefectures contained no data on selected purposes, and were therefore excluded from the sample.

¹⁸ NPO law, arts. 31-32, 40 (concerning winding up); NPO law, arts. 33-39, 40 (concerning merger).

¹⁹ Specifically, “comma separated value” (CSV) format.

²⁰ NPO law, arts. 28 & 29.

²¹ NPO law, table 1.

²² This excludes eleven NPOs that declare this to be their sole purpose. The average “income” of the organizations thus excluded is ¥15,393,487 per year, with all organizations placing in the first and second quartiles.

²³ Under conditions of considerable optimism, this will pay the salaries of no more than three employees (assuming away most operating expenses).

²⁴ Because our analysis is based on an observation made at a single point in time, we are unable to prove conclusively that the pattern of growth observed in the data is not the result of coincidence. Given the sample size and the clarity of the pattern, however, we believe that is extremely unlikely.

²⁵ R. Pekkanen, *Japan’s Dual Civil Society: Members Without Advocates* 3 (Stanford University Press, 2006).

²⁶ The technique depends on the successful extraction of character unit “blobs” before the specific shape of characters is analyzed. See Glossary of OCR terms (as used in Tesseract) V0.04, at http://tesseract-ocr.repairfaq.org/tess_glossary.html (hereinafter cited as “Glossary”).

²⁷ For the curious and the doubtful, Nathan Willis of **Linux.com** offers the following background: “The Tesseract code was written at Hewlett-Packard in the 1980s and ’90s. In 1995, it was one of the top-tier performers at UNLV’s OCR competition, but when HP withdrew from

the OCR software marketplace, the code languished. Then in 2005, HP handed off the code to UNLV's Information Science Research Institute (ISRI), an academic center doing ongoing research into OCR and related topics. ISRI discovered that original Tesseract developer Ray Smith was now an employee at Google, and asked the search engine giant if it was interested in the code. Google spent a few months updating the code to compile on modern operating systems, and released it on SourceForge.net.” <http://www.linux.com/articles/57222>

²⁸ **Tesseract** is able to reconsider what constitutes a “blob” after its initial attempt at recognition. See Glossary, *supra* note 26.